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**Functional Polyesters**

### 4-arm PLGA

4-arm poly(lactide-co-glycolide) (4-arm PLGA) is a multiarm PLGA connected to one pentaerythritol core. 4-arm PLGA is terminated with hydroxyl group for further modification. Otherwise noted, multiarm PLGA is composed of d,l-lactide and glycolide (50:50 ratio).

- Molecular weight: 5K, 10K, 20K, 30K, 40K
- Package size: 1g, 5g

### HO-PLGA-SH

HO-PLGA-SH, or α-hydroxy-ω-thiol poly(D,L-lactide-co-glycolide), is a linear heterofunctional polyester with hydroxyl on one end and thiol group on the other.

Thiol capped poly(L-lactide-co-glycolide) (PLGA-thiol, PLGA-SH, thiol terminated PLGA) can be used to prepare nanoparticles. Thiol, or SH, sulfhydryl, or mercapto group selectively reacts with maleimide, OPSS, vinylsulfone and transition metal surface including gold, silver, etc.

Poly (lactic-co-glycolic acid) (PLGA) is one of the most effective biodegradable polymeric nanoparticles (NPs). It has been approved by the US FDA to use in drug delivery systems due to controlled and sustained-release properties, low toxicity, and biocompatibility with tissue and cells.

- Molecular weight: 5000, 10K
- Package size: 100mg, 1g

### Mal-PDLLA-OH

α-maleimide, ω-hydroxyl poly(D,L-lactide) (Mal-PDLLA-OH) can be used to prepare nanoparticles, which can be further modified by thiol-reactive entities.

Poly lactides are a family of biodegradable and bioactive thermoplastic aliphatic polyester. It is used to fabricate resorbable medical devices that degrade over months in physiological conditions. Due to their history, poly lactides are one of the easiest and most affordable biodegradable polymers for medical devices. PDLLA polymer is amorphous because the polymer composed randomly by the repeating units from L-lactic acid and D-lactic acid. Therefore, the polymer did not show melting point and has inferior mechanical properties than PLLA, so that the polymer is mainly applied for the coating of suture.

- Molecular weight: 5000, 10K, 20K
- Package size: 100mg, 1g

### PDLLA-amine/PDLLA-NH2

Amine capped poly(D,L-lactide) (PDLLA-Amine, PDLLA-NH2, PLGA-Amine, PLA-NH2, NH2-PLA) can be used to prepare nanoparticles, which can be further modified by amine-reactive entities.

Poly lactides are a family of biodegradable and bioactive thermoplastic aliphatic polyester. It is used to fabricate resorbable medical devices that degrade over months in physiological conditions. Due to their history, poly lactides are one of the easiest and most affordable biodegradable polymers for medical devices. PDLLA polymer is amorphous because the polymer composed randomly by the repeating units from L-lactic acid and D-lactic acid. Therefore, the polymer did not show melting point and has inferior mechanical properties than PLLA, so that the polymer is mainly applied for the coating of suture.

- Molecular weight: 2000, 5000, 10K, 16K, 20K
- Package size: 100mg, 1g
Azide capped poly(D,L-lactide) (PDLLA-Azide, PDLLA-N3, N3-PDLLA) can be used to prepare azide functionalized nanoparticles. Azide can be used to react with alkynes cyclooctyne in aqueous solution with or without copper catalyst.

Polyesters are a family of biodegradable and bioactive thermoplastic aliphatic polyester. It is used to fabricate resorbable medical devices that degrade over months in physiological conditions. Due to their history, polyesters are one of the easiest and most affordable biodegradable polymers for medical devices. PDLLA polymer is amorphous because the polymer composed randomly by the repeating units from L-lactic acid and D-lactic acid. Therefore, the polymer did not show melting point and has inferior mechanical properties than PLLA, so that the polymer is mainly applied for the coating of suture.

- Molecular weight: 5000, 10K, 20K
- Package size: 100mg, 1g

Biotinylated poly(D,L-lactide) (PDLLA-Biotin, PDLLA-Bio, Bio-PDLLA) can be used to prepare nanoparticles. Biotinylate-PDLLA can be used to prepare targeted nanoparticles that can specifically bind to avidin or streptavidin.

Polyesters are a family of biodegradable and bioactive thermoplastic aliphatic polyester. It is used to fabricate resorbable medical devices that degrade over months in physiological conditions. Due to their history, polyesters are one of the easiest and most affordable biodegradable polymers for medical devices. PDLLA polymer is amorphous because the polymer composed randomly by the repeating units from L-lactic acid and D-lactic acid. Therefore, the polymer did not show melting point and has inferior mechanical properties than PLLA, so that the polymer is mainly applied for the coating of suture.

- Molecular weight: 5000, 10K, 20K
- Package size: 100mg, 1g

Acid capped poly(D,L-lactide) (PDLLA-acid, PDLLA-COOH, PLA-COOH, PLA-acid) can be used to prepare nanoparticles, which can be further modified through COOH.

Polyesters are a family of biodegradable and bioactive thermoplastic aliphatic polyester. It is used to fabricate resorbable medical devices that degrade over months in physiological conditions. Due to their history, polyesters are one of the easiest and most affordable biodegradable polymers for medical devices. PDLLA polymer is amorphous because the polymer composed randomly by the repeating units from L-lactic acid and D-lactic acid. Therefore, the polymer did not show melting point and has inferior mechanical properties than PLLA, so that the polymer is mainly applied for the coating of suture.

- Molecular weight: 2000, 5000, 10K, 20K
- Package size: 100mg, 1g

Fluorescein labeled poly(D,L-lactide) (PDLLA-Fluorescein, PDLLA-FITC) can be used to prepare fluorescent nanoparticles.

Polyesters are a family of biodegradable and bioactive thermoplastic aliphatic polyester. It is used to fabricate resorbable medical devices that degrade over months in physiological conditions. Due to their history, polyesters are one of the easiest and most affordable biodegradable polymers for medical devices. PDLLA polymer is amorphous because the polymer composed randomly by the repeating units from L-lactic acid and D-lactic acid. Therefore, the polymer did not show melting point and has inferior mechanical properties than PLLA, so that the polymer is mainly applied for the coating of suture.

- Molecular weight: 5000, 10K, 20K
- Package size: 50mg, 100mg

Rhodamine B labeled poly(D,L-lactide) (PDLLA-Rhodamine B, PDLLA-RhB) can be used to prepare fluorescent nanoparticles.

Polyesters are a family of biodegradable and bioactive thermoplastic aliphatic polyester. It is used to fabricate resorbable medical devices that degrade over months in physiological conditions. Due to their history, polyesters are one of the easiest and most affordable biodegradable polymers for medical devices. PDLLA polymer is amorphous because the polymer composed randomly by the repeating units from L-lactic acid and D-lactic acid. Therefore, the polymer did not show melting point and has inferior mechanical properties than PLLA, so that the polymer is mainly applied for the coating of suture.

- Molecular weight: 5000, 10K, 20K
- Package size: 50mg, 100mg
devices that degrade over months in physiological conditions. Due to their history, poly lactides are one of the easiest and most affordable biodegradable polymers for medical devices. PDLLA polymer is amorphous because the polymer composed randomly by the repeating units from L-lactic acid and D-lactic acid. Therefore, the polymer did not show melting point and has inferior mechanical properties than PLLA, so that the polymer is mainly applied for the coating of suture.

- Molecular weight: 2000, 5000, 10K, 20K
- Package size: 50mg, 100mg

PDLLA-Thiol/PDLLA-SH

Thiol capped poly(DL-Lactide) (PDLLA-thiol, PDLLA-SH, PLA-SH) can be used to prepare nanoparticles, which can be further modified through -SH groups on the nanoparticle surface. Thiol can selectively react with maleimide and transition metal surface including gold, silver, etc.

Poly lactides are a family of biodegradable and bioactive thermoplastic aliphatic polyester. It is used to fabricate resorbable medical devices that degrade over months in physiological conditions. Due to their history, poly lactides are one of the easiest and most affordable biodegradable polymers for medical devices. PLLA polymer is amorphous because the polymer composed randomly by the repeating units from L-lactic acid and D-lactic acid. Therefore, the polymer did not show melting point and has inferior mechanical properties than PLLA, so that the polymer is mainly applied for the coating of suture.

- Molecular weight: 2000, 5000, 10K, 20K
- Package size: 100mg, 1g

PLGA acid/PLGA-COOH (50:50)

Acid capped poly(DL-lactide-co-glycolide) (PLGA-acid, PLGA-COOH, PLGA acid terminated, D,L-LA/GA=50:50) can be used to prepare nanoparticles, which can be further modified by amine-reactive entities. PLGA-COOH can be used to prepare polymer-drug conjugates.

Poly (lactic-co-glycolic acid) (PLGA) is one of the most effective biodegradable polymeric nanoparticles (NPs). It has been approved by the US FDA to use in drug delivery systems due to controlled and sustained-release properties, low toxicity, and biocompatibility with tissue and cells.

- Molecular weight: 2000, 5000, 10K, 20K, 40K
- Package size: 1g, 5g

PLGA-Amine/PLGA-NH2 (50:50)

Amine capped poly(DL-lactide-co-glycolide) (PLGA-Amine, PLGA-NH2, NH2-PLGA, LA/GA: 50:50) can be used to prepare nanoparticles, which can be further modified by amine-reactive entities. PLGA-amine can be used to prepare polymer-drug conjugates.

Poly (lactic-co-glycolic acid) (PLGA) is one of the most effective biodegradable polymeric nanoparticles (NPs). It has been approved by the US FDA to use in drug delivery systems due to controlled and sustained-release properties, low toxicity, and biocompatibility with tissue and cells.

- Molecular weight: 5000, 10K, 20K, 40K
- Package size: 100mg, 1g

PLGA-Biotin/PLGA-Bio

Biotin functionalized poly(L-lactide-co-glycolide) (PLGA-Biotin, PLGA-Bio, Biotinylate-PLGA) can be used to prepare targeted nanoparticles. Biotin can specifically bind to avidin or streptavidin.

Poly (lactic-co-glycolic acid) (PLGA) is one of the most effective biodegradable polymeric nanoparticles (NPs). It has been approved by the US FDA to use in drug delivery systems due to controlled and sustained-release properties, low toxicity, and biocompatibility with tissue and cells.

- Molecular weight: 5000, 10K, 20K
- Package size: 100mg, 1g
PLGA-Fluorescein/PLGA-FITC

Fluorescein labeled poly(l-lactide-co-glycolide) (PLGA-FITC, PLGA-Fluorescein) can be used to prepare fluorescent nanoparticles.

Poly (lactic-co-glycolic acid) (PLGA) is one of the most effective biodegradable polymeric nanoparticles (NPs). It has been approved by the US FDA to use in drug delivery systems due to controlled and sustained-release properties, low toxicity, and biocompatibility with tissue and cells.

(10888)
- Molecular weight: 5000, 10K, 20K
- Package size: 100mg

PLGA-Maleimide/PLGA-Mal

Maleimide functionalized poly(l-lactide-co-glycolide) (PLGA-Maleimide, PLGA-Mal, Mal-PLGA) can be used to prepare nanoparticles, which can be further modified by thiol-reactive entities.

Poly (lactic-co-glycolic acid) (PLGA) is one of the most effective biodegradable polymeric nanoparticles (NPs). It has been approved by the US FDA to use in drug delivery systems due to controlled and sustained-release properties, low toxicity, and biocompatibility with tissue and cells.

(10870)
- Molecular weight: 5000, 10K, 20K
- Package size: 100mg, 1g

PLGA-Rhodamine/PLGA-RhB

Rhodamine B labeled poly(l-lactide-co-glycolide) (PLGA-Rhodamine B, PLGA-RhB) can be used to prepare fluorescent nanoparticles.

Poly (lactic-co-glycolic acid) (PLGA) is one of the most effective biodegradable polymeric nanoparticles (NPs). It has been approved by the US FDA to use in drug delivery systems due to controlled and sustained-release properties, low toxicity, and biocompatibility with tissue and cells.

(10898)
- Molecular weight: 5000, 10K, 20K
- Package size: 100mg

Poly(DL-lactide-co-glycolide)/PLGA

Polymer poly(DL-lactide-co-glycolide) (PLGA) is a copolymer of poly lactic acid (PLA) and poly glycolic acid (PGA). Poly lactic acid contains an asymmetric α-carbon which is typically described as the D or L form in classical stereochemical terms and sometimes as R and S form, respectively. The enantiomeric forms of the polymer PLA are poly D-lactic acid (PDLA) and poly L-lactic acid (PLLA). PLGA is generally an acronym for poly DL-lactic-co-glycolic acid where D- and L- lactic acid forms are in equal ratio. PLGA can degrade into glycolic acid and lactic acid by hydrolysis, while its specific rate of degradation is dependent on its copolymer ratio and molecular weight.

PLGA has been among the most attractive polymeric candidates used to fabricate devices for drug delivery and tissue engineering applications. PLGA is biocompatible and biodegradable, exhibits a wide range of erosion times, has tunable mechanical properties and most importantly, is a FDA approved polymer. In particular, PLGA has been extensively studied for the development of devices for controlled delivery of small molecule drugs, proteins and other macromolecules in commercial use and in research.

Nanosoft Polymers' Poly(DL-lactide-co-glycolide) (PLGA) is a high quality excipient for controlled-extended release of drugs, for industrial usage.

(11088)
- Molecular weight: 7-20K, 20-50K, 50-70K, 70-100K, 100-130K, 200-300K
- Ratio of LA to GA: 50:50, 75:25
- Package size: 1g, 5g, 10g

Poly(DL-lactide)/PDLLA

Poly(DL-lactide) (PDLLA) is an ubiquitous biodegradable polymer. It is typically used to fabricate medical devices that predictably degrade over months in physiological conditions. The well-researched release profile also allows for drug-release functionalization with calculable results. Owing to its extensive history, PDLLA is one of the most understood and affordable biodegradable polymers for medical devices today.

(11140)
- Package size: 1g, 5g, 10g
Poly(L-lactide)/PLLA

Poly(L-lactide) (PLLA) is a biodegradable polymer for medical device and pharmaceutical applications. It is used to fabricate resorbable medical devices that degrade over months in physiological conditions. Due to their history, polylactides are one of the easiest and most affordable biodegradable polymers for medical devices. It is also used for drug delivery and 3D printing.

(11166)
- Package size: 1g, 5g, 10g

Poly(Lactide-co-glycolide)/PLGA50:50

Poly(lactide-co-glycolide) (PLGA) is an ubiquitous biodegradable polymer. It is typically used to fabricate medical devices that predictably degrade over months in physiological conditions. The well-researched release profile also allows for drug-release functionalization with calculable results. Depending on the ratio of lactide to glycolide used for the polymerization, different forms of PLGA can be obtained: these are usually identified in regard to the molar ratio of the monomers used (e.g. PLGA 75:25 identifies a copolymer whose composition is 75% lactic acid and 25% glycolic acid). The crystallinity of PLGAs will vary from fully amorphous to fully crystalline depending on block structure and molar ratio. PLGAs typically show a glass transition temperature in the range of 40-60 °C. PLGA can be dissolved by a wide range of solvents, depending on composition. Higher lactide polymers can be dissolved using chlorinated solvents whereas higher glycolide materials will require the use of fluorinated solvents such as HFIP.

Owing to its extensive history, PLGA is one of the most understood and affordable biodegradable polymers for medical devices today. PLGA has been successful as a biodegradable polymer because it undergoes hydrolysis in the body to produce the original monomers, lactic acid and glycolic acid. These two monomers under normal physiological conditions, are by-products of various metabolic pathways in the body.

(11541)
- Molecular weight: 2-5K, 7-20K, 20-50K, 50-70K, 70-100K, 100-130K
- Package size: 1g, 10g
Lipids

**DSPE-Azide/DSPE-N3**

1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine-N-azide (DSPE-azide, DSPE-N3) is a phospholipid capped with azide group. The azide capped head can be used to react with alkynes cyclooctyne in aqueous solution with or without copper catalyst.

Phospholipids belong to the lipid family of biological polymers. A phospholipid is composed of two fatty acids, a glycerol unit, a phosphate group and a polar molecule. The phosphate group and polar head region of the molecule is hydrophilic (attracted to water), while the fatty acid tail is hydrophobic (repelled by water). When placed in water, phospholipids will orient themselves into a bilayer in which the non-polar tail region faces the inner area of the bilayer. The polar head region faces outward and interacts with the water.

Phospholipids are excellent natural biomaterials for drug delivery.

- Package size: 100mg, 200mg, 500mg, 1g

**DSPE-Biotin/DSPE-Bio**

1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine-Biotin (DSPE-Biotin, DSPE-Bio) is a phospholipid capped with Biotin group. Biotin can specifically binds to avidin or streptavidin.

Phospholipids belong to the lipid family of biological polymers. A phospholipid is composed of two fatty acids, a glycerol unit, a phosphate group and a polar molecule. The phosphate group and polar head region of the molecule is hydrophilic (attracted to water), while the fatty acid tail is hydrophobic (repelled by water). When placed in water, phospholipids will orient themselves into a bilayer in which the non-polar tail region faces the inner area of the bilayer. The polar head region faces outward and interacts with the water.

Phospholipids are excellent natural biomaterials for drug delivery.

- Package size: 50mg, 100mg, 1g

**DSPE-Fluorescein/DSPE-FITC**

Fluorescein labeled 1,2-Distearoyl-sn-glycero-3-phosphoethanolamine (DSPE-FITC, DSPE-fluorescein) is used for labeling liposomes.

Phospholipids belong to the lipid family of biological polymers. A phospholipid is composed of two fatty acids, a glycerol unit, a phosphate group and a polar molecule. The phosphate group and polar head region of the molecule is hydrophilic (attracted to water), while the fatty acid tail is hydrophobic (repelled by water). When placed in water, phospholipids will orient themselves into a bilayer in which the non-polar tail region faces the inner area of the bilayer. The polar head region faces outward and interacts with the water.

- Package size: 20mg, 50mg, 100mg

**DSPE-glutaric acid**

1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine-N-(glutaryl) (DSPE-glutaric acid, DSPE-GA) is a phospholipid capped with glutaric acid group. The glutaric acid capped head can be used to react with OH or amine for bioconjugation.

Phospholipids belong to the lipid family of biological polymers. A phospholipid is composed of two fatty acids, a glycerol unit, a phosphate group and a polar molecule. The phosphate group and polar head region of the molecule is hydrophilic (attracted to water), while the fatty acid tail is hydrophobic (repelled by water). When placed in water, phospholipids will orient themselves into a bilayer in which the non-polar tail region faces the inner area of the bilayer. The polar head region faces outward and interacts with the water.

Phospholipids are excellent natural biomaterials for drug delivery.

- Package size: 100mg, 200mg, 500mg, 1g

**DSPE-Maleimide/DSPE-MAL**

1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine-maleimide (DSPE-maleimide, DSPE-Mal) is a phospholipid capped with maleimide group. The maleimide capped head can be used to react with thiol or cysteine group.
Phospholipids belong to the lipid family of biological polymers. A phospholipid is composed of two fatty acids, a glycerol unit, a phosphate group and a polar molecule. The phosphate group and polar head region of the molecule is hydrophilic (attracted to water), while the fatty acid tail is hydrophobic (repelled by water). When placed in water, phospholipids will orient themselves into a bilayer in which the non-polar tail region faces the inner area of the bilayer. The polar head region faces outward and interacts with the water.

Phospholipids are excellent natural biomaterials for drug delivery.

(10791)
- Package size: 50mg, 100mg, 500mg

**DSPE-NHS**

1,2-Distearoyl-sn-glycero-3-phosphoethanolamine-NHS ester (DSPE-NHS) is a phospholipid capped with NHS group. The active NHS ester capped head can be used to react with amine-containing groups for bioconjugation.

Phospholipids belong to the lipid family of biological polymers. A phospholipid is composed of two fatty acids, a glycerol unit, a phosphate group and a polar molecule. The phosphate group and polar head region of the molecule is hydrophilic (attracted to water), while the fatty acid tail is hydrophobic (repelled by water). When placed in water, phospholipids will orient themselves into a bilayer in which the non-polar tail region faces the inner area of the bilayer. The polar head region faces outward and interacts with the water.

(10778)
- Package size: 100mg, 200mg, 500mg, 1g

**DSPE-OPSS**

1,2-Distearoyl-sn-glycero-3-phosphoethanolamine-Orthopyridyl disulfide (DSPE-OPSS) is a phospholipid capped with OPSS group. Orthopyridyl disulfide or pyridyldithio functional (OPSS) functionalized lipid can selectively react with free thiol, SH, sulfhydryl or mercapto to form an oxidation, reduction reversible disulfide bond.

Phospholipids belong to the lipid family of biological polymers. A phospholipid is composed of two fatty acids, a glycerol unit, a phosphate group and a polar molecule. The phosphate group and polar head region of the molecule is hydrophilic (attracted to water), while the fatty acid tail is hydrophobic (repelled by water). When placed in water, phospholipids will orient themselves into a bilayer in which the non-polar tail region faces the inner area of the bilayer. The polar head region faces outward and interacts with the water.

Phospholipids are excellent natural biomaterials for drug delivery.

(10785)
- Package size: 100mg, 500mg

**DSPE-Pyrene**

1,2-Distearoyl-sn-glycero-3-phosphoethanolamine-Pyrene (DSPE-Pyrene) is a phospholipid capped with fluorescent pyrene.

Phospholipids belong to the lipid family of biological polymers. A phospholipid is composed of two fatty acids, a glycerol unit, a phosphate group and a polar molecule. The phosphate group and polar head region of the molecule is hydrophilic (attracted to water), while the fatty acid tail is hydrophobic (repelled by water). When placed in water, phospholipids will orient themselves into a bilayer in which the non-polar tail region faces the inner area of the bilayer. The polar head region faces outward and interacts with the water.

Phospholipids are excellent natural biomaterials for drug delivery.

(10810)
- Package size: 20mg, 50mg, 100mg

**DSPE-Rhodamine B/DSPE-RhB**

Rhodamine B labeled 1,2-Distearoyl-sn-glycero-3-phosphoethanolamine (DSPE-RhB, DSPE-Rhodamine B) is used for labeling liposomes.

Phospholipids belong to the lipid family of biological polymers. A phospholipid is composed of two fatty acids, a glycerol unit, a phosphate group and a polar molecule. The phosphate group and polar head region of the molecule is hydrophilic (attracted to water), while the fatty acid tail is hydrophobic (repelled by water). When placed in water, phospholipids will orient themselves into a bilayer in which the non-polar tail region faces the inner area of the bilayer. The polar head region faces outward and interacts with the water.

(10796)
**DSPE-succinic acid**

1,2-Distearoyl-sn-glycero-3-phosphoethanolamine-N-(succinyl) (DSPE-succinic acid, DSPE-SA) is a phospholipid capped with succinic acid group. The succinic acid capped head can be used to react with OH or amine for bioconjugation.

Phospholipids belong to the lipid family of biological polymers. A phospholipid is composed of two fatty acids, a glycerol unit, a phosphate group and a polar molecule. The phosphate group and polar head region of the molecule is hydrophilic (attracted to water), while the fatty acid tail is hydrophobic (repelled by water). When placed in water, phospholipids will orient themselves into a bilayer in which the non-polar tail region faces the inner area of the bilayer. The polar head region faces outward and interacts with the water.

Phospholipids are excellent natural biomaterials for drug delivery.

**DSPE-Thiol**

1,2-Distearoyl-sn-glycero-3-phosphoethanolamine-N-N-(mercaptopropyl) (DSPE-thiol, DSPE-SH) is a phospholipid capped with thiol group. The thiol capped head can selectively react with maleimide and transition metal surface including gold, silver, etc.

Phospholipids belong to the lipid family of biological polymers. A phospholipid is composed of two fatty acids, a glycerol unit, a phosphate group and a polar molecule. The phosphate group and polar head region of the molecule is hydrophilic (attracted to water), while the fatty acid tail is hydrophobic (repelled by water). When placed in water, phospholipids will orient themselves into a bilayer in which the non-polar tail region faces the inner area of the bilayer. The polar head region faces outward and interacts with the water.

Phospholipids are excellent natural biomaterials for drug delivery.
Polyamino Acids

**Acetal-Poly-L-lysine**

Acetal-capped poly-L-lysine (Acetal-poly-L-Lysine, Acetal-PLL) is a positively charged synthetic polyamino acid. It is a crystalline solid soluble in water. Applications for poly-L-lysine include the promotion of cell adhesion to solid substrates for culture dishes or slides, the conjugation to active molecules for improved activities, the layer-by-layer deposition techniques, and the complexation with nucleic acids for gene expression.

Acetal-functionalized polymers can be easily reduced to aldehyde group using acidic aqueous conditions (pH=2-4). Aldehyde group can selectively react with amine or thiol group in aqueous solution.

(11222)
- Molecular weight: 3300 (X=20), 8,200 (X=50), 16,000 (X=100), 32,000 (X=200)
- Package size: 100mg, 500mg, 1g

**Alkyne-poly-L-Glutamic acid/ALK-PGlu**

Alkyne-capped poly-L-Glutamic acid (Alkyne-poly-L-Glutamic acid, ALK-PGlu, Alkyne-PGlu) is a negatively charged synthetic polyamino acid. It is a crystalline solid soluble in water. Applications for poly-L-glutamic acid include the conjugation to active molecules for improved activities and the layer-by-layer deposition techniques for surface coating.

Alkyne-terminated polymers were used to react azide group "click" chemistry in mild condition, which is very useful for bioconjugation.

(11314)
- Molecular weight: 2500 (x=20), 5000 (x=38), 10K (x=76), 20K (x=154)
- Package size: 100mg, 500mg, 1g

**Biotin-poly-L-Glutamic acid/Biotin-pGlu**

Biotin-Poly-L-glutamic acid (Biotin-pGlu) is a negatively charged synthetic polyamino acid with biotin on one end. It is a crystalline solid soluble in water.

Applications for poly-L-glutamic acid include the conjugation to active molecules for improved activities and the layer-by-layer deposition techniques for surface coating.

(11267)
- Molecular weight: 2500 (x=20), 5000 (x=38), 10K (x=76), 20K (x=154)
- Package size: 100mg, 500mg, 1g

**N3-PLL**

Azide capped poly(L-lysine) (N3-PLL) is a functional cationic polyamino acid used for surface modification or gene/drug delivery. The azide-PLL can be modified by alkyne-containing moieties through click chemistry.

(9993)
- Molecular weight: 3000 (m=20), 7500 (m=50)
- Package size: 50mg, 100mg

**N3-Poly-L-Glutamic acid/N3-pGlu**

- N3-Poly-L-glutamic acid (pGlu) is a negatively charged synthetic polyamino acid.
- It is a crystalline solid soluble in water.
- Applications for poly-L-glutamic acid include the conjugation to active molecules for improved activities and the layer-by-layer deposition techniques for surface coating.
- Azide group can be used for bioconjugation by click chemistry

(11237)
- Molecular weight: 2500 (x=20), 5000 (x=38), 10K (x=76), 20K (x=154)
**OPSS-poly-L-Glutamic acid**

Orthopyridyl disulfide capped poly-L-Glutamic acid (OPSS-poly-L-Glutamic acid, OPSS-PGlu, Pyridylthio-PGlu) is a negatively charged synthetic polyamino acid. It is a crystalline solid soluble in water. Applications for poly-L-glutamic acid include the conjugation to active molecules for improved activities and the layer-by-layer deposition techniques for surface coating.

Orthopyridyl disulfide or pyridyldithio (OPSS) functionalized polymers can selectively react with free thiol, SH, sulfhydryl or mercapto to form an oxidation, reduction reversible disulfide bond.

**(11299)**
- Molecular weight: 2500 (x=20), 5000 (x=38), 10K (x=76), 20K (x=154)
- Package size: 100mg, 500mg, 1g

**OPSS-poly-L-Lysine/OPSS-PLL**

Orthopyridyl disulfide capped poly-L-lysine hydrochloride (OPSS-poly-L-Lysine, OPSS-PLL, Pyridylthio-PLL) is a positively charged synthetic polyamino acid. It is a crystalline solid soluble in water. Applications for poly-L-lysine include the promotion of cell adhesion to solid substrates for culture dishes or slides, the conjugation to active molecules for improved activities, the layer-by-layer deposition techniques, and the complexation with nucleic acids for gene expression.

Orthopyridyl disulfide or pyridyldithio (OPSS) functionalized polymers can selectively react with free thiol, SH, sulfhydryl or mercapto to form an oxidation, reduction reversible disulfide bond.

**(11043)**
- Molecular weight: 3300 (X=20), 8,200 (X=50), 16,000 (X=100), 32,000 (X=200)
- Package size: 100mg, 500mg, 1g

**Poly-L-Aspartic acid sodium salt**

Poly-L-aspartic acid sodium salt (poly(L-Asp), poly(L-Aspartic acid sodium salt)) is a negatively charged synthetic polyamino acid having one Na per aspartic acid unit. It is soluble in water.

Applications for poly-L-aspartic acid sodium salt include the conjugation to active molecules for drug delivery, the layer-by-layer deposition techniques for surface coating, the mineralization of bone.

**(10970)**
- Molecular weight: 2800 (n=20), 6800(n=50), 14K(n=100), 27K(n=200)
- Package size: 100mg, 1g

**Poly-L-Glutamic acid**

Poly-L-glutamic acid (pGlu) is a negatively charged synthetic polyamino acid.

- It is a crystalline solid soluble in water.
- Applications for poly-L-glutamic acid include the conjugation to active molecules for improved activities and the layer-by-layer deposition techniques for surface coating.

**(10069)**
- Molecular size: 2500 (x=20), 5000 (x=38), 10K (x=76), 20K (x=154)
- Package size: 100mg, 500mg, 1g

**Poly-L-Lysine hydrochloride**

Poly-L-lysine hydrochloride or Poly(L-Lysine hydrochloride) is a positively charged synthetic polyamino acid having one HCl per lysine unit.

- It is a crystalline solid soluble in water. Poly-L-lysine hydrochloride is a good alternative to poly-L-lysine hydrobromide in applications where biocompatibility is critical.
- PLL can be used for conjugation to active molecules for improved activities, the layer-by-layer deposition techniques, and the complexation with nucleic acids for gene expression.

**(10039)**
- Molecular size: 3000 (x=20), 5000 (x=30), 16K (x=100), 32K (x=200)
Poly-L-lysine hydrochloride alkyne

Alkyne terminated poly-L-lysine hydrochloride or Poly-L-lysine hydrochloride alkyne (PLL-Alkyne) is a positively charged synthetic polyamino acid having one HCl per lysine unit and alkyne group on the N-terminal. It is a crystalline solid soluble in water. Applications for poly-L-lysine hydrobromide include the promotion of cell adhesion to solid substrates for culture dishes or slides, the conjugation to active molecules for improved activities, the layer-by-layer deposition techniques, and the complexation with nucleic acids for gene expression.

Alkyne-terminated polymers were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

Molecular weight: 3300 (X=20), 8,200 (X=50), 16,000 (X=100), 32,000 (X=200)

Package size: 100mg, 500mg, 1g

Poly-L-lysine hydrochloride biotin

Biotinylated poly-L-lysine hydrochloride or Poly-L-lysine hydrochloride biotin (PLL-biotin) is a positively charged synthetic polyamino acid having one HCl per lysine unit and biotin on the N-terminal. It is a crystalline solid soluble in water. Applications for poly-L-lysine hydrobromide include the promotion of cell adhesion to solid substrates for culture dishes or slides, the conjugation to active molecules for improved activities, the layer-by-layer deposition techniques, and the complexation with nucleic acids for gene expression.

Biotins (BIO)-functionalized polymers can bind to streptavidin and avidin with high affinity and specificity.

Molecular weight: 3300 (X=20), 8,200 (X=50), 16,000 (X=100), 32,000 (X=200)

Package size: 100mg, 500mg, 1g

Tritylthiol terminated poly-L-lysine

Tritylthiol terminated poly-L-lysine (PLL-tritylthiol, Tritylthiol-PLL, Trt-SH-PLL, PLL-Trt-SH) is a positively charged synthetic polyamino acid terminated with trityl protected SH. It is a crystalline solid soluble in water. Applications for poly-L-lysine include the promotion of cell adhesion to solid substrates for culture dishes or slides, the conjugation to active molecules for improved activities, the layer-by-layer deposition techniques, and the complexation with nucleic acids for gene expression.

Tritylthiol Poly-L-lysine can be offered in form of hydrochloride. Trityl group can be easily removed by TFA to obtain free SH.

SH-terminated polymers were used to selectively react with maleimide and transition metal surface including gold, silver, etc.

Molecular weight: 3300 (X=20), 8,200 (X=50), 16,000 (X=100), 32,000 (X=200)

Package size: 100mg, 500mg, 1g

Tritylthiol-poly-L-Glutamic acid/Trt-pGlu

Tritylthiol terminated poly-L-Glutamic acid (pGlu-tritylthiol, Tritylthiol-pGlu, Trt-SH-PGlu, pGlu-Trt-SH) is a negatively charged synthetic polyamino acid terminated with trityl protected SH. It is a crystalline solid soluble in water. Applications for Tritylthiol-poly-L-glutamic acid include the conjugation to active molecules for improved activities and the layer-by-layer deposition techniques for surface coating.

Tritylthiol Poly-L-glutamic acid can be offered in form of sodium salts. Trityl group can be easily removed by TFA to obtain free SH.

Molecular weight: 2500 (x=20), 5000 (x=38), 10K (x=76), 20K (x=154)

Package size: 100mg, 500mg, 1g
Functional Poly(L-Glutamic acid)

Alkyne-poly-L-Glutamic acid/Alk-pGlu

Alkyne capped poly-L-Glutamic acid (Alkyne-poly-L-Glutamic acid, Alk-PGlu, Alkyne-PGlu) is a negatively charged synthetic polypeptide. It is a crystalline solid soluble in water. Applications for poly-L-glutamic acid include the conjugation to active molecules for improved activities and the layer-by-layer deposition techniques for surface coating.

Alkyne-terminated polymers were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

(11314)
- Molecular weight: 2500 (x=20), 5000 (x=38), 10K (x=76), 20K (x=154)
- Package size: 100mg, 500mg, 1g

Biotin-poly-L-Glutamic acid/Biotin-pGlu

Biotin-Poly-L-glutamic acid (Biotin-pGlu) is a negatively charged synthetic polypeptide with biotin on one end. It is a crystalline solid soluble in water.

Applications for poly-L-glutamic acid include the conjugation to active molecules for improved activities and the layer-by-layer deposition techniques for surface coating.

(11267)
- Molecular weight: 2500 (x=20), 5000 (x=38), 10K (x=76), 20K (x=154)
- Package size: 100mg, 500mg, 1g

N3-Poly-L-Glutamic acid/N3-pGlu

N3-Poly-L-glutamic acid (pGlu) is a negatively charged synthetic polypeptide. It is a crystalline solid soluble in water.

Applications for poly-L-glutamic acid include the conjugation to active molecules for improved activities and the layer-by-layer deposition techniques for surface coating.

- Azide group can be used for bioconjugation by click chemistry

(11237)
- Molecular weight: 2500 (x=20), 5000 (x=38), 10K (x=76), 20K (x=154)
- Package size: 100mg, 500mg, 1g

OPSS-poly-L-Glutamic acid

Orthopyridyl disulfide capped poly-L-Glutamic acid (OPSS-poly-L-Glutamic acid, OPSS-PGlu, Pyridylthio-PGlu) is a negatively charged synthetic polypeptide. It is a crystalline solid soluble in water. Applications for poly-L-glutamic acid include the conjugation to active molecules for improved activities and the layer-by-layer deposition techniques for surface coating.

Orthopyridyl disulfide or pyridylthio (OPSS) functionalized polymers can selectively react with free thiol, SH, sulfhydryl or mercapto to form an oxidation, reduction reversible disulfide bond.

(11299)
- Molecular weight: 2500 (x=20), 5000 (x=38), 10K (x=76), 20K (x=154)
- Package size: 100mg, 500mg, 1g

Poly-L-Glutamic acid

- Poly-L-glutamic acid (pGlu) is a negatively charged synthetic polypeptide.
- It is a crystalline solid soluble in water.
- Applications for poly-L-glutamic acid include the conjugation to active molecules for improved activities and the layer-by-layer deposition techniques for surface coating.

(10069)
- Molecular size: 2500 (x=20), 5000 (x=38), 10K (x=76), 20K (x=154)
- Package size: 100mg, 500mg, 1g
Tritylthiol-poly-L-Glutamic acid/Trt-pGlu

Tritylthiol terminated poly-L-Glutamic acid (pGlu-tritylthiol, Tritylthiol-pGlu, Tr-SH-PGlu, pGlu-Trt-SH) is a negatively charged synthetic polypeptide terminated with trityl protected SH. It is a crystalline solid soluble in water. Applications for Tritylthiol-poly-L-glutamic acid include the conjugation to active molecules for improved activities and the layer-by-layer deposition techniques for surface coating.

Tritylthiol Poly-L-glutamic acid can be offered in form of sodium salts. Trityl group can be easily removed by TFA to obtain free SH. SH-terminated polymers were used to selectively react with maleimide and transition metal surface including gold, silver, etc.

(11283)
- Molecular weight: 2500 (x=20), 5000 (x=38), 10K (x=76), 20K (x=154)
- Package size: 100mg, 500mg, 1g
Functional Poly(L-Lysine)

Acetal-Poly-L-Lysine

Acetal-capped poly-L-lysine (Acetal-poly-L-Lysine, Acetal-PLL) is a positively charged synthetic polyamino acid. It is a crystalline solid soluble in water. Applications for poly-L-lysine include the promotion of cell adhesion to solid substrates for culture dishes or slides, the conjugation to active molecules for improved activities, the layer-by-layer deposition techniques, and the complexation with nucleic acids for gene expression.

Acetal-functionalized polymers can be easily reduced to aldehyde group using acidic aqueous conditions (pH=2-4). Aldehyde group can selectively react with amine or thiol group in aqueous solution.

Molecular weight: 3300 (X=20), 8,200 (X=50), 16,000 (X=100), 32,000 (X=200)
Package size: 100mg, 500mg, 1g

N3-PLL

Azide capped poly(L-lysine) (N3-PLL) is a functional cationic polyamino acid used for surface modification or gene/drug delivery. The azide-PLL can be modified by alkyne-containing moieties through click chemistry.

Molecular weight: 3000 (m=20), 7500 (m=50)
Package size: 50mg, 100mg

OPSS-poly-L-Lysine/OPSS-PLL

Orthopyridyl disulfide capped poly-L-lysine hydrochloride (OPSS-poly-L-Lysine, OPSS-PLL, Pyridylthio-PLL) is a positively charged synthetic polyamino acid. It is a crystalline solid soluble in water. Applications for poly-L-lysine include the promotion of cell adhesion to solid substrates for culture dishes or slides, the conjugation to active molecules for improved activities, the layer-by-layer deposition techniques, and the complexation with nucleic acids for gene expression.

Orthopyridyl disulfide or pyridylthio (OPSS) functionalized polymers can selectively reacts with free thiol, SH, sulffhydryl or mercapto to form a oxidation, reduction reversible disulfide bond.

Molecular weight: 3300 (X=20), 8,200 (X=50), 16,000 (X=100), 32,000 (X=200)
Package size: 100mg, 500mg, 1g

Poly-L-Lysine hydrochloride

• Poly-L-Lysine hydrochloride or Poly(L-Lysine hydrochloride) is a positively charged synthetic polyamino acid having one HCl per lysine unit.
• It is a crystalline solid soluble in water. Poly-L-lysine hydrochloride is a good alternative to poly-L-lysine hydrobromide in applications where biocompatibility is critical.
• PLL can be used for conjugation to active molecules for improved activities, the layer-by-layer deposition techniques, and the complexation with nucleic acids for gene expression.

Molecular size: 3000 (x=20), 5000 (x=30), 16K (x=100), 32K (x=200)
Package size: 100mg, 500mg, 1g
Poly-L-lysine hydrochloride alkyne

Alkyne terminated poly-L-lysine hydrochloride or Poly-L-lysine hydrochloride alkyne (PLL-Alkyne) is a positively charged synthetic polyanino acid having one HCl per lysine unit and alkyne group on the N-terminal. It is a crystalline solid soluble in water. Applications for poly-L-lysine hydrobromide include the promotion of cell adhesion to solid substrates for culture dishes or slides, the conjugation to active molecules for improved activities, the layer-by-layer deposition techniques, and the complexation with nucleic acids for gene expression.

Alkyne-terminated polymers were used to react azide group "click" chemistry in mild condition, which is very useful for bioconjugation.

(10998)

- Molecular weight: 3300 (X=20), 8,200 (X=50), 16,000 (X=100), 32,000 (X=200)
- Package size: 100mg, 500mg, 1g

Poly-L-lysine hydrochloride biotin

Biotinylated poly-L-lysine hydrochloride or Poly-L-lysine hydrochloride biotin (PLL-biotin) is a positively charged synthetic polyamino acid having one HCl per lysine unit and biotin on the N-terminal. It is a crystalline solid soluble in water. Applications for poly-L-lysine hydrobromide include the promotion of cell adhesion to solid substrates for culture dishes or slides, the conjugation to active molecules for improved activities, the layer-by-layer deposition techniques, and the complexation with nucleic acids for gene expression.

Biotins (BIO)-functionalized polymers can bind to streptavidin and avidin with high affinity and specificity.

(11013)

- Molecular weight: 3300 (X=20), 8,200 (X=50), 16,000 (X=100), 32,000 (X=200)
- Package size: 100mg, 500mg, 1g

Tritylthiol terminated poly-L-lysine

Tritylthiol terminated poly-L-lysine (PLL-tritylthiol, Trt-SH-PLL, PLL-Trt-SH) is a positively charged synthetic polyamino acid terminated with trityl protected SH. It is a crystalline solid soluble in water. Applications for poly-L-lysine include the promotion of cell adhesion to solid substrates for culture dishes or slides, the conjugation to active molecules for improved activities, the layer-by-layer deposition techniques, and the complexation with nucleic acids for gene expression.

Tritylthiol Poly-L-lysine can be offered in form of hydrochloride. Trityl group can be easily removed by TFA to obtain free SH.

SH-terminated polymers were used to selectively react with maleimide and transition metal surface including gold, silver, etc.

(11028)

- Molecular weight: 3300 (X=20), 8,200 (X=50), 16,000 (X=100), 32,000 (X=200)
- Package size: 100mg, 500mg, 1g
**Lipid-PEGs**

**Cholesterol-PEG-COOH**

Cholesterol functionalized polyethylene glycol with terminal carboxylic group (Cholesterol-PEG-COOH) is a lipophilic lipid PEG conjugate with good water solubility. PEG cholesterol derivatives can be used to make targeted liposome to improve circulation time for encapsulated drugs. They may also be used for non-viral transfection reagents. The COOH functionalized nanoparticles can be used to surface modification.

(3042)
- Molecular weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 500mg, 1g

**Cholesterol-PEG-MAL**

Cholesterol-poly(ethylene glycol) with conjugated maleimide (Cholesterol-PEG-MAL) is a lipophilic lipid PEG conjugate with good water solubility. Cholesterol-PEG-MAL is used to make targeted liposome to improve circulation time for encapsulated drugs. They may also be used for non-viral transfection reagents. The maleimide group on the nanoparticle surface can react with thiol-containing moieties.

(3024)
- Molecular weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 500mg, 1g

**Cholesterol-PEG-N3**

Cholesterol functionalized polyethylene glycol with terminal azide group (Cholesterol-PEG-N3) is a lipophilic lipid PEG conjugate with good water solubility. Cholesterol-PEG derivatives can be used to make targeted liposome to improve circulation time for encapsulated drugs. They may also be used for non-viral transfection reagents. The formed nanoparticles can be modified by ligands containing alkyne group by click chemistry.

(3018)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 100mg, 500mg, 1g

**Cholesterol-PEG-NH2**

Cholesterol functionalized polyethylene glycol with amine (cholesterol-PEG-NH2, cholesterol-PEG-Amine) is a lipophilic lipid PEG conjugate with good water solubility. PEG cholesterol derivatives can be used to make targeted liposome to improve circulation time for encapsulated drugs. They may also be used for non-viral transfection reagents.

(3036)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 100mg, 500mg, 1g

**Cholesterol-PEG-NHS**

Cholesterol functionalized poly(ethylene glycol) with terminal N-hydroxysuccinimide (cholesterol-PEG-NHS) is a lipophilic lipid PEG conjugate with good water solubility. PEG cholesterol derivatives can be used to make targeted liposome to improve circulation time for encapsulated drugs. Cholesterol-PEG-NHS can be used to conjugate amine-containing peptides, antibodies or ligands for active targeting.

(3070)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 100mg, 500mg, 1g

**Cholesterol-PEG-SH**

Cholesterol poly(ethylene glycol)-thiol (Cholesterol-PEG-SH) is a lipophilic lipid PEG conjugate with good water solubility. Cholesterol-PEG-SH can be used to make targeted liposome to improve circulation time for encapsulated drugs. Thiol (SH) can be used to react with maleimide or thiol group.

(3078)
- Molecular weight: 1000, 2000, 3400, 5000
1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine with conjugated methoxyl poly(ethylene glycol) (DSPE-mPEG) is a linear phospholipid PEG conjugate which has both hydrophilicity and hydrophobility. Pegylated phospholipids are excellent liposome or micelle formation materials that can be used for drug delivery. Pegylation of phospholipids significantly improves the blood circulation time and stability for encapsulated drugs. These materials can also be used for targeted drug delivery by modifying their surfaces with targeting ligands such as antibodies, peptides.

[Reference: 9071]

Molecular weight of PEG: 1,000, 2,000, 3,400, 5,000

Package size: 100mg, 500mg, 1g

DSPE-PEG-Amine/DSPE-PEG-NH2

1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine (DSPE)-polyethylene glycol-amine (DSPE-PEG-Amine, DSPE-PEG-NH2) is a linear heterobifunctional PEGylation reagent with a DSPE phospholipid and an amine. DSPE-PEG-NH2 is used to modify liposome surface with biomolecules containing amine reactive groups (NHS, thiolate). It is a useful self-assembling reagent to prepare grafted or PEGylated liposome or micelle while also providing an amine group for bioconjugation. It is often used in targeted drug delivery with the lipid bilayer to improve drug solubility, the PEG to provide stealth property, extend circulation half-life and reduce non-specific protein binding or cell adhesion, and the amine group to bioconjugate targeting molecules including antibody, aptamer, protein, and peptide.

[Reference: 2828]

Molecular weight: 600, 1000, 2000, 3400, 5000

Package size: 100 mg, 500 mg, 1 g

DSPE-PEG-Azide/DSPE-PEG-N3

DSPE-PEG-azide (DSPE-PEG-N3) is lipid-PEG conjugate with terminated azide. NSP azide PEG DSPE products can be used to prepare pegylated liposome using Click Chemistry. Azide reacts readily with alkyne or cyclooctyne in aqueous solution with or without copper catalyst.

PEG conjugated 1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine (DSPE), DSPE-PEG is a phospholipid PEG conjugate which has both hydrophilicity and hydrophobility. Pegylated phospholipids are excellent liposome formation materials that can be used for drug delivery, gene transfection and vaccine delivery as well. Pegylation of phospholipids significantly improves the blood circulation time and stability for encapsulated drugs. These materials can also be used for targeted drug delivery by modifying their surfaces with targeting ligands such as antibodies, peptides.

[Reference: 2274]

Molecular weight: 600, 1000, 2000, 3400, 5000

Package size: 100 mg, 500 mg, 1 g

DSPE-PEG-Biotin/DSPE-PEG-BIO

DSPE-PEG-Biotin (DSPE-PEG-BIO) is a linear heterobifunctional PEGylation reagent with a DSPE phospholipid and a biotin. It is a useful self-assembling reagent to prepare grafted or PEGylated liposome or micelle while also providing a biotin group for binding to avidin or streptavidin.

It is often used in targeted drug delivery with the lipid bilayer to improve drug solubility, the PEG to provide stealth property, extend circulation half-life and reduce non-specific protein binding or cell adhesion, and the biotin group to non-covalently bind to targeting molecules including antibody, aptamer, protein, and peptide.

[Reference: 2356]

Molecular weight: 1000, 2000, 3400, 5000

Package size: 100 mg, 500 mg, 1 g

DSPE-PEG-COOH

1,2-distearoyl-sn-glycero-3-phosphoethanolamine-PEG-succinic acid (DSPE-PEG-COOH), or N-succinyl-L-α-phosphatidylethanolamine, Distearoyl) is a DSPE-PEG conjugate with carboxylic acid group at the end of PEG. DSPE-PEG-COOH is used to prepare long-circulating liposomes with free -COOH on the liposome surface for further modification. It is extensively used for targeted drug/gene delivery.
DSPE-PEG-Cy3
1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine (DSPE)-polyethylene glycol with conjugated cyanine 3 (DSPE-PEG-Cy3) is an amphiphilic polymer. Pegylated phospholipids are excellent liposome formation materials that can be used for drug delivery, gene transfection and vaccine delivery as well. Pegylation of phospholipids significantly improves the blood circulation time and stability for encapsulated drugs. These materials can also be used for targeted drug delivery by modifying their surfaces with targeting ligands such as antibodies and peptides.

DSPE-PEG-DBCO
1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine (DSPE) conjugated polyethylene glycol with dibenzocycloctyne (DSPE-PEG-DBCO) is a linear heterobifunctional PEGylation reagent with a DSPE phospholipid and an DBCO for Cu-free chemistry. DSPE derivatives can go Click Chemistry reaction without a need of any metal catalysts. The strain-promoted 1,3-dipolar cycloaddition of cyclooctynes and azides, also termed as the Cu-free click reaction, is a bioorthogonal reaction that enables the conjugation of two molecules in aqueous solution. DBCO reagents can be used to label azide-modified biomolecules spontaneous w ithout the need for toxic Cu catalysts. The reaction of azides with strained alkynes, such as cyclooctynes, readily forms a triazole product w ithout the need for a toxic catalyst:PEGylation can increase solubility and stability and reduce immunogenicity of peptides and proteins. It can also suppress the non-specific binding of charged molecules to the modified surfaces.

DSPE-PEG-FITC
1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine (DSPE)-polyethylene glycol with conjugated fluorescein (DSPE-PEG-FITC) is an amphiphilic polymer. Pegylated phospholipids are excellent liposome formation materials that can be used for drug delivery, gene transfection and vaccine delivery as well. Pegylation of phospholipids significantly improves the blood circulation time and stability for encapsulated drugs. These materials can also be used for targeted drug delivery by modifying their surfaces with targeting ligands such as antibodies and peptides. Fluorescein labeled DSPE PEG products emitted green fluorescence and can be easily detected with fluorescent microscopy or spectroscopy.

DSPE-PEG-Folate
Nanosoft Polymers offers DSPE-PEG-Folate (DSPE-PEG-FOL) conjugate, which can be incorporated into liposomes as a targeting ligand. Folate receptors are cellular surface markers for numerous solid tumors and myeloid leukemias. Folate targeted drug delivery has emerged as an alternative therapy for the treatment and imaging of many cancers and inflammatory diseases. Due to its small molecular size and high binding affinity for cell surface folate receptors (FR), folate conjugates have the ability to deliver a variety of molecular complexes to pathologic cells without causing harm to normal tissues. Complexes that have been successfully delivered to FR expressing cells, to date, include protein toxins, immune stimulants, chemotherapeutic agents, liposomes, nanoparticles, and imaging agents. This review will summarize the applications of folic acid as a targeting ligand and highlight the various methods being developed for delivery of therapeutic and imaging agents to FR-expressing cells.

DSPE-PEG-IA
1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine (DSPE) conjugated polyethylene glycol with iodoacetyl (DSPE-PEG-IA) is a linear heterobifunctional PEGylation reagent with a DSPE phospholipid and an iodoacetyl group. Iodoacetyl (IA) is a thiol (-SH) reactive group that can be used to modify biomolecules or other materials via their available thiol groups. Iodine group can be
easily replaced by thiol group to form a stable carbon thiol bond. DSPE-PEG-IA is used to prepare micelles or liposomes with
labile acetyl group on the particle surface for bioconjugation via thiol substitution.

(Molecular weight: 2000, 3400, 5000
Package size: 100mg, 1g)

**DSPE-PEG-Maleimide/ DSPE-PEG-MAL**

DSPE-PEG-maleimide (DSPE-PEG-MAL) is a linear heterobifunctional PEGylation reagent with a DSPE phospholipid and a maleimide.
It is a useful self-assembling reagent to prepare PEGylated liposome or micelle while also providing a thiol or cysteine reactive
maleimeide group. It is often used in targeted drug delivery with the lipid bilayer to improve drug solubility, the PEG to provide stealth
property, extend circulation half-life and reduce non-specific protein binding or cell adhesion, and the reactive maleimide to
bioconjugate targeting molecules including antibody, aptamer, protein, and peptide.

(Molecular size of PEG: 1000, 2000, 3400, 5000
Package size: 100 mg, 500 mg, 1g)

**DSPE-PEG-NHS**

1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine (DSPE) conjugated polyethylene glycol with active succinimidy1 ester (DSPE-
PEG-NHS) is a linear heterobifunctional PEGylation reagent with a DSPE phospholipid and an active ester group. It is a useful self-
forming reagent to prepare PEGylated liposome or micelle while also providing a NHS group for conjugation with amine-
containing molecules or ligands. It is often used in targeted drug delivery with the lipid bilayer to improve drug solubility, the NHS to
provide stealth property, extend circulation half-life and reduce non-specific protein binding or cell adhesion, and the hydroxyl group to
bioconjugate targeting molecules including antibody, aptamer, protein, and peptide.

(Molecular weight (PEG): 600, 1000, 2000, 3400, 5000
Package size: 100mg, 500mg, 1g)

**DSPE-PEG-OH**

1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine (DSPE) conjugated Polyethylene Glycol (DSPE-PEG-OH), is a phospholipid PEG
conjugate which has both hydrophilicity and hydrophobicity. Pegylated phospholipids are excellent liposome formation materials that
can be used for drug delivery, gene transfection and vaccine delivery as well. Pegylation of phospholipids significantly improves
the blood circulation time and stability for encapsulated drugs. These materials can also be used for targeted drug delivery by
modifying their surfaces with targeting ligands such as antibodies, peptides.

(Molecular weight: 1000, 2000, 3400, 5000
Package size: 100mg, 500mg, 1g)

**DSPE-PEG-OPSS**

1,2-Distearoyl-sn-glycero-3-phosphoethanolamine (DSPE)-poly(ethylene glycol) with conjugated orthopyridyl disulfide (OPSS or
OPD) (DSPE-PEG-OPSS) is a linear heterobifunctional PEGylation reagent with a DSPE phospholipid and a orthopyridyl disulfide.
DSPE-PEG-OPSS, is an 18 carbon phospholipid PEG conjugate which has both hydrophobicity and hydrophilicity. It is a useful self-
forming reagent to prepare PEGylated liposome or micelle while also providing a thiol or cysteine reactive maleimide group. It is
often used in targeted drug delivery with the lipid bilayer to improve drug solubility, the PEG to provide stealth property, extend
circulation half-life and reduce non-specific protein binding or cell adhesion, and the reactive maleimide to bioconjugate targeting
molecules including antibody, aptamer, protein, and peptide. Orthopyridyl disulfide or pyridylthio functional group can selectively
reacts with free thiol, SH, sulphydryl or mercapto to form a oxidation, reduction reversible disulfide bond. Pegylation of
phospholipids significantly improves the blood circulation time and stability for encapsulated drugs.

(Molecular weight: 1000, 2000, 3400, 5000
Package size: 100mg, 500mg, 1g)

**DSPE-PEG-RhB**

1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine (DSPE)-poly(ethylene glycol) with conjugated rhodamine (DSPE-PEG-RhB) is an
amphiphilic polymer. Pegylated phospholipids are excellent liposome formation materials that can be used for drug delivery, gene
transfection and vaccine delivery as well. Pegylation of phospholipids significantly improves the blood circulation time and stability
for encapsulated drugs. These materials can also be used for targeted drug delivery by modifying their surfaces with targeting
ligands such as antibodies, peptides. Fluorescein labeled DSPE PEG products emitted red fluorescence and can be easily detected.
with fluorescent microscopy or spectroscopy.

Molecular size: 1000, 2000, 3400, 5000
Package size: 50 mg

**DSPE-PEG-SH**

DSPE-PEG-SH is a linear heterobifunctional PEGylation reagent with a DSPE phospholipid and a thiol group. It is a useful self-assembling reagent to prepare PEGylated liposome or micelle while also providing a thiol group for conjugation with thiol-containing molecules. It is often used in targeted drug delivery with the lipid bilayer to improve drug solubility, the PEG to provide stealth property, extend circulation half-life and reduce non-specific protein binding or cell adhesion, and the acid group to bioconjugate targeting molecules including antibody, aptamer, protein, and peptide.

Molecular weight: 1000, 2000, 3400, 5000
Package size: 100mg, 500mg, 1g

**DSPE-PEG-VS**

DSPE-PEG-Vinylsulfone (DSPE-PEG-VS) is a linear heterobifunctional PEGylation reagent with a DSPE phospholipid and a biotin. It is a useful self-assembling reagent to prepare grafted or PEGylated liposome or micelle which has functional vinylsulfone on the surface that can react with thiol-containing peptides or antibodies. It is often used in targeted drug delivery with the lipid bilayer to improve drug solubility, the PEG to provide stealth property, extend circulation half-life and reduce non-specific protein binding or cell adhesion, and the VS group to bind to targeting molecules including antibody, aptamer, protein, and peptide.

Molecular size: 1000, 2000, 3400, 5000
Package size: 100 mg, 1g

**Pentacosadiynoic acid-MPEG**

10,12-Pentacosadiynoic acid-MPEG (PCDA-MPEG) is an unsaturated fatty acid-PEG conjugate which has two acetylene in its structure. The polymer conjugates could form nanometer-sized micelles in aqueous media and be further polymerized under the exposure of UV 254 nm due to the UV sensitive nature of PCDA. Due to their unique properties such as high water-solubility, cross-linkable micelle formation with a nano-scaled size, and stimuli-responsive chromic nature, the polymer-lipid conjugates could be used for various biomedical applications, in particular as a nano-carrier for drug delivery and chem/biosensor.

Molecular size: 1000, 2000, 3400, 5000
Package size: 100 mg, 1g

**Stearic acid-MPEG**

Stearic acid is an 18 carbon saturated fatty acid lipid with excellent hydrophobicity. PEGylated stearic acid is an excellent amphiphilic polymer with both hydrophilicity and hydrophobicity. PEGylated stearyl (stearic acid-MPEG) is an amphiphilic, PEG surfactant and can be used to form micelles, drug delivery systems to enhance drug solubility and improve drug formulation and bioavailability. PEG is attached to the C18 alkyl (octadecanoic acid) through an amide bond.

Molecular size: 1000, 2000, 5000
Package size: 100 mg, 1g

**Stearic acid-PEG-COOH**

Stearic acid-PEG-carboxylic acid (Stearic acid-PEG-COOH) is an amphiphilic surfactant with terminated -COOH for targeted drug delivery. COOH group can be used to react with amine-containing moieties.
solubility and improve drug formulation and bioavailability. PEG is attached to the C18 alkyl (octadecanoic acid) through an amide bond.

PEG molecular weight: 1000, 2000, 3400, 5000
Package size: 100mg, 500mg

**Stearic acid-PEG-FITC**

Stearic acid-PEG-FITC is an amphiphilic surfactant with terminated fluorescent FITC.

Stearic acid is an 18 carbon saturated fatty acid lipid with excellent hydrophobicity. PEG modified stearic acid is an excellent amphiphilic polymer with both hydrophilicity and hydrophobility. PEGylated stearic acid is an amphoteric, PEG surfactant and can be used to form micelles, drug delivery systems to enhance drug solubility and improve drug formulation and bioavailability. PEGylated stearyl are also excellent liposome formation materials that can be used for drug delivery, gene transfection and vaccine delivery as well. These materials can also be used for targeted drug delivery by modifying their surfaces with targeting ligands such as antibodies, peptides.

PEG molecular weight: 1000, 2000, 3400, 5000
Package size: 50mg

**Stearic acid-PEG-Maleimide**

Stearic acid-PEG-maleimide (SA-PEG-Mal) can be used to prepare micelles or nanoparticles which have maleimide on the surface for bioconjugation.

PEGylated stearic acid (stearylic acid-PEG) is an amphiphilic, PEG surfactant and can be used to form micelles, drug delivery systems to enhance drug solubility and improve drug formulation and bioavailability. PEG is attached to the C18 alkyl (octadecanoic acid) through an amide bond.

PEG molecular weight: 1000, 2000, 3400, 5000
Package size: 100mg, 1g

**Stearic acid-PEG-NH2**

Stearic acid-PEG-amine (Stearic acid-PEG-NH2, or C18-PEG-NH2) is an amphiphilic surfactant with terminal amine group, which can be used to design micelles or nanoparticles for targeted drug delivery.

PEGylated stearic acid is an amphiphilic, PEG surfactant and can be used to form micelles, drug delivery systems to enhance drug solubility and improve drug formulation and bioavailability. PEG is attached to the C18 alkyl (octadecanoic acid) through an amide bond.

PEG molecular weight: 1000, 2000, 3400, 5000, 10K
Package size: 100mg, 1g

**Stearic acid-PEG-NHS**

Stearic acid-PEG-N-hydroxysuccinimide ester (Stearic acid-PEG-NHS) is an amphiphilic surfactant with terminated -NHS active ester for targeted drug delivery. NHS group can be used to react with amine-containing moieties.

Stearic acid is an 18 carbon saturated fatty acid lipid with excellent hydrophobicity. PEG modified stearic acid is an excellent amphiphilic polymer with both hydrophilicity and hydrophobility. PEGylated stearic acid is an amphoteric, PEG surfactant and can be used to form micelles, drug delivery systems to enhance drug solubility and improve drug formulation and bioavailability. PEGylated stearyl are also excellent liposome formation materials that can be used for drug delivery, gene transfection and vaccine delivery as well. These materials can also be used for targeted drug delivery by modifying their surfaces with targeting ligands such as antibodies, peptides.

PEG molecular weight: 1000, 2000, 3400, 5000
Package size: 100mg, 1g
Stearic acid-PEG-Rhodamine

Stearic acid-PEG-Rhodamine (Stearic acid-PEG-RhB) is an amphiphilic surfactant with terminated fluorescent RhB.

Stearic acid is an 18 carbon saturated fatty acid lipid with excellent hydrophobicity. PEG modified stearic acid is an excellent amphiphilic polymer with both hydrophilicity and hydrophobicity. PEGylated stearyl is an amphiphilic, PEG surfactant and can be used to form micelles, drug delivery systems to enhance drug solubility and improve drug formulation and bioavailability. Pegylated lipids are also excellent liposome formation materials that can be used for drug delivery, gene transfection and vaccine delivery as well. These materials can also be used for targeted drug delivery by modifying their surfaces with targeting ligands such as antibodies, peptides.

(10681)
- **PEG molecular weight:** 1000, 2000, 3400, 5000
- **Package size:** 50mg
Fatty acid-PEGs

**Pentacosadiynoic acid-MPEG**

10,12-Pentacosadiynoic acid-MPEG (PCDA-MPEG) is an unsaturated fatty acid-PEG conjugate which has two acetylene in its structure. The polymer conjugates could form nanometer-sized micelles in aqueous media and be further polymerized under the exposure of UV 254 nm due to the UV sensitive nature of PCDA.

Due to their unique properties such as high water-solubility, cross-linkable micelle formation with a nano-scaled size, and stimuli-responsive chromic nature, the polymer-lipid conjugates could be used for various biomedical applications, in particular as a nano-carrier for drug delivery and chem/biosensor.

(10636)
- **PEG molecular weight:** 1000, 2000, 5000
- **Package size:** 100mg, 1g

**Stearic acid-MPEG**

Stearic acid is an 18 carbon saturated fatty acid lipid with excellent hydrophobicity. PEGylated stearic acid is an excellent amphiphilic polymer with both hydrophilicity and hydrophobility. PEGylated stearyl (stearic acid-MPEG) is an amphiphilic, PEG surfactant and can be used to form micelles, drug delivery systems to enhance drug solubility and improve drug formulation and bioavailability. PEG is attached to the C18 alky (octadecanoic acid) through an amide bond.

(10623)
- **PEG molecular weight:** 1000, 2000, 5000
- **Package size:** 100mg, 1g

**Stearic acid-PEG-COOH**

Stearic acid-PEG-carboxylic acid (Stearic acid-PEG-COOH) is an amphiphilic surfactant with terminated -COOH for targeted drug delivery. COOH group can be used to react with amine-containing moieties.

PEGylated stearyl is an amphiphilic, PEG surfactant and can be used to form micelles, drug delivery systems to enhance drug solubility and improve drug formulation and bioavailability. PEG is attached to the C18 alkyl (octadecanoic acid) through an amide bond.

(9670)
- **PEG molecular weight:** 1000, 2000, 3400, 5000
- **Package size:** 100mg, 500mg

**Stearic acid-PEG-FITC**

Stearic acid-PEG-Fluorescein (Stearic acid-PEG-FITC) is an amphiphilic surfactant with terminated fluorescent FITC. Stearic acid is an 18 carbon saturated fatty acid lipid with excellent hydrophobicity. PEG modified stearic acid is an excellent amphiphilic polymer with both hydrophilicity and hydrophobility. PEGylated stearyl is an amphiphilic, PEG surfactant and can be used to form micelles, drug delivery systems to enhance drug solubility and improve drug formulation and bioavailability. PEGylated lipids are also excellent liposome formation materials that can be used for drug delivery, gene transfection and vaccine delivery as well. These materials can also be used for targeted drug delivery by modifying their surfaces with targeting ligands such as antibodies, peptides.

(10688)
- **PEG molecular weight:** 1000, 2000, 3400, 5000
- **Package size:** 50mg

**Stearic acid-PEG-Maleimide**

Stearic acid-PEG-maleimide (SA-PEG-Mal) can be used to prepare micelles or nanoparticles which have maleimide on the surface for bioconjugation.

PEGylated stearyl (stearic acid-MPEG) is an amphiphilic, PEG surfactant and can be used to form micelles, drug delivery systems to enhance drug solubility and improve drug formulation and bioavailability. PEG is attached to the C18 alkyl (octadecanoic acid) through an amide bond.

(10647)
- **PEG molecular weight:** 1000, 2000, 3400, 5000
- **Package size:** 100mg, 1g
Stearic acid-PEG-NH₂

Stearic acid-PEG-amine (Stearic acid-PEG-NH₂, or C₁₈-PEG-NH₂) is an amphiphilic surfactant with terminal amine group, which can be used to design micelles or nanoparticles for targeted drug delivery.

PEGylated stearyl is an amphiphilic, PEG surfactant and can be used to form micelles, drug delivery systems to enhance drug solubility and improve drug formulation and bioavailability. PEG is attached to the C₁₈ alkyl (octadecanoic acid) through an amide bond.

(10606)
- PEG molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g

Stearic acid-PEG-NHS

Stearic acid-PEG-N-hydroxysuccinimide ester (Stearic acid-PEG-NHS) is an amphiphilic surfactant with terminated -NHS active ester for targeted drug delivery. NHS group can be used to react with amine-containing moieties.

Stearic acid is an 18 carbon saturated fatty acid lipid with excellent hydrophobicity. PEG modified stearic acid is an excellent amphiphilic polymer with both hydrophilicity and hydrophobicity. PEGylated stearyl is an amphiphilic, PEG surfactant and can be used to form micelles, drug delivery systems to enhance drug solubility and improve drug formulation and bioavailability. Pegylated lipids are also excellent liposome formation materials that can be used for drug delivery, gene transfection and vaccine delivery as well. These materials can also be used for targeted drug delivery by modifying their surfaces with targeting ligands such as antibodies, peptides.

(10668)
- PEG molecular weight: 1000, 2000, 3400, 5000
- Package size: 100mg, 1g

Stearic acid-PEG-Rhodamine

Stearic acid-PEG-Rhodamine B (Stearic acid-PEG-RhB) is an amphiphilic surfactant with terminated fluorescent RhB.

Stearic acid is an 18 carbon saturated fatty acid lipid with excellent hydrophobicity. PEG modified stearic acid is an excellent amphiphilic polymer with both hydrophilicity and hydrophobicity. PEGylated stearyl is an amphiphilic, PEG surfactant and can be used to form micelles, drug delivery systems to enhance drug solubility and improve drug formulation and bioavailability. Pegylated lipids are also excellent liposome formation materials that can be used for drug delivery, gene transfection and vaccine delivery as well. These materials can also be used for targeted drug delivery by modifying their surfaces with targeting ligands such as antibodies, peptides.

(10681)
- PEG molecular weight: 1000, 2000, 3400, 5000
- Package size: 50mg
Cholesterol-PEGs

**Cholesterol-PEG-BIO**

Cholesterol functionalized polyethylene glycol with conjugated terminal biotin (Cholesterol-PEG-BIO, cholesterol-PEG-Biotin) is a lipophilic lipid PEG conjugate with good water solubility. PEG cholesterol derivatives can be used to make targeted liposome to improve circulation time for encapsulated drugs. They may also be used for non-viral transfection reagents. The biotin-functionalized nanoparticles can bind to streptavidin and avidin with high affinity and specificity.

(3084)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 100mg, 500mg, 1g

**Cholesterol-PEG-COOH**

Cholesterol functionalized polyethylene glycol with terminal carboxylic group (Cholesterol-PEG-COOH) is a lipophilic lipid PEG conjugate with good water solubility. PEG cholesterol derivatives can be used to make targeted liposome to improve circulation time for encapsulated drugs. They may also be used for non-viral transfection reagents. The COOH functionalized nanoparticles can be used to surface modification.

(3042)
- Molecular weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 500mg, 1g

**Cholesterol-PEG-MAL**

Cholesterol-poly(ethylene glycol) with conjugated maleimide (Cholesterol-PEG-MAL) is a lipophilic lipid PEG conjugate with good water solubility. Cholesterol-PEG-MAL can be used to make targeted liposome to improve circulation time for encapsulated drugs. They may also be used for non-viral transfection reagents. The maleimide group on the nanoparticle surface can react with thiol-containing moieties.

(3024)
- Molecular weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 500mg, 1g

**Cholesterol-PEG-N3**

Cholesterol functionalized polyethylene glycol with terminal azide group (Cholesterol-PEG-N3) is a lipophilic lipid PEG conjugate with good water solubility. Cholesterol-PEG derivatives can be used to make targeted liposome to improve circulation time for encapsulated drugs. They may also be used for non-viral transfection reagents. The formed nanoparticles can be modified by ligands containing azide group by click chemistry.

(3018)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 100mg, 500mg, 1g

**Cholesterol-PEG-NH2**

Cholesterol functionalized polyethylene glycol with amine (cholesterol-PEG-NH2, cholesterol-PEG-Amine) is a lipophilic lipid PEG conjugate with good water solubility. PEG cholesterol derivatives can be used to make targeted liposome to improve circulation time for encapsulated drugs. They may also be used for non-viral transfection reagents.

(3036)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 100mg, 500mg, 1g

**Cholesterol-PEG-NHS**

Cholesterol functionalized poly(ethylene glycol) with terminal N-hydroxysuccinimide (cholesterol-PEG-NHS) is a lipophilic lipid PEG conjugate with good water solubility. Cholesterol-PEG-NHS can be used to conjugate amine-containing peptides, antibodies or ligands for active targeting.

(3070)
- Molecular weight: 1000, 2000, 3400, 5000
Cholesterol-PEG-SH

Cholesterol poly(ethylene glycol)-thiol (Cholesterol-PEG-SH) is a lipophilic lipid PEG conjugate with good water solubility. Cholesterol-PEG-SH can be used to make targeted liposome to improve circulation time for encapsulated drugs. Thiol (SH) can be used to react with maleimide or thiol group.

(3078)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 100mg, 500mg, 1g

Cholesterol-PEG-VS

Cholesterol functionalized polyethylene glycol with conjugated vinylsulfone (Cholesterol-PEG-VS), is a lipophilic lipid PEG conjugate with good water solubility. PEG cholesterol derivatives can be used to make targeted liposome to improve circulation time for encapsulated drugs. They may also be used for non-viral transfection reagents. The vinylsulfone-functionalized nanoparticles can be modified by thiol-containing moieties.

(8529)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 100mg, 500mg, 1g
DSPE-PEGs

**DSPE-mPEG**
1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine with conjugated methoxyl poly(ethylene glycol) (DSPE-mPEG) is a linear phospholipid PEG conjugate which has both hydrophilicity and hydrophobility. Pegylated phospholipids are excellent liposome or micelle formation materials that can be used for drug delivery. Pegylation of phospholipids significantly improves the blood circulation time and stability for encapsulated drugs. These materials can also be used for targeted drug delivery by modifying their surfaces with targeting ligands such as antibodies, peptides.

(9071)
- Molecular weight of PEG: 1,000, 2,000, 3,400, 5,000
- Package size: 500mg, 1g

**DSPE-PEG-Amine/DSPE-PEG-NH2**
1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine-PEG-amine (DSPE-PEG-Amine, DSPE-PEG-NH2) is a linear heterobifunctional PEGylation reagent with DSPE phospholipid and amine. DSPE-PEG-NH2 is used to modify liposome surface with biomolecules containing amine reactive groups (NHS, thiolate). It is a useful self-assembling reagent to prepare grafted or PEGylated liposome or micelle while also providing an amine group for bioconjugation. It is often used in targeted drug delivery with the lipid bilayer to improve drug solubility, the PEG to provide stealth property, extend circulation half-life and reduce non-specific protein binding or cell adhesion, and the amine group to bioconjugate targeting molecules including antibody, aptamer, protein, and peptide.

(2828)
- Molecular weight: 600, 1000, 2000, 3400, 5000
- Package size: 100 mg, 500 mg, 1 g

**DSPE-PEG-Azide/DSPE-PEG-N3**
DSPE-PEG-azide (DSPE-PEG-N3) is lipid-PEG conjugate with terminal azide. NSP azide PEG DSPE products can be used to prepare pegylated liposome using Click Chemistry. Azide reacts readily with alkyne or cyclooctyne in aqueous solution with or without copper catalyst.

PEG conjugated 1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine (DSPE), DSPE-PEG is a phospholipid PEG conjugate which has both hydrophilicity and hydrophobility. Pegylated phospholipids are excellent liposome formation materials that can be used for drug delivery, gene transfection and vaccine delivery as well. Pegylation of phospholipids significantly improves the blood circulation time and stability for encapsulated drugs. These materials can also be used for targeted drug delivery by modifying their surfaces with targeting ligands such as antibodies, peptides.

(2274)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 100 mg, 500 mg, 1 g

**DSPE-PEG-Biotin/DSPE-PEG-BIO**
DSPE-PEG-Biotin (DSPE-PEG-BIO) is a linear heterobifunctional PEGylation reagent with DSPE phospholipid and a biotin. It is a useful self-assembling reagent to prepare grafted or PEGylated liposome or micelle while also providing a biotin group for binding to avidin or streptavidin.

It is often used in targeted drug delivery with the lipid bilayer to improve drug solubility, the PEG to provide stealth property, extend circulation half-life and reduce non-specific protein binding or cell adhesion, and the biotin group to non-covalently bind to targeting molecules including antibody, aptamer, protein, and peptide.

(2356)
- Molecular size: 1000, 2000, 3400, 5000
- Package size: 100 mg, 500 mg, 1 g

**DSPE-PEG-COOH**
1,2-distearoyl-sn-glycero-3-phosphoethanolamine-PEG-succinic acid (DSPE-PEG-COOH), (or N-succinyl-L-α-phosphatidylethanolamine, Distearyl)- is a DSPE-PEG conjugate with carboxylic acid group at the end of PEG. DSPE-PEG-COOH is used to prepare long-circulating liposomes with free -COOH on the liposome surface for further modification. It is extensively used for targeted drug/gene delivery.
Molecular size of PEG: 1000, 2000, 3400, 5000
Package size: 100 mg, 500 mg, 1g

**DSPE-PEG-Cy3**
1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine (DSPE)-polyethylene glycol with conjugated cyanine 3 (DSPE-PEG-Cy3) is an amphiphilic polymer. Pegylated phospholipids are excellent liposome formation materials that can be used for drug delivery, gene transfection and vaccine delivery as well. Pegylation of phospholipids significantly improves the blood circulation time and stability for encapsulated drugs. These materials can also be used for targeted drug delivery by modifying their surfaces with targeting ligands such as antibodies and peptides.

Molecular size: 2000, 3400, 5000
Package size: 10 mg, 50 mg

**DSPE-PEG-DBCO**
1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine (DSPE) conjugated polyethylene glycol with dibenzocycloctyne (DSPE-PEG-DBCO) is a linear heterobifunctional PEGylation reagent with a DSPE phospholipid and an DBCO for Cu-free chemistry. DSPE derivatives can go Click Chemistry reaction without a need of any metal catalysts. The strain-promoted 1,3-dipolar cycloaddition of cyclooctynes and azides, also termed as the Cu-free click reaction, is a bioorthogonal reaction that enables the conjugation of two molecules in aqueous solution. DBCO reagents can be used to label azide-modified biomolecules spontaneous without the need for toxic Cu catalysts. The reaction of azides with strained alkynes, such as cyclooctynes, readily forms a triazole product without the need for a toxic catalyst. PEGylation can increase solubility and stability and reduce immunogenicity of peptides and proteins. It can also suppress the non-specific binding of charged molecules to the modified surfaces.

Molecular weight: 2000, 3400, 5000
Package size: 50mg, 100mg

**DSPE-PEG-FITC**
1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine (DSPE)-polyethylene glycol with conjugated fluorescein (DSPE-PEG-FITC) is an amphiphilic polymer. Pegylated phospholipids are excellent liposome formation materials that can be used for drug delivery, gene transfection and vaccine delivery as well. Pegylation of phospholipids significantly improves the blood circulation time and stability for encapsulated drugs. These materials can also be used for targeted drug delivery by modifying their surfaces with targeting ligands such as antibodies, peptides. Fluorescein labeled DSPE PEG products emitted green fluorescence and can be easily detected with a fluorescence microscope or spectroscopy.

Molecular size: 1000, 2000, 3400, 5000
Package size: 50 mg

**DSPE-PEG-Folate**
Nanosoft Polymers offers DSPE-PEG-Folate (DSPE-PEG-FOL) conjugate, which can be incorporated into liposomes as a targeting ligand. Folate receptors are cellular surface markers for numerous solid tumors and myeloid leukemias.

Folate targeted drug delivery has emerged as an alternative therapy for the treatment and imaging of many cancers and inflammatory diseases. Due to its small molecular size and high binding affinity for cell surface folate receptors (FR), folate conjugates have the ability to deliver a variety of molecular complexes to pathologic cells without causing harm to normal tissues. Complexes that have been successfully delivered to FR expressing cells, to date, include protein toxins, immune stimulants, chemotherapeutic agents, liposomes, nanoparticles, and imaging agents. This review will summarize the applications of folic acid as a targeting ligand and highlight the various methods being developed for delivery of therapeutic and imaging agents to FR-expressing cells.

Molecular weight: 1000, 2000, 3400, 5000
Package size: 50 mg

**DSPE-PEG-IA**
1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine (DSPE) conjugated polyethylene glycol with iodoacetyl (DSPE-PEG-IA) is a linear heterobifunctional PEGylation reagent with a DSPE phospholipid and an iodoacetyl group. Iodoacetyl (IA) is a thiol (-SH) reactive group that can be used to modify biomolecules or other materials via their available thiol groups. Iodine group can be
easily replaced by thiol group to form a stable carbon thiol bond. DSPE-PEG-IA is used to prepare micelles or liposomes with iodoacetyl group on the particle surface for bioconjugation via thiol substitution.

(9321)
- Molecular weight: 2000, 3400, 5000
- Package size: 100 mg, 1 g

**DSPE-PEG-Maleimide/ DSPE-PEG-MAL**
DSPE-PEG-maleimide (DSPE-PEG-MAL) is a linear heterobifunctional PEGylation reagent with a DSPE phospholipid and a maleimide. It is a useful self-assembling reagent to prepare PEGylated liposome or micelle while also providing a thiol or cysteine reactive maleimide group. It is often used in targeted drug delivery with the lipid bilayer to improve drug solubility, the PEG to provide stealth property, extend circulation half-life and reduce non-specific protein binding or cell adhesion, and the reactive maleimide to bioconjugate targeting molecules including antibody, aptamer, protein, and peptide.

(2049)
- Molecular size of PEG: 1000, 2000, 3400, 5000
- Package size: 100 mg, 500 mg, 1 g

**DSPE-PEG-NHS**
1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine (DSPE) conjugated polyethylene glycol with active succinimidyl ester (DSPE-PEG-NHS) is a linear heterobifunctional PEGylation reagent with a DSPE phospholipid and an active ester group. It is a useful self-assembling reagent to prepare PEGylated liposome or micelle while also providing a NHS group for conjugation with amine-containing molecules or ligands. It is often used in targeted drug delivery with the lipid bilayer to improve drug solubility, the PEG to provide stealth property, extend circulation half-life and reduce non-specific protein binding or cell adhesion, and the acid group to bioconjugate targeting molecules including antibody, aptamer, protein, and peptide.

(1544)
- Molecular weight (PEG): 600, 1000, 2000, 3400, 5000
- Package size: 100 mg, 500 mg, 1 g

**DSPE-PEG-OH**
1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine (DSPE) conjugated Polyethylene Glycol (DSPE-PEG-OH), is a phospholipid PEG conjugate which has both hydrophilicity and hydrophobicity. Pegylated phospholipids are excellent liposome formation materials that can be used for drug delivery, gene transfection and vaccine delivery as well. Pegylation of phospholipids significantly improves the blood circulation time and stability for encapsulated drugs. These materials can also be used for targeted drug delivery by modifying their surfaces with targeting ligands such as antibodies, peptides.

(9609)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 100 mg, 500 mg, 1 g

**DSPE-PEG-OPSS**
1,2-Distearoyl-sn-glycero-3-phosphoethanolamine (DSPE)-poly(ethylene glycol) with conjugated orthopyridyl disulfide (OPSS or PDP) (DSPE-PEG-OPSS) is a linear heterobifunctional PEGylation reagent with a DSPE phospholipid and a orthopyridyl disulfide. DSPE-PEG-OPSS, is an 18 carbon phospholipid PEG conjugate which has both hydrophilicity and hydrophobicity. It is a useful self-assembling reagent to prepare PEGylated liposome or micelle while also providing a thiol or cysteine reactive maleimide group. It is often used in targeted drug delivery with the lipid bilayer to improve drug solubility, the PEG to provide stealth property, extend circulation half-life and reduce non-specific protein binding or cell adhesion, and the reactive maleimide to bioconjugate targeting molecules including antibody, aptamer, protein, and peptide. Orthopyridyl disulfide or pyridyldithio functional group can selectively reacts with free thiol, SH, sulfhydryl or mercapto to form a oxidation, reduction reversible disulfide bond. Pegylation of phospholipids significantly improves the blood circulation time and stability for encapsulated drugs.

(3330)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 100 mg, 500 mg, 1 g

**DSPE-PEG-RhB**
1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine (DSPE)-polyethylene glycol with conjugated rhodamine (DSPE-PEG-RhB) is an amphiphilic polymer. Pegylated phospholipids are excellent liposome formation materials that can be used for drug delivery, gene transfection and vaccine delivery as well. Pegylation of phospholipids significantly improves the blood circulation time and stability for encapsulated drugs. These materials can also be used for targeted drug delivery by modifying their surfaces with targeting ligands such as antibodies, peptides. Fluorescein labeled DSPE PEG products emitted red fluorescence and can be easily detected
with fluorescent microscopy or spectroscopy.

- Molecular size: 1000, 2000, 3400, 5000
- Package size: 50 mg

**DSPE-PEG-SH**

DSPE-PEG-SH is a linear heterobifunctional PEGylation reagent with a DSPE phospholipid and a thiol group. It is a useful self-assembling reagent to prepare PEGylated liposome or micelle while also providing a thiol group for conjugation with thiol-containing molecules. It is often used in targeted drug delivery with the lipid bilayer to improve drug solubility, the PEG to provide stealth property, extend circulation half-life and reduce non-specific protein binding or cell adhesion, and the acid group to bioconjugate targeting molecules including antibody, aptamer, protein, and peptide.

- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 100 mg, 500 mg, 1 g

**DSPE-PEG-VS**

DSPE-PEG-Vinylsulfone (DSPE-PEG-VS) is a linear heterobifunctional PEGylation reagent with a DSPE phospholipid and a biotin. It is a useful self-assembling reagent to prepare grafted or PEGylated liposome or micelle which has functional vinylsulfone on the surface that can react with thiol-containing peptides or antibodies. It is often used in targeted drug delivery with the lipid bilayer to improve drug solubility, the PEG to provide stealth property, extend circulation half-life and reduce non-specific protein binding or cell adhesion, and the VS group to bind to targeting molecules including antibody, aptamer, protein, and peptide.

- Molecular size: 1000, 2000, 3400, 5000
- Package size: 100 mg, 1 g
Poly(L-amino acid)-PEGs

**MPEG-pAsp**

Methoxy-poly(ethylene glycol)-block-poly(L-Aspartic acid) (MPEG-pAsp) is a linear PEG-poly(L-Amino Acid) block copolymer which can be self-assembled into micelles. Poly(L-Aspartic acid) is core-forming block, which has pendant free -COOH groups for drug conjugation and core modification. MPEG-pAsp is one of the most commonly used biodegradable copolymers for drug delivery.

(9110)
- Poly(L-Aspartic acid) MW: 3000, 5000, 7500
- PEG MW: 1000, 2000, 5000
- Package size: 200mg, 500mg, 1g

**MPEG-pGlu**

Methoxy-poly(ethylene glycol)-block-poly(L-glutamic acid) (MPEG-pGlu) is a linear PEG-poly(L-Amino Acid) block copolymer which can be self-assembled into micelles. Poly(L-glutamic acid) is core-forming block, which has pendant free -COOH groups for drug conjugation and core modification. MPEG-pGlu is one of the most commonly used biodegradable copolymers for drug delivery.

(2917)
- Poly(L-glutamic acid) MW: 3000, 7500, 15k
- PEG MW: 1000, 2000, 5000
- Package size: 200mg, 500mg, 1g

**pAsp-PEG-N3**

Poly(L-Aspartic acid)-PEG-Azide (pAsp-PEG-N3) is a linear amphiphilic block copolymer (ABC) which has poly(L-Aspartic acid) as the hydrophobic section and azide-functionalized PEG as the hydrophilic section. ABC can self-assemble into micelles. P(L-Asp) -PEG-N3 has reactive groups on both sections, i.e., the the pendant free -COOH on P(L-Asp) can be used to modify micelle core and -N3 group on PEG can be used to modify micelle shell by click chemistry.

(9150)
- pAsp MW: 3000, 5000
- PEG MW: 5000
- Package size: 100mg

**pAsp-PEG-pAsp**

Poly(L-Aspartic acid)-PEG-block-poly(L-Aspartic acid) (pAsp-PEG-pAsp) is a linear amphiphilic triblock copolymer. The hydrophobic section pAsp has pendant free -COOH groups. It can self-assemble into micelles or form hydrogels for drug delivery.

(9156)
- pAsp MW: 1150 (m=10), 2300 (m=20), 5750 (m=50)
- PEG MW: 1000, 2000, 5000
- Package size: 200mg, 500mg, 1g

**pGlu-PEG-N3**

Poly(L-Glutamic acid)-PEG-Azide (pGlu-PEG-N3) is a linear amphiphilic block copolymer (ABC) which has poly(L-Glutamic acid) as the hydrophobic section and azide-functionalized PEG as the hydrophilic section. ABC can self-assemble into micelles. P(L-Glu)-PEG-N3 has reactive groups on both sections, i.e., the the pendant free -COOH on P(L-Glu) can be used to modify micelle core and -N3 group on PEG can be used to modify micelle shell by click chemistry.

(2929)
- Poly(L-glutamic acid) MW: 3000, 7500
- PEG MW: 1000, 2000, 5000
- Package size: 100mg, 500mg

**pGlu-PEG-pGlu**

Poly(L-Glutamic acid)-PEG-block-poly(L-Glutamic acid) (pGlu-PEG-pGlu) is a linear amphiphilic triblock copolymer. The hydrophobic section pGlu has pendant free -COOH groups. It can self-assemble into micelles or form hydrogels for drug delivery.

(2955)
- Poly(L-glutamic acid) MW: 3000, 7500, 15k
- PEG MW: 1000, 2000, 5000
- Package size: 200mg, 500mg, 1g

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PLL-g-PEG
Poly-L-Lysine graft PEG or PEG-grafted-PLL (PLL-g-PEG, PEG-g-PLL) is a random graft co-polymer with a poly(L-lysine) backbone and poly(ethylene glycol) side-chains. For surface modification, the PLL backbone interacts electrostatically with the substrate, while the side-chains extend from the surface to form a densely packed polymeric brush. PLL-g-PEG can be used to prepare nanoparticles for gene/drug delivery.

Number of repeating units: X=20, X=50, X=100, X=200
Molecular weight of PEG: 2000, 5000
Percentage of PEG substitution: 3.5%, 10%, 20%
Package size: 50mg, 100mg

PLL-PEG
Poly(L-Lysine)-PEG methyl ether (PLL-PEG, PEG-PLL) is a linear amphiphilic block copolymer which has PLL as the hydrophobic section and PEG as the hydrophilic section. PLL section has pendant free amine groups. PLL-PEG can self-assemble into micelles with functional PLL core for drug and gene delivery.

PLL MW: 3000, 7500, 15000
PEG MW: 1000, 2000, 5000
Package size: 200mg, 500mg, 1g

PLL-PEG-N3
Poly(L-Lysine)-poly(ethylene glycol)-azide (PLL-PEG-N3) is amphiphilic block copolymer that has PLL as the core-forming block and azide-functionalized PEG as the shell-forming block. PLL-PEG-N3 has pendant free amine in PLL block and azide in PEG block, it can self assemble into micelle with azide on the micelle surface for shell modification by click chemistry.

Molecular weight of PLL: 3000, 7500, 15K
Molecular weight of PEG: 5000
Package size: 50mg, 200mg, 500mg

PLL-PEG-PLL
Poly(L-lysine)-poly(ethylene glycol)-block-poly(L-lysine) (PLL-PEG-PLL) is A-B-A type amphiphilic block copolymer that has PLL on both sides of PEG. PLL section has pendant free amine groups for functionalization.

PLL MW: 3000, 7500, 15000
PEG MW: 1000, 2000, 5000
Package size: 200mg, 500mg, 1g

Poly(L-Ornithine)-MPEG
Poly(L-Ornithine)-PEG (pOrn-PEG) is amphiphilic block copolymer (ABCs) which has hydrophilic PEG block and hydrophobic p(L-Orn) block. P(L-Orn)-PEG can self-assemble into micelles composed of p(L-Orn) core and PEG shell. P(L-Orn) has pendant free amines which can be derivatized on demand for drug/gene delivery. P(L-Orn)-PEG is one of the most extensively biodegradable ABCs for nanomedicine.

pOrn molecular weight: 2000, 5000, 10K
PEG molecular weight: 1000, 2000, 5000
Package size: 200mg, 500mg, 1g
Poly(L-Ornithine)-PEGs

Poly(L-Ornithine)-MPEG

- Poly(L-Ornithine)-PEG (pOrn-PEG) is amphiphilic block copolymer (ABCs) which has hydrophilic PEG block and hydrophobic p(L-Orn) block. P(L-Orn)-PEG can self-assemble into micelles composed of p(L-Orn) core and PEG shell. P(L-Orn) has pendant free amines which can be derivatized on demand for drug/gene delivery.

- P(L-Orn)-PEG is one of the most extensively biodegradable ABCs for nanomedicine.

(9544)

- pOrn molecular weight: 2000, 5000, 10K
- PEG molecular weight: 1000, 2000, 5000
- package size: 200mg, 500mg, 1g
MPEG-pGlu

Methoxy-poly(ethylene glycol)-block-poly(L-glutamic acid) (MPEG-pGlu) is a linear PEG-poly(L-Amino Acid) block copolymer which can be self assembled into micelles. Poly(L-glutamic acid) is core-forming block, which has pendant free -COOH groups for drug conjugation and core modification. MPEG-PGlu is one of the most commonly used biodegradable copolymers for drug delivery.

(2917)
- Poly(L-glutamic acid) MW: 3000, 7500, 15k
- PEG MW: 1000, 2000, 5000
- Package size: 200mg, 500mg, 1g

pGlu-PEG-N3

Poly(L-Glutamic acid)-PEG-Azide (pGlu-PEG-N3) is a linear amphiphilic block copolymer (ABC) which has poly(L-Glutamic acid) as the hydrophobic section and azide-functionalized PEG as the hydrophilic section. ABC can self assemble into micelles. P(L-Glu)-PEG-N3 has reactive groups on both sections, i.e. the pendant free -COOH on P(L-Glu) can be used to modify micelle core and -N3 group on PEG can be used to modify micelle shell by click chemistry.

(2929)
- Poly(L-glutamic acid) MW: 3000, 7500
- PEG MW: 2000, 5000
- Package size: 100mg, 500mg

pGlu-PEG-pGlu

Poly(L-Glutamic acid)-PEG-block-poly(L-Glutamic acid) (pGlu-PEG-pGlu) is a linear amphiphilic triblock copolymer. The hydrophobic section pGlu has pendant free -COOH groups. It can self assemble into micelles or form hydrogels for drug delivery.

(2955)
- Poly(L-glutamic acid) MW: 3000, 7500, 15k
- PEG MW: 1000, 2000, 5000
- Package size: 200mg, 500mg, 1g
**Poly(L-Lysine)-PEGs**

**PLL-g-PEG**
Poly-L-Lysine graft PEG or PEG-grafted-PLL (PLL-g-PEG, PEG-g-PLL) is a random graft co-polymer with a poly(L-lysine) backbone and poly(ethylene glycol) side-chains. For surface modification, the PLL backbone interacts electrostatically with the substrate, while the side-chains extend from the surface to form a densely packed polymeric brush. PLL-g-PEG can be used to prepare nanoparticles for gene/drug delivery.

(11354)
- Number of repeating units: X=20, X=50, X=100, X=200
- Molecular weight of PEG: 2000, 5000
- Percentage of PEG substitution: 3.5%, 10%, 20%
- Package size: 50mg, 100mg

**PLL-PEG**
Poly(L-Lysine)-PEG methyl ether (PLL-PEG, PEG-PLL) is a linear amphiphilic block copolymer which has PLL as the hydrophobic section and PEG as the hydrophilic section. PLL section has pendant free amine groups. PLL-PEG can self assemble into micelles with functional PLL core for drug and gene delivery.

(2923)
- PLL MW: 3000, 7500, 15000
- PEG MW: 1000, 2000, 5000
- Package size: 200mg, 500mg, 1g

**PLL-PEG-N3**
Poly(L-Lysine)-poly(ethylene glycol)-azide (PLL-PEG-N3) is amphiphilic block copolymer that has PLL as the core-forming block and azide-functionalized PEG as the shell-forming block. PLL-PEG-N3 has pendant free amine in PLL block and azide in PEG block. It can self assemble into micelle with azide on the micelle surface for shell modification by click chemistry.

(3635)
- Molecular weight of PLL: 3000, 7500, 15K
- Molecular weight of PEG: 5000
- Package size: 50mg, 200mg, 500mg

**PLL-PEG-PLL**
Poly(L-lysine)-poly(ethylene glycol)-block-poly(L-lysine) (PLL-PEG-PLL) is A-B-A type amphiphilic block copolymer that has PLL on both sides of PEG. PLL section has pendant free amine groups for functionalization.

(2949)
- PLL MW: 3000, 7500, 15000
- PEG MW: 1000, 2000, 5000
- Package size: 200mg, 500mg, 1g
Poly(L-Aspartic acid)-PEGs

**MPEG-pAsp**

Methoxy-poly(ethylene glycol)-block-poly(L-Aspartic acid) (MPEG-pAsp) is a linear PEG-poly(L-Amino Acid) block copolymer which can be self assembled into micelles. Poly(L-Aspartic acid) is core-forming block, which has pendant free -COOH groups for drug conjugation and core modification. MPEG-pAsp is one of the most commonly used biodegradable copolymers for drug delivery.

- Poly(L-Aspartic acid) MW: 3000, 5000, 7500
- PEG MW: 1000, 2000, 5000
- Package size: 200mg, 500mg, 1g

**pAsp-PEG-N3**

Poly(L-Aspartic acid)-PEG-Azide (pAsp-PEG-N3) is a linear amphiphilic block copolymer (ABC) which has poly(L-Aspartic acid) as the hydrophobic section and azide-functionalized PEG as the hydrophilic section. ABC can self assemble into micelles. Poly(L-Aspartic acid)-PEG-N3 has reactive groups on both sections, i.e. the pendant free -COOH on Poly(L-Aspartic acid) can be used to modify micelle core and -N3 group on PEG can be used to modify micelle shell by click chemistry.

- pAsp MW: 3000, 5000
- PEG MW: 5000
- Package size: 100mg

**pAsp-PEG-pAsp**

Poly(L-Aspartic acid)-PEG-block-poly(L-Aspartic acid) (pAsp-PEG-pAsp) is a linear amphiphilic triblock copolymer. The hydrophobic section pAsp has pendant free -COOH groups. It can self assemble into micelles or form hydrogels for drug delivery.

- pAsp MW: 1150 (m=10), 2300 (m=20), 5750 (m=50)
- PEG MW: 1000, 2000, 5000
- Package size: 200mg, 500mg, 1g
Functional PEGs

**Acetal-PEG-OH/Diethoxy-PEG-OH**

Diacetyl acetal-PEG-OH (Acetal-PEG-OH) is a linear heterobifunctional PEG reagent with an acetal and OH group. It is a useful reagent for bioconjugation with a PEG spacer. Acetal can be easily reduced to aldehyde under acidic condition (pH 4.0). Acetal-PEG-OH may be used to introduce aldehyde in PEG copolymers. The aldehyde group can react with amine and thiol group for bioconjugation.

Molecular weight: 1000, 2000, 3500, 5000, 10K
Package size: 100 mg, 500 mg, 1g

**Amine alkyn-PEG-COOH**

Amine and Alkyn conjugated PEG-carboxylic acid (Amine alkyn-PEG-COOH, Alkyn amine-PEG-COOH) is a trifunctional PEG derivative, which has amine and alkyn group sharing one end and -COOH group on the other end.

Amine group can react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Alkyn were used to react azide group "click" chemistry in mild condition, which is very useful for bioconjugation.

COOH can react with amine or OH containing entities.

Molecular weight: 1000, 2000, 3400, 5000, 10K
Package size: 100mg, 1g

**Amine Alkyn-PEG-OH**

Amine and Alkyn conjugated PEG-OH (Amine Alkyn-PEG-OH) is a trifunctional PEG derivative, which has amine and alkyn group sharing one PEG end and hydroxyl group on the other end. Multiple entities may be linked together by NSP's trifunctional PEGs.

Amine group can react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Alkyn were used to react azide group "click" chemistry in mild condition, which is very useful for bioconjugation.

OH can be further derivatized for bioconjugation.

Molecular weight: 2000, 3400, 5000, 10K
Package size: 100mg, 1g

**Amine-PEG3-Amine**

1,11-Diamine-3,6,9-trioxaundecane (Amine-PEG3-Amine, NH2-PEG3-NH2), is a linear bifunctional monodisperse PEG crosslinking reagent with a reactive primary amine or NH2 group that can rapidly react with activated carboxylic acid or carboxyl groups such as NHS ester to form stable amide bonds.

Molecular weight: 1196
Package size: 500mg, 1g

**Azide amine-PEG-COOH**

Amine and azide conjugated PEG-carboxylic acid (Amine azide-PEG-COOH, azide amine-PEG-COOH) is a trifunctional PEG derivative, which has amine and azide group sharing one end and -COOH group on the other end.

Amine group can react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Azide were used to react azide group "click" chemistry in mild condition, which is very useful for bioconjugation.

COOH can react with amine or OH containing entities.

Molecular weight: 10379
Azide Amine-PEG-OH
Azide and amine conjugated PEG-OH (Azide amine-PEG-OH) is a trifunctional PEG derivative, which has azide and amine group sharing one PEG end and hydroxyl group on the other end. Multiple entities may be linked together by NSP’s trifunctional PEGs.

Amine group can react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Azide were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

OH can be further derivatized for bioconjugation.

BIO-PEG-FITC
Biotin-PEG-FITC (BIO-PEG-FITC) is a heterofunctional linker, which has biotin group on one end, and fluorescent probe (green) on the other end for labeling. Biotin can bind to avidin and streptavidin with high specificity and affinity.

BIO-PEG-RhB
Biotin-PEG-Rhodamine (BIO-PEG-RhB) is a heterofunctional linker, which has Biotin group on one end, and fluorescent probe (red) on the other end for labeling. Biotin group can react with amine-containing groups.

Biotin-PEG2-Maleimide
Biotin-PEG2-Maleimide (BIO-PEG2-MAL) is a linear heterobifunctional PEGylation reagent with a biotin and a maleimide. It is a useful crosslinking, bioconjugation reagent with a PEG spacer. Biotin can bind to avidin and streptavidin with high specificity and affinity. Maleimide can conjugate with thiol, SH, sulfhydryl or mercapto group to form a disulfide bond.

Boc-amine alkyne-PEG-COOH
Boc-protected amine and alkyne conjugated PEG-carboxylic acid (Boc-amine alkyne-PEG-COOH, Alkyne Boc-amine-PEG-COOH) is a trifunctional PEG derivative, which has Boc-protected amine and alkyne group sharing one end and -COOH group on the other end.

tBoc-amine can be deprotected by acid (TFA) to free amine, which react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Alkyne were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

COOH can react with amine or OH-containing entities.
Boc-amine alkyn-PEG-OH

Boc-protected amine and alkyn conjugated PEG-OH (Boc-amine alkyn-PEG-OH) is a trifunctional PEG derivative, which has amine and alkyn group sharing one PEG end and hydroxyl group on the other end. Multiple entities may be linked together by NSP's trifunctional PEGs.

**Boc-amine** can be deprotected by acid (TFA) to free amine, which react with carboxylic acid and its active esters, and isocyanates. It can also react with ω-carbonyl such as ketone and aldehyde.

**Alkyn** were used to react azide group "click" chemistry in mild condition, which is very useful for bioconjugation.

**OH** can be further derivatized for bioconjugation.

(10496)
- Molecular weight: 000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g

Boc-amine Azide-PEG-COOH

Boc-protected amine and azide conjugated PEG-carboxylic acid (Boc-amine Azide-PEG-COOH, Azide Boc-amine-PEG-COOH) is a trifunctional PEG derivative, which has amine and alkyn group sharing one end and COOH group on the other end.

**tBoc-amine** can be deprotected by acid (TFA) to free amine, which react with carboxylic acid and its active esters, and isocyanates. It can also react with ω-carbonyl such as ketone and aldehyde.

**Azide** were used to react azide group "click" chemistry in mild condition, which is very useful for bioconjugation.

**COOH** can react with amine or OH containing entities.

(10393)
- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g

Boc-amine azide-PEG-OH

Azide and Boc-protected amine conjugated PEG-OH (Boc-amine azide-PEG-OH) is a trifunctional PEG derivative, which has azide and amine group sharing one PEG end and hydroxyl group on the other end. Multiple entities may be linked together by NSP's trifunctional PEGs.

**Boc-amine** can be deprotected by acid (TFA) to free amine, which react with carboxylic acid and its active esters, and isocyanates. It can also react with ω-carbonyl such as ketone and aldehyde.

**Azide** were used to react azide group "click" chemistry in mild condition, which is very useful for bioconjugation.

**OH** can be further derivatized for bioconjugation.

(10509)
- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g

DBCO-PEG-COOH

DBCO (dibenzocyclooctyne) PEG acid or DBCO-PEG-carboxylic acid (DBCO-PEG-COOH) is a heterobifunctional reactive PEG derivative that can go Click Chemistry reaction without a need of any metal catalysts. The strain-promoted 1,3-dipolar cycloaddition of cyclooctynes and azides, also termed as the Cu-free click reaction, is a bioorthogonal reaction that enables the conjugation of two molecules in aqueous solution. DBCO PEG derivatives possess fast kinetics and stability in aqueous buffer. DBCO reagents can be used to label azide-modified biomolecules spontaneously without the need for toxic Cu catalysts. Carboxylic acid group, on the other hand, can be activated to react with amine, hydroxy and other functional groups.

(11062)
- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 50mg, 100mg

FITC-PEG-NHS

FITC-PEG-succinimidyl ester (FITC-PEG-NHS) is a heterofunctional linker, which has active succinimidyl ester group on one end, and fluorescent probe (green) on the other end for labeling. NHS group can react with amine-containing groups.

(4530)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 50 mg
Fmoc amine azide-PEG-COOH

Fmoc protected amine and azide conjugated PEG-carboxylic acid (Fmoc amine azide-PEG-COOH, azide Fmoc amine-PEG-COOH) is a trifunctional PEG derivative, which has Fmoc-protected amine and azide group sharing one end and -COOH group on the other end.

Fmoc protected amine can be deprotected by piperidine to free amine which can react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Azide were used to react azide group "click" chemistry in mild condition, which is very useful for bioconjugation.

COOH can react with amine or OH containing entities.

(10578)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 100mg, 1g

Folate-PEG-Amine

NSP offers heterobifunctional Folate-PEG-Amine (Folate-PEG-NH2, Folic acid-PEG-NH2) with high quality. Folic acid, or vitamin B9, can selectively bind to folate receptor, while Primary amine can react with a variety of functional groups such as succinimidyl ester (NHS), carboxylic acids (COOH), anhydride and many others. The PEG moiety in the heterofunctional PEG derivatives provides water solubility, biocompatibility, and flexibility. This reaction allows attachment of folic acid ligand to proteins, antibodies, peptides or particle surfaces. Folic acid functionalized substrates have been used for targeted drug delivery, imaging, and bioassay development.

(11498)
- Molecular weight: 1000, 2000, 3500, 5000, 10K
- Package size: 50mg, 100 mg

Folate-PEG-COOH

NSP offers heterobifunctional Folate PEG Acetic Acid products (Folate-PEG-COOH, Folic acid-PEG-COOH) with high quality. Folic acid, or vitamin B9, can selectively bind to folate receptor, while the carboxylic group can reactive with amine-containing moieties. The PEG moiety in the heterofunctional PEG derivatives provides water solubility, biocompatibility, and flexibility.

(11379)
- Molecular weight: 1000, 2000, 3500, 5000, 10K
- Package size: 50mg, 100 mg

Folate-PEG-Maleimide

NSP offers heterobifunctional Folate-PEG-Maleimide (Folate-PEG-Mal, Folic acid-PEG-maleimide) with high quality. Folic acid, or vitamin B9, can selectively bind to folate receptor, while maleimide can react with sulfhydryl (-SH) in pH 6.5-7.5 quickly and efficiently. The PEG moiety in the heterofunctional PEG derivatives provides water solubility, bioconpatibility, and flexibility. This reaction allows attachment of folic acid ligand to proteins, antibodies, peptides or particle surfaces. Folic acid functionalized substrates have been used for targeted drug delivery, imaging, and bioassay development.

(11495)
- Molecular weight: 1000, 2000, 3500, 5000, 10K
- Package size: 50mg, 100 mg

Folate-PEG-NHS

NSP offers heterobifunctional Folate PEG NHS products (Folate-PEG-NHS, Folic acid-PEG-NHS) with high quality. Folic acid, or vitamin B9, can selectively bind to folate receptor, while the NHS ester can reactive with amine-containing moieties in alkaline conditions quickly and efficiently. This reaction allows attachment of folic acid ligand to proteins, antibodies, peptides or particle surfaces. The PEG moiety in the heterofunctional PEG derivatives provides water solubility, biocompatibility, and flexibility. Folic acid functionalized substrates have been used for targeted drug delivery, imaging, and bio-assay development.

(11395)
- Molecular weight: 1000, 2000, 3500, 5000, 10K
- Package size: 50mg, 100 mg

Folate-PEG-OH

NSP offers heterobifunctional Folate PEG Hydroxyl products (Folate-PEG-OH, Folic acid-PEG-OH) with high quality. Folic acid, or vitamin B9, can selectively bind to folate receptor, while the OH group can be further modified for bioconjugation. The PEG moiety in the heterofunctional PEG derivatives provides water solubility, biocompatibility, and flexibility.
**HO-PEG-COOtBu**

HO-PEG-COOtBu is a linear heterobifunctional PEG derivative with one hydroxyl group and one carboxylate tert-butyl ester. The protected carboxyl (COOH) prevents self coupling or polymerization under standard acid/amine or acid/hydroxyl coupling conditions. The protected acid can be regenerated by acidic or basic hydrolysis.

**IA-PEG-IA**

Iodoacetyl-poly(ethylene glycol)-iodoacetyl (IA-PEG-IA) is a linear bifunctional crosslinking PEG reagent with one iodoacetyl at both ends of PEG that can be used to modify biomolecules or other materials via their available thiol groups. Iodine group can be easily replaced by thiol group to form a stable carbon thiol bond.

**LA-PEG-BIO**

Lipoic acid-PEG-Biotin (LA-PEG-BIO) is a heterofunctional linker, which has lipoic group on one end for surface modification, and biotin group on the other end for avidin. Lipoic acid, also known as thiotic acid, is an important bioactive molecule participating in various biological processes. PEG functionalized lipoic acid can be used to bind to metallic particle or film surface with its -S-S-bond. Lipoic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipoic acid is water soluble and can be used directly in aqueous buffer.

**LA-PEG-COOH**

Lipoic acid-PEG-COOH (LA-PEG-COOH) is a heterofunctional linker for surface modification. Lipoic acid, also known as thiotic acid, is an important bioactive molecule participating in various biological processes. PEG functionalized lipoic acid can be used to bind to metallic particle or film surface with its -S-S-bond. Lipoic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipoic acid is water soluble and can be used directly in aqueous buffer.

**LA-PEG-MAL**

Lipoic acid-PEG-Maleimide (LA-PEG-Mal) is a heterofunctional linker, which has lipoic group on one end for surface modification, and maleimide group on the other end for bioconjugation. Lipoic acid, also known as thiotic acid, is an important bioactive molecule participating in various biological processes. PEG functionalized lipoic acid can be used to bind to metallic particle or film surface with its -S-S-bond. Lipoic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipoic acid is water soluble and can be used directly in aqueous buffer.
nanoparticles and quantum dots. PEGylated lipoic acid is water soluble and can be used directly in aqueous buffer. (3195)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 200mg, 500mg, 1g

LA-PEG-NH2
Lipoic acid-PEG-Amine (LA-PEG-NH2) is a heterofunctional linker, which has lipoic group on one end for surface modification, and amine group on the other end. Lipoic acid (LA), also known as thioctic acid, is an important bioactive molecule participating in various biological processes. PEG functionalized lipoic acid can be used to bind to metallic particle or film surface with its -S-S- bond. Lipoic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipoic acid is water soluble and can be used directly in aqueous buffer. (3208)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 200mg, 500mg, 1g

LA-PEG-NHS
Lipoic acid-PEG-NHS (LA-PEG-NHS) is a heterofunctional linker, which has lipoic group on one end for surface modification, and amine-reactive N-hydroxysuccinimide esters (NHS) group on the other end for bioconjugation. Lipoic acid, also known as thioctic acid, is an important bioactive molecule participating in various biological processes. PEG functionalized lipoic acid can be used to bind to metallic particle or film surface with its -S-S- bond. Lipoic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipoic acid is water soluble and can be used directly in aqueous buffer. (3214)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 200mg, 500mg, 1g

LA-PEG-OH
Lipoic acid-PEG-hydroxyl (LA-PEG-OH) is a heterofunctional linker for surface modification. Lipoic acid, also known as thioctic acid, is an important bioactive molecule participating in various biological processes. PEG functionalized lipoic acid can be used to bind to metallic particle or film surface with its -S-S- bond. Lipoic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipoic acid is water soluble and can be used directly in aqueous buffer. (3189)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 200mg, 500mg, 1g

MAL-PEG-FITC
Maleimide-PEG-FITC (MAL-PEG-FITC) is a heterofunctional linker, which has maleimide group on one end for conjugation of thiol-containing ligands, and fluorescent probe (green) on the other end for labeling. (4521)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 50 mg

MAL-PEG-RhB
Maleimide-PEG-Rhodamine (MAL-PEG-RhB) is a heterofunctional linker, which has maleimide group on one end for conjugation of thiol-containing ligands, and fluorescent probe (red) on the other end for labeling. (4571)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 50 mg

MPEG-Iodocetyl
Methoxy poly(ethylene glycol)-iodocetyl (MPEG-IA) is a type of linear monofunctional PEG acid reagents. PEG-IA can be used to react with thiol groups.

Haloacetyl reaction chemistry: The most commonly used haloacetyl crosslinkers contain an iodoacetyl or a bromoacetyl group. Haloacetyl groups react with sulfhydryl groups at physiologic pH. The reaction of the iodoacetyl group proceeds by nucleophilic substitution of iodine with a sulfur atom from a sulfhydryl group, resulting in a stable thioether linkage.
mPEG-Mesylate
mPEG-Mesylate is a linear monofunctional PEG reagent with a mesyl, also called methanesulfonyl, which is a good leaving group for nucleophilic substitution reaction (SN2).

MPEG-Silane
MPEG-silane is a linear monofunctional methyl ether PEG with a reactive tri-ethoxy silane group. Silane PEG is often used to PEGylate glass and hydroxylated surfaces and particles.

N3-PEG-BIO
Azide-PEG-Biotin (N3-PEG-BIO) is a linear heterobifunctional PEG reagent with an azide and a biotin group on the PEG ends. It is a useful crosslinking reagent with a PEG spacer. Azide can be used for molecule conjugation by click chemistry, and biotin can bind to streptavidin. Azide-PEG-biotin may be used for bioconjugation, drug delivery, PEG hydrogel, crosslinker, and surface functionalization.

N3-PEG-LA
Azide-PEG-Lipoic acid (N3-PEG-LA) is a linear heterobifunctional PEG reagent with an azide and a lipoic acid group on the PEG ends. It is a useful crosslinking reagent with a PEG spacer. Azide can be used for molecule conjugation by click chemistry, and lipoic acid can be used to bind to metallic particle or film surface with its -S-S-bond. Azide-PEG-Lipoic acid may be used for bioconjugation, drug delivery, PEG hydrogel, crosslinker, and surface functionalization.
N3-PEG-Mal

Azide-PEG-maleimide (N3-PEG-Mal) is a linear heterobifunctional PEG reagent with an azide and a maleimide group on the PEG ends. It is a useful crosslinking reagent with a PEG spacer. Azide can be used for molecule conjugation by click chemistry, and maleimide can react with thiol groups. Azide-PEG-maleimide may be used to for bioconjugation, drug delivery, PEG hydrogel, crosslinker, and surface functionalization.

High quality azide-PEG-maleimide (N3-PEG-Mal) with a standard quality specification of >90% Substitution.

Heterobifunctional PEG reagents from NSP are generally employed as crosslinking agents or as spacers between two different chemical entities. The PEG moiety in the heterobifunctional PEG derivatives provides water solubility, biocompatibility, and flexibility. Applications are especially geared towards the development of antibody drug conjugates.

N3-PEG-SH

Azide-PEG-thiol (Azide-PEG-SH, N3-PEG-SH) is a linear heterobifunctional PEG reagent with an azide and a thiol group on the PEG ends. It is a useful crosslinking reagent with a PEG spacer. Azide can be used for molecule conjugation by click chemistry, and thiol can react with -SH or maleimide groups. Azide-PEG-thiol may be used to for bioconjugation, drug delivery, PEG hydrogel, crosslinker, and surface functionalization.

High quality azide-PEG-thiol (N3-PEG-SH) with a standard quality specification of >90% Substitution.

Heterobifunctional PEG reagents from NSP are generally employed as crosslinking agents or as spacers between two different chemical entities. The PEG moiety in the heterobifunctional PEG derivatives provides water solubility, biocompatibility, and flexibility. Applications are especially geared towards the development of antibody drug conjugates.

N3-PEG2-NH2

8-Azido-3,6-dioxaundecan-1-amine (Azide-PEG2-Amine, N3-PEG-NH2) is a mono-dispersed heterobifunctional PEG with an azide and an amine group on the PEG ends. It is a useful crosslinking reagent with a PEG spacer. Azide can be used for molecule conjugation by click chemistry, and amine can react with carboxylic acid or NHS ester. The product is typically provided in HCl salt form. Azide-PEG-Amine may be used to for bioconjugation, drug delivery, PEG hydrogel, crosslinker, and surface functionalization.

N2-PEG-COOtBu

Amine-PEG-tert Butyl protected carboxylic acid (NH2-PEG-COOtBu) is a linear heterobifunctional PEG reagent with one amine and one tertiary butyl ester protected carboxylic acid. It is a useful crosslinking reagent with a PEG spacer. The protected acid can be regenerated by mild acidic or basic conditions. Typically, the product is offered as its HCl or TFA salt.

NH2-PEG-NHS

Rhodamine-PEG-succinimidyl ester (RhB-PEG-NHS) is a heterofunctional linker, which has active succinimidyl ester group on one end, and fluorescent probe (red) on the other end for labeling. NHS group can react with amine-containing groups.
Molecular weight: 1000, 2000, 3000, 5000
Package size: 50 mg

**RhB-PEG-SH**

Thiol-Rhodamine (RhB-PEG-SH) is a heterofunctional linker, which has thiol group on one end for conjugation of thiol-containing ligands, and fluorescent probe (red) on the other end for labeling.

Molecular weight: 1000, 2000, 3000, 5000
Package size: 50 mg

**Silane-PEG-Acrylate**

Silane-PEG-Acrylate (Acrylate-PEG-Silane, Silane-PEG-AcrI, or AcrI-PEG-Silane) is a linear heterobifunctional PEG reagent with an acrylate and a silane group. It is a useful crosslinking reagent with a PEG spacer. Acrylate can polymerize with UV light or radical initiator to form PEG hydrogel, and silane can react with glass or other hydroxylated surfaces.

Molecular weight: 1000, 2000, 3000, 5000, 10K
Package size: 200 mg, 500 mg, 1g

**Silane-PEG-Biotin**

Silane-PEG-Biotin is a linear heterobifunctional PEG reagent with a biotin and an silane.

- It is a useful crosslinking or bioconjugation reagent with a PEG spacer.
- Biotin can bind to avidin and streptavidin with high specificity and affinity. Silane can be used to react with glass, silica, or other hydroxylated particle surface.

Molecular weight: 1000, 2000, 3000, 5000, 10K
Package size: 100 mg, 1g, 5g

**Silane-PEG-COOH**

Ethoxy silane functionalized polyethylene glycol, silane PEG (PEG-Si) is a surface reactive PEG derivative that can be used to modify glass, silica and other surfaces via the reaction between hydroxyl group and ethoxy/methoxyl silane. Pegylation can greatly suppress the non-specific binding of charged molecules to the modified surfaces. And they have wide applications for medical device, biomems or biocompatible material development.

Typically, the functionalization of silica, known as silanization, begins with APTES and involves multiple steps to produce the desired functionality. However, with methoxy, azide, alkyne, and biotin functionalities, NSPs silane PEGs greatly reduces the steps required to create the desired functionality.

Molecular weight: 1000, 2000, 3000, 5000, 10K
Package size: 100 mg, 1g, 5g

**Silane-PEG-Mal**

Silane-PEG-Maleimide (Silane-PEG-Mal) is a linear heterobifunctional PEG reagent with a maleimide and a silane.

- It is a useful crosslinking reagent with a PEG spacer. Maleimide reacts with thiols, SH, sulfhydryl or mercapto, and silane group can react with glass or other hydroxylated surface or particle.
- It may be used to introduce thiol or cysteine reactive functional group on hydroxylated nanoparticle, microsphere, self-assembled monolayer or metal chips.
- Pegylation can greatly suppress the non-specific binding of charged molecules to the modified surfaces. And they have wide applications for medical device, biomems or biocompatible material development.

Molecular weight: 1000, 2000, 3000, 5000, 10K
Package size: 100 mg, 1g, 5g
Silane-PEG-Silane

Silane-CH₂CH₂-OCH₂CH₂)n-Silane

- Silane-PEG-silane is a linear bifunctional PEG with two reactive triethoxy silane groups.
- Silane PEG is often used to PEGylate glass and hydroxylated surfaces and particles.

Molecular weight: 1000, 2000, 3400, 5000, 10K
Package size: 100mg, 1g, 5g
Monodisperse PEGs

Amine-PEG3-Amine

1,11-Diamine-3,6,9-trioxaundecane (Amine-PEG3-Amine, NH2-PEG3-NH2), is a linear bifunctional monodisperse PEG crosslinking reagent with a reactive primary amine or NH2 group that can rapidly react with activated carboxylic acid or carboxyl groups such as NHS ester to form stable amide bonds.

(package size: 500mg, 1g)

Biotin-PEG2-Maleimide

Biotin-PEG2-Maleimide (BIO-PEG2-MAL) is a linear heterobifunctional PEGylation reagent with a biotin and a maleimide. It is a useful crosslinking, bioconjugation reagent with a PEG spacer. Biotin can bind to avidin and streptavidin with high specificity and affinity. Maleimide can conjugate with thiol, SH, sulphydryl or mercapto group to form a disulfide bond.

(package size: 25mg, 50mg, 100mg)

N3-PEG2-NH2

8-Azido-3,6-dioxaundecan-1-amine (Azide-PEG2-Amine, N3-PEG-NH2) is a mono-dispersed heterofunctional PEG with an azide and an amine group on the PEG ends. It is a useful crosslinking reagent with a PEG spacer. Azide can be used for molecule conjugation by click chemistry, and amine can react with carboxylic acid or NHS ester. The product is typically provided in HCl salt form. Azide-PEG-Amine may be used to for bioconjugation, drug delivery, PEG hydrogel, crosslinker, and surface functionalization.

(package size: 500mg, 1g)
Trifunctional PEGs

**Amine alkynę-PEG-COOH**

Amine and Alkyne conjugated PEG-carboxylic acid (Amine alkynę-PEG-COOH, Alkyne amine-PEG-COOH) is a trifunctional PEG derivative, which has amine and alkynę group sharing one end and -COOH group on the other end.

Amine group can react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Alkyne were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

COOH can react with amine or OH containing entities.

(10352)
- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g

**Amine Alkyne-PEG-OH**

Amine and Alkyne conjugated PEG-OH (Amine Alkyne-PEG-OH) is a trifunctional PEG derivative, which has amine and alkynę group sharing one PEG end and hydroxyl group on the other end. Multiple entities may be linked together by NSP’s trifunctional PEGs.

Amine group can react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Alkyne were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

Oh can be further derivatized for bioconjugation.

(10337)
- Molecular weight: 2000, 3400, 5000, 10K
- Package size: 100mg, 1g

**Azide amine-PEG-COOH**

Amine and azide conjugated PEG-carboxylic acid (Amine azide-PEG-COOH, azide amine-PEG-COOH) is a trifunctional PEG derivative, which has amine and azide group sharing one end and -COOH group on the other end.

Amine group can react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Azide were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

COOH can react with amine or OH containing entities.

(10379)
- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g

**Azide Amine-PEG-OH**

Azide and amine conjugated PEG-OH (Azide amine-PEG-OH) is a trifunctional PEG derivative, which has azide and amine group sharing one PEG end and hydroxyl group on the other end. Multiple entities may be linked together by NSP’s trifunctional PEGs.

Azide group can react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Azide were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

Oh can be further derivatized for bioconjugation.

(10366)
- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g
Boc-amine alkyne-PEG-COOH

Boc-protected amine and alkyne conjugated PEG-carboxylic acid (Boc-amine alkyne-PEG-COOH, Alkyne Boc-amine-PEG-COOH) is a trifunctional PEG derivative, which has Boc-protected amine and alkyne group sharing one end and -COOH group on the other end.

Boc-amine can be deprotected by acid (TFA) to free amine, which react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Alkyne were used to react azide group "click" chemistry in mild condition, which is very useful for bioconjugation.

COOH can react with amine or OH containing entities.

Molecular weight: 1000, 2000, 3400, 5000
Package size: 100mg, 1g

Boc-amine alkyne-PEG-OH

Boc-protected amine and alkyne conjugated PEG-OH (Boc-amine alkyne-PEG-OH) is a trifunctional PEG derivative, which has amine and alkyne group sharing one PEG end and hydroxyl group on the other end. Multiple entities may be linked together by NSP’s trifunctional PEGs.

Boc-amine can be deprotected by acid (TFA) to free amine, which react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Alkyne were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

OH can be further derivatized for bioconjugation.

Molecular weight: 1000, 2000, 3400, 5000, 10K
Package size: 100mg, 1g

Boc-amine Azide-PEG-COOH

Boc protected-amine and azide conjugated PEG-carboxylic acid (Boc-amine Azide-PEG-COOH, Azide Boc-amine-PEG-COOH) is a trifunctional PEG derivative, which has amine and alkyne group sharing one end and -COOH group on the other end.

Boc-amine can be deprotected by acid (TFA) to free amine, which react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Azide were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

COOH can react with amine or OH containing entities.

Molecular weight: 1000, 2000, 3400, 5000, 10K
Package size: 100mg, 1g

Boc-amine azide-PEG-OH

Azide and Boc-protected amine conjugated PEG-OH (Boc-amine azide-PEG-OH) is a trifunctional PEG derivative, which has azide and amine group sharing one PEG end and hydroxyl group on the other end. Multiple entities may be linked together by NSP’s trifunctional PEGs.

Boc-amine can be deprotected by acid (TFA) to free amine, which react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Azide were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

OH can be further derivatized for bioconjugation.

Molecular weight: 1000, 2000, 3400, 5000, 10K
Package size: 100mg, 1g

Fmoc amine azide-PEG-COOH

Fmoc protected amine and azide conjugated PEG-carboxylic acid (Fmoc amine azide-PEG-COOH, azide Fmoc amine-PEG-COOH) is a trifunctional PEG derivative, which has Fmoc-protected amine and azide group sharing one end and -COOH group on the other end.
end.

Fmoc protected amine can be deprotected by piperidine to free amine which can react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Azide were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

COOH can react with amine or OH containing entities.

(10578)

- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 100mg, 1g
4-arm PEGs

4-Arm PEG-ACRL

4-arm PEG-alkyne (4-arm PEG-ALK) is a multiarm PEG derivative with alkyne groups at each terminal of the eight arms connected to one pentaerythritol core. PEG-ALK is one type of click chemistry reagents. Alkyne can be used to conjugate azide-containing groups in mild condition.

- Molecular weight: 2K, 5K, 10K, 20K
- Package size: 1g, 5g, 10g

4-arm PEG-COOH

4-Arm PEG-carboxylic acid (4-arm PEG-COOH) is a multiarm PEG derivative with carboxylic acid groups at each terminal of the four arms connected to one hexaglycerol core. There is a methylene (CH2) linkage between PEG and the COOH group, often called acetic acid (AA) or carboxyl methyl (CM). More details can be found at the FAQ webpage. PEG acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

- Molecular weight: 2000, 5000, 10K, 20K
- Package size: 1g, 5g, 10g

4-arm PEG-EPO

4-Arm PEG-Epoxide (4-Arm PEG-EPO) is a multiarm PEG derivative with epoxide or epoxy groups at each terminal of the four arms connected to one pentaerythritol core.
4-arm PEG-MAL

4-Arm PEG maleimide (4-Arm PEG-MAL) is a multiarm PEG derivative with maleimide groups at each terminal of the four arms connected to one pentaerythritol core. The maleimide group selectively reacts with free thiol, SH, sulfhydryl, or mercapto group via Michael addition to form a stable carbon sulfur bond. 4-Arm PEG-MAL can be used for site specific protein and peptide modification.

4-arm PEG-N3

4-arm PEG Azide (4-arm PEG-N3) is a multiarm PEG derivative which has -N3 at each PEG end and can be cross-linked into PEG hydrogels. Azide groups are useful for coupling via click chemistry reactions with alkynes. PEG hydrogels have a variety of applications in medical devices and regenerative medicine, and are especially of interest for controlled release of drugs, for 2D and 3D cell culture, and for wound sealing and healing. Nanosoft Polymers 4 arm PEGs are synthesized by ethoxylation of pentaerythritol (4 ARM PEG). The number of ethylene oxide units in the PEG chain may not be equal for all arms.

4-arm PEG-NH2

4-Arm PEG Amine (4-arm PEG-NH2) is a multiarm PEG derivative with amine groups at each terminal of the four arms connected to one pentaerythritol core. The reactive primary amine or NH2 group can rapidly react with activated carboxyl acid such as NHS ester to form stable amide bonds.

4-arm PEG-NPC

Nanosoft Polymers offer 4 arm PEG-para-nitrophenyl carbonate (4-arm PEG-NPC) derivatives which can be cross-linked into PEG hydrogels. PEG hydrogels have a variety of applications in medical devices and regenerative medicine, and are especially of interest for controlled drug release. 4-Arm PEG-NPC is a multiarm PEG derivative with para-nitrophenyl carbonate groups at each terminal of the four arms connected to one pentaerythritol core.

4-Arm PEG-OH

4-Arm PEG-OH is a multi-arm polyethylene glycol with hydroxyl groups at each terminal of the four arms. Pentaerythritol core is used in 4arm PEG raw materials and derivatives. The indicated molecular weight of the multi-arm PEG is the sum of the molecular weights of all the arms.

4-arm PEG-SA

4-Arm PEG succinic acid (4-arm PEG-SA) is a multiarm PEG derivative with carboxylic acid groups at each terminal of the 4 arms connected to one pentaerythritol core. There is a C2 hydrocarbon ester linkage between PEG and the succinic acid COOH group. PEG acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.
4-arm PEG-SAA

4-Arm PEG-amino succinic acid (4-arm PEG-SAA) is a multiarm PEG derivative with carboxylic acid groups at each terminal of the eight arms connected to one pentaerythritol core. There is a C2 amide linkage between PEG and the succinamide acid COOH group. PEG acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

(4193)
- Molecular weight: 2K, 5K, 10K, 20K
- Package size: 1g, 5g, 10g

4-Arm PEG-SCM

Nanosoft Polymers offer 4 arm PEG Succinimidyl Carboxymethyl Ester (4-arm PEG-SCM) derivatives which can be cross-linked into PEG hydrogels. PEG hydrogels have a variety of applications in medical devices and regenerative medicine, and are especially of interest for controlled drug release. Nanosoft Polymers’ 4 arm PEGs are synthesized by ethoxylation of pentaerythritol (4ARM PEG). The number of ethylene oxide units in the PEG chain may not be equal for all arms.

(2430)
- Molecular weight: 2K, 5K, 10K, 20K
- Package size: 1g, 5g, 10g

4-arm PEG-SH

4-Arm PEG-Thiol (4-arm PEG-SH) is a multiarm PEG derivative with thiol groups at each terminal of the four arms connected to one pentaerythritol core. The reactive free thiol, SH, sulfhydryl, or mercapto groups selectively react with maleimide and transition metal surface including gold, silver, etc. PEG-SH can be easily air oxidized to form S-S disulfide (disulphide) bonds, which can be reversed with reducing agents. It is a useful reagent for reversible PEGylation and PEG hydrogel.

(2424)
- Molecular weight: 2K, 5K, 10K, 20K
- Package size: 1g, 5g, 10g

4-arm PEG-SS

4-arm PEG succinimidyl succinate ester (4-arm PEG-SS) is a multiarm PEG derivative with succinimidyl NHS active ester groups at each terminal of the 4 arms connected to one pentaerythritol core. PEG-SS (succinimidyl succinate ester) is one type of PEG-NHS reagents. There is a C2 hydrocarbon ester linkage between PEG and the NHS ester. NHS is a good leaving group which can react with amine-containing moieties.

(4178)
- Molecular weight: 2K, 5K, 10K, 20K
- Package size: 1g, 5g, 10g
### 8-arm PEGs

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Molecular Weight</th>
<th>Package Size</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>8-arm PEG-ACRL</strong></td>
<td>8-Arm PEG-Acrylate (8-arm PEG-ACRL) is a multiarm PEG derivative with acrylate groups at each terminal of the eight arms connected to one hexaglycerol core. The 8-arm PEG acrylate can be used for radical initiator or UV light induced polymerization to synthesize PEG hydrogel. 8-Arm PEG-methacrylate may be offered by our custom synthesis service.</td>
<td>10k, 20k, 40k</td>
<td>1g, 5g, 10g</td>
</tr>
<tr>
<td><strong>8-arm PEG-ALK</strong></td>
<td>8-Arm PEG-alkyne (8-arm PEG-ALK) is a multiarm PEG derivative with alkyne groups at each terminal of the eight arms connected to one hexaglycerol core. PEG-ALK is one type of click chemistry reagents. Alkyne can be used to conjugate azide-containing groups in mild condition.</td>
<td>10k, 20k, 40k</td>
<td>1g, 5g, 10g</td>
</tr>
<tr>
<td><strong>8-arm PEG-COOH</strong></td>
<td>8-Arm PEG-acid (8-arm PEG-COOH) is a multiarm PEG derivative with carboxylic acid groups at each terminal of the eight arms connected to one hexaglycerol core. PEG acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.</td>
<td>10k, 20k, 40k</td>
<td>1g, 5g, 10g</td>
</tr>
<tr>
<td><strong>8-arm PEG-Epoxide</strong></td>
<td>8-Arm PEG-Epoxide is a multiarm PEG derivative with epoxide groups at each terminal of the eight arms connected to one hexaglycerol core.</td>
<td>10k, 20k, 40k</td>
<td>1g, 5g, 10g</td>
</tr>
<tr>
<td><strong>8-arm PEG-GA</strong></td>
<td>8-Arm PEG-glutamic acid (8-arm PEG-GA) is a multiarm PEG derivative with carboxylic acid groups at each terminal of the eight arms connected to one hexaglycerol core. There is a C3 amide linkage between PEG and the glutamic acid COOH group. PEG acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.</td>
<td>10,000, 20,000, 40,000</td>
<td>1g, 5g, 10g</td>
</tr>
<tr>
<td><strong>8-arm PEG-GAA</strong></td>
<td>8-Arm PEG-amino glutamic acid (8-arm PEG-GAA) is a multiarm PEG derivative with carboxylic acid groups at each terminal of the eight arms connected to one hexaglycerol core. There is a C3 amide linkage between PEG and the glutamic acid COOH group. PEG acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.</td>
<td>10k, 20k, 40k</td>
<td>1g, 5g, 10g</td>
</tr>
<tr>
<td><strong>8-arm PEG-GAS</strong></td>
<td>8-Arm PEG-succinimidyl glutaramide ester (8-arm PEG-GAS) is a multiarm PEG derivative with succinimidyl NHS ester groups at each terminal of the eight arms connected to one hexaglycerol core. PEG-GAS is one type of PEG-NHS reagents. There is a C3 hydrocarbon amide linkage between PEG and the NHS ester.</td>
<td>10k, 20k, 40k</td>
<td>1g, 5g, 10g</td>
</tr>
</tbody>
</table>
8-arm PEG-MAL
8-arm PEG-maleimide (8-arm PEG-MAL) is a multiarm PEG derivative with maleimide groups at each terminal of the eight arms connected to one hexaglycerol core. The maleimide group selectively reacts with free thiol, SH, sulfhydryl, or mercapto group via Michael addition to form a stable carbon sulfur bond. 8-Arm PEG-MAL can be used for site specific protein and peptide modification.

(2462)
- Molecular weight: 10k, 20k, 40k
- Package size: 1g, 5g, 10g

8-arm PEG-N3
8-arm PEG Azide (8-arm PEG-N3) is a multiarm PEG derivative which has –N3 at each PEG end and can be cross-linked into PEG hydrogels. Azide groups are useful for coupling via click chemistry reactions with alkynes. PEG hydrogels have a variety of applications in medical devices and regenerative medicine, and are especially of interest for controlled release of drugs, for 2D and 3D cell culture, and for wound sealing and healing. Nanosoft Polymers 8 arm PEGs are synthesized by ethoxylation of hexaglycerol corepentaerythritol (8 ARM PEG). The number of ethylene oxide units in the PEG chain may not be equal for all arms.

(4455)
- Molecular weight: 10K, 20K, 40K
- Package size: 1 g, 5 g, 10 g

8-arm PEG-NH2
8-Arm PEG-Amine (8-arm PEG-NH2) is a multiarm PEG derivative with amine groups at each terminal of the eight arms connected to one hexaglycerol core. The reactive primary amine or NH2 group can rapidly react with activated carboxyl acid such as NHS ester to form stable amide bonds.

(2443)
- Molecular weight: 10k, 20k, 40k
- Package size: 1g, 5g, 10g

8-arm PEG-NPC
8-arm PEG-nitrophenyl carbonate (8-arm PEG-NPC) is a multiarm PEG derivative with para-nitrophenyl carbonate groups at each terminal of the eight arms connected to one hexaglycerol core. NPC is a good leaving group which can be easily substituted by amine-containing groups.

(2446)
- Molecular weight: 10k, 20k, 40k
- Package size: 1g, 5g, 10g

8-arm PEG-SA
8-Arm PEG-succinic acid (8-arm PEG-SA) is a multiarm PEG derivative with carboxylic acid groups at each terminal of the eight arms connected to one hexaglycerol core. There is a C2 amide linkage between PEG and the succinic acid COOH group. PEG acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

(4141)
- Molecular weight: 10k, 20k, 40k
- Package size: 1g, 5g, 10g

8-arm PEG-SAA
8-Arm PEG-amino succinic acid (8-arm PEG-SAA) is a multiarm PEG derivative with carboxylic acid groups at each terminal of the eight arms connected to one hexaglycerol core. There is a C2 amide linkage between PEG and the succinamide acid COOH group. PEG acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

(4129)
- Molecular weight: 10k, 20k, 40k
- Package size: 1g, 5g, 10g

8-arm PEG-SAS
8-Arm PEG-succinimidyl succinamide ester (8-arm PEG-SAS) is a multiarm PEG derivative with succinimidyl NHS ester groups at each terminal of the eight arms connected to one hexaglycerol core. PEG-SAS is one type of PEG-NHS reagents. There is a C2...
hydrocarbon amide linkage between PEG and the NHS ester.

Molecular weight: 10k, 20k, 40k
Package size: 1g, 5g, 10g

8-arm PEG-SCM

8-Arm PEG-succinimidyl carboxyl methyl ester (8-arm PEG-SCM) is a multiarm PEG derivative with succinimidyl NHS ester groups at each terminal of the eight arms connected to one hexaglycerol core. PEG-SCM is one type of PEG-NHS reagents. There is a methylene (CH2) linkage between PEG and the NHS ester. NHS is a good leaving group which can react with amine-containing moieties.

Molecular weight: 10k, 20k, 40k
Package size: 1g, 5g, 10g

8-arm PEG-SG

8-arm PEG succinimidyl glutamate ester (8-arm PEG-SG) is a multiarm PEG derivative with succinimidyl NHS active ester groups at each terminal of the eight arms connected to one hexaglycerol core. PEG-SG (succinimidyl glutamate ester) is one type of PEG-NHS reagents. There is a C3 hydrocarbon ester linkage between PEG and the NHS ester. NHS is a good leaving group which can react with amine-containing moieties.

Molecular weight: 10k, 20k, 40k
Package size: 1g, 5g, 10g

8-arm PEG-SH

8-Arm PEG-Thiol (8-Arm PEG-SH) is a multiarm PEG derivative with thiol groups at each terminal of the eight arms connected to one hexaglycerol core. The reactive free thiol, SH, sulfhydryl, or mercapto groups selectively react with maleimide and transition metal surface including gold, silver, etc. PEG-SH can be easily air oxidized to form S-S disulfide bonds, which can be reversed with reducing agents. It is a useful reagent for reversible PEGylation and PEG hydrogel.

Molecular weight: 10k, 20k, 40k
Package size: 1g, 5g, 10g

8-arm PEG-SS

8-arm PEG succinimidyl succinate ester (8-arm PEG-SS) is a multiarm PEG derivative with succinimidyl NHS active ester groups at each terminal of the eight arms connected to one hexaglycerol core. PEG-SS (succinimidyl succinate ester) is one type of PEG-NHS reagents. There is a C2 hydrocarbon ester linkage between PEG and the NHS ester. NHS is a good leaving group which can react with amine-containing moieties.

Molecular weight: 10k, 20k, 40k
Package size: 1g, 5g, 10g
Heterobifunctional PEGs

**Acetal-PEG-OH/Diethoxy-PEG-OH**

Diethyl acetal-PEG-OH (Acetal-PEG-OH) is a linear heterobifunctional PEG reagent with an acetal and OH group. It is a useful reagent for bioconjugation with a PEG spacer. Acetal can be easily reduced to aldehyde under acidic condition (pH 4.0). Acetal-PEG-OH may be used to introduce aldehyde in PEG copolymers. The aldehyde group can react with amine and thiol group for bioconjugation.

(Molecular weight: 1000, 2000, 3500, 5000, 10K)
- Package size: 100 mg, 500 mg, 1g

**ACRL-PEG-COOH**

Acrylate-PEG-carboxylic acid (ACRL-PEG-COOH) is a linear heterobifunctional PEG reagent with an acrylate and -COOH. It is a useful crosslinking reagent with a PEG spacer. Acrylate can polymerize with UV light or radical initiator, and COOH can react with amine. Acrylate-PEG-COOH may be used to introduce carboxylic acid group in PEG hydrogel.

(Molecular weight: 1000, 2000, 3500, 5000, 10K)
- Package size: 500 mg, 1g

**ACRL-PEG-MAL**

Acrylate-PEG-maleimide (ACRL-PEG-MAL) is a linear heterobifunctional PEG reagent with an acrylate and maleimide. It is a useful crosslinking reagent with a PEG spacer. Acrylate can polymerize with UV light or radical initiator, and maleimide can react with thiol-containing groups. Acrylate-PEG-Mal may be used to introduce maleimide in PEG hydrogel.

(Molecular weight: 1000, 2000, 3500, 5000, 10K)
- Package size: 200 mg, 500 mg, 1g

**ACRL-PEG-NH2**

Acrylate-PEG-amine (ACRL-PEG-NH2) is a linear heterobifunctional PEG reagent with an acrylate and an amine. It is a useful crosslinking reagent with a PEG spacer. Acrylate can polymerize with UV light or radical initiator, and amine can react with carboxylic acid or NHS ester. Acrylate-PEG-Amine may be used to introduce an amine functional group in PEG hydrogel. The product is typically provided in the TFA or HCl salt form.

(Molecular weight: 1000, 2000, 3400, 5000)
- Package size: 100 mg, 1g, 5g

**ACRL-PEG-NHS**

Acrylate-PEG-succinimidyl ester (ACRL-PEG-NHS) is a linear heterobifunctional PEG reagent with an acrylate and NHS active ester. It is a useful crosslinking reagent with a PEG spacer. Acrylate can polymerize with UV light or radical initiator, and NHS ester can react with amine. Acrylate-PEG-NHS may be used to introduce NHS-containing group in PEG hydrogel.

(Molecular weight: 1000, 2000, 3500, 5000, 10K)
- Package size: 200 mg, 500 mg, 1g

**ALK-PEG-MAL**

Alkyne-polyethylene glycol-maleimide (ALK-PEG-MAL) is a bifunctional PEG derivative that can be used to modify proteins, peptides and other materials via Click Chemistry. Alkyne group can react with azide in aqueous solution catalyzed by copper, and maleimide group can react with thiol group from a peptide. PEGylation can increase solubility and stability and reduce immunogenicity of peptides and proteins. It can also suppress the non-specific binding of charged molecules to the modified surfaces.

(Molecular weight: 1000, 2000, 3500, 5000)
- Package size: 100mg, 500mg, 1g
BIO-PEG-COOH
Biotin conjugated PEG-COOH (BIO-PEG-COOH) is a linear heterobifunctional PEG reagent with a biotin and a carboxylic acid. It is a useful crosslinking or bioconjugation reagent with a PEG spacer. Biotin can bind to avidin and streptavidin with high specificity and affinity and achieve non-covalent PEGylation.

Molecular weight: 1000, 2000, 3500, 5000, 10k
Package size: 200mg, 500mg, 1g

BIO-PEG-FITC
Biotin-PEG-FITC (BIO-PEG-FITC) is a heterofunctional linker, which has a biotin group on one end, and a fluorescent probe (green) on the other end for labeling. Biotin can bind to avidin and streptavidin with high specificity and affinity.

Molecular weight: 1000, 2000, 3400, 5000
Package size: 50 mg

BIO-PEG-MAL
Biotin-PEG-Maleimide (BIO-PEG-MAL) is a linear heterobifunctional PEGylation reagent with a biotin and a maleimide. It is a useful crosslinking, bioconjugation reagent with a PEG spacer. Biotin can bind to avidin and streptavidin with high specificity and affinity. Maleimide can conjugate with thiol, SH, sulfhydryl or mercapto group to form a disulfide bond.

Molecular weight: 1000, 2000, 3500, 5000, 7500, 10k
Package size: 500mg, 1g

BIO-PEG-NH2
Biotin-PEG-amine (BIO-PEG-NH2) is a linear heterobifunctional PEG reagent with a biotin and an amine. It is a useful crosslinking or bioconjugation reagent with a PEG spacer. Biotin can bind to avidin and streptavidin with high specificity and affinity.

Molecular weight: 1000, 2000, 3500, 5000, 10k
Package size: 200mg, 500mg, 1g

BIO-PEG-NHS
Biotin-poly(ethylene glycol)-succinimidyl ester (BIO-PEG-NHS) is a linear bifunctional PEG derivative with a biotin group on reactive NHS ester. It is a useful crosslinking or bioconjugation reagent with a PEG spacer. Biotin can bind to avidin and streptavidin with high specificity and affinity. NHS can react with amine-containing ligands.

Molecular weight: 1000, 2000, 3500, 5000, 7500
Package size: 200mg, 500mg, 1g

BIO-PEG-OH
Biotin-PEG-OH (BIO-PEG-OH) is a linear heterobifunctional PEGylation reagent with a biotin and a hydroxyl. It is a useful crosslinking or bioconjugation reagent with a PEG spacer. Biotin can bind to avidin and streptavidin with high specificity and affinity.

Molecular weight: 1000, 2000, 3400, 5000, 10k
Package size: 200mg, 500mg, 1g

BIO-PEG-RhB
Biotin-PEG-Rhodamine (BIO-PEG-RhB) is a heterofunctional linker, which has a biotin group on one end, and a fluorescent probe (red) on the other end for labeling. Biotin group can react with amine-containing groups.

Molecular weight: 1000, 2000, 3400, 5000
Package size: 50 mg

Boc-NH-PEG-COOH
Boc-NH-PEG-COOH is a linear heterobifunctional PEG reagent with one Boc protected amine and one carboxyl. It is a useful crosslinking reagent with a PEG spacer. The protected amine can be regenerated by mild acidic conditions such as TFA or dilute...
**Molecular weight:** 1000, 2000, 3500, 5000, 10k
**Package size:** 500mg, 1g

**MDP-PEG-COOH**

MDP (mesoporous silica) PEG acid or MDP-PEG-carboxylic acid (MDP-PEG-COOH) is a heterobifunctional reactive PEG derivative that can go Click Chemistry reaction without the need of any metal catalysts. The strain-promoted 1,3-dipolar cycloaddition of cyclooctynes and azides, also termed as the Cu-free click reaction, is a bioorthogonal reaction that enables the conjugation of two molecules in aqueous solution. MDP-PEG derivatives possess fast kinetics and stability in aqueous buffer. MDP reagents can be used to label azide-modified biomolecules spontaneously without the need for toxic Cu catalysts. Carboxylic acid group, on the other hand, can be activated to react with amines, hydroxyl and other functional groups.

**Molecular weight:** 1000, 2000, 3400, 5000
**Package size:** 50mg, 100mg

**Fmoc-NH-PEG-COOH**

Fmoc-NH-PEG-carboxyl (Fmoc-NH-PEG-COOH) is a linear heterobifunctional PEG reagent with one Fmoc protected amine and one carboxylic acid. It is a useful crosslinking reagent with a PEG spacer. The protected amine can be regenerated by mild basic conditions.

**Molecular weight:** 1000, 2000, 3500, 5000, 10k
**Package size:** 200mg, 500mg, 1g

**Fmoc-NH-PEG-OH**

Fmoc-protected amine-PEG-hydroxyl (Fmoc-NH-PEG-OH) is a linear heterobifunctional PEG derivative with one Fmoc protected amine and hydroxyl group. It is a useful crosslinking reagent with a PEG spacer. The protected amine can be regenerated under mild basic conditions.

**Molecular weight:** 1000, 2000, 3500, 5000
**Package size:** 500mg, 1g

**Folate-Peg-Amine**

NSP offers heterobifunctional Folate-PEG-Amine (Folate-Peg-NHS, Folic acid-PEG-NH2) with high quality. Folic acid, or vitamin B9, can selectively bind to folate receptor, while Primary amine can react with a variety of functional groups such as succinimidyl ester (NHS), carboxylic acids (COOH), anhydride and many others. The PEG moiety in the heterobifunctional PEG derivatives provides water solubility, biocompatibility, and flexibility. This reaction allows attachment of folic acid ligand to proteins, antibodies, peptides or particle surfaces. Folic acid functionalized substrates have been used for targeted drug delivery, imaging, and bioassay development.

**Molecular weight:** 1000, 2000, 3500, 5000, 10K
**Package size:** 50mg, 100 mg

**Folate-Peg-COOH**

NSP offers heterobifunctional Folate PEG Acetic Acid products (Folate-Peg-COOH, Folic acid-PEG-COOH) with high quality. Folic acid, or vitamin B9, can selectively bind to folate receptor, while the carboxylic group can reactive with amin-containing moieties. The PEG moiety in the heterofunctional PEG derivatives provides water solubility, biocompatibility, and flexibility.

**Molecular weight:** 1000, 2000, 3500, 5000
**Package size:** 50mg, 100 mg
**Folate-PEG-Maleimide**

NSP offers heterobifunctional Folate-PEG-Maleimide (Folate-PEG-Mal, Folic acid-PEG-maleimide) with high quality. Folic acid, or vitamin B9, can selectively bind to folate receptor, while maleimide can react with sulfhydryl (-SH) in pH 6.5-7.5 quickly and efficiently. The PEG moiety in the heterobifunctional PEG derivatives provides water solubility, biocompatibility, and flexibility. This reaction allows attachment of folic acid ligand to proteins, antibodies, peptides or particle surfaces. Folic acid functionalized substrates have been used for targeted drug delivery, imaging, and bioassay development.

- Molecular weight: 1000, 2000, 3500, 5000, 10K
- Package size: 50mg, 100mg

**Folate-PEG-NHS**

NSP offers heterobifunctional Folate PEG NHS products (Folate-PEG-NHS, Folic acid-PEG-NHS) with high quality. Folic acid, or vitamin B9, can selectively bind to folate receptor, while the NHS ester can react with amine-containing moieties in alkaline conditions quickly and efficiently. This reaction allows attachment of folic acid ligand to proteins, antibodies, peptides or particle surfaces. The PEG moiety in the heterobifunctional PEG derivatives provides water solubility, biocompatibility, and flexibility. Folic acid functionalized substrates have been used for targeted drug delivery, imaging, and bioassay development.

- Molecular weight: 1000, 2000, 3500, 5000, 10K
- Package size: 50mg, 100mg

**Folate-PEG-OH**

NSP offers heterobifunctional Folate PEG Hydroxyl products (Folate-PEG-OH, Folic acid-PEG-OH) with high quality. Folic acid, or vitamin B9, can selectively bind to folate receptor, while the OH group can be further modified for bioconjugation. The PEG moiety in the heterobifunctional PEG derivatives provides water solubility, biocompatibility, and flexibility.

- Molecular weight: 1000, 2000, 3500, 5000, 10K
- Package size: 50mg, 100mg

**HO-PEG-COOH**

α-hydroxyl-ω-carboxyl poly(ethylene glycol) (HO-PEG-COOH) is a linear heterobifunctional PEG with hydroxyl on one end and carboxyl group on the other. It is a useful crosslinking reagent with a PEG spacer. There is a methylene (CH2) linkage between PEG and COOH, often called AA (acetic acid) or CM (carboxyl methyl). Heterobifunctional PEG products with other carboxylic acid such as GA (glutaric acid), SA (succinic acid), GAA (glutaramide acid), and SAA (succinamide acid) may be offered through our custom synthesis service.

- Molecular size: 1000, 2000, 3500, 5000, 10k
- Package size: 200mg, 500mg, 1g

**HO-PEG-COOtBu**

HO-PEG-COOtBu is a linear heterobifunctional PEG derivative with one hydroxyl group and one carboxylate tert-butyl ester. The protected carboxyl (COOH) prevents self coupling or polymerization under standard acid/amine or acid/hydroxyl coupling conditions. The protected acid can be regenerated by acidic or basic hydrolysis.

- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g, 5g

**HO-PEG-NHS**

Hydroxyl PEG Succinimidyl NHS ester (HO-PEG-NHS) is a linear heterobifunctional PEG derivative with one hydroxyl group and one NHS ester. It is a useful crosslinking reagent with a PEG spacer. There is a methylene (CH2) linkage between PEG and the succinimidyl carboxylate. Heterobifunctional PEG products with other NHS esters such as succinimidyl glutarate, succinate, glutaramide, and succinamide may be offered through our custom synthesis service.

- Molecular weight: 1000, 2000, 3500, 5000, 10k
- Package size: 200mg, 500mg, 1g
HS-PEG-COOH
Thiol-PEG-carboxyl (HS-PEG-COOH) is a linear heterobifunctional PEG reagent with a thiol and a carboxyl group. It is a useful crosslinking reagent with a PEG spacer.

- Molecular weight: 1000, 2000, 3500, 5000
- Package size: 500mg, 1g

HS-PEG-OH
Thiol-PEG-hydroxyl (HS-PEG-OH) is a linear heterobifunctional PEGylation reagent with a thiol and a hydroxyl. It is a useful crosslinking or bioconjugation reagent with a PEG spacer. Thiol, or SH, sulfhydryl, or mercapto group selectively reacts with maleimide, OPSS, vinylsulfone and transition metal surface including gold, silver, etc.

- Molecular weight: 1000, 2000, 3500, 5000, 10k
- Package size: 1g, 5g

LA-PEG-BIO
Lipoic acid-PEG-Biotin (LA-PEG-BIO) is a heterofunctional linker, which has lipoic group on one end for surface modification, and biotin group on the other end for avidin. Lipoic acid, also known as thiotic acid, is an important bioactive molecule participating in various biological processes. PEG functionalized lipoic acid can be used to bind to metallic particle or film surface with its -S-S-bond. Lipoic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipoic acid is water soluble and can be used directly in aqueous buffer.

- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 200mg, 500mg, 1g

LA-PEG-FITC
Lipoic acid-PEG-FITC (LA-PEG-FITC) is a heterofunctional linker, which has lipoic group on one end for surface modification, and fluorescent probe (green) on the other end for labeling. Lipoic acid, also known as thiotic acid, is an important bioactive molecule participating in various biological processes. PEG functionalized lipoic acid can be used to bind to metallic particle or film surface with its -S-S-bond. Lipoic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipoic acid is water soluble and can be used directly in aqueous buffer.

- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 200mg, 500mg, 1g

LA-PEG-MAL
Lipoic acid-PEG-Maleimide (LA-PEG-Mal) is a heterofunctional linker, which has lipoic group on one end for surface modification, and maleimide group on the other end for bioconjugation. Lipoic acid, also known as thiotic acid, is an important bioactive molecule participating in various biological processes. PEG functionalized lipoic acid can be used to bind to metallic particle or film surface with its -S-S-bond. Lipoic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipoic acid is water soluble and can be used directly in aqueous buffer.

- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 200mg, 500mg, 1g

LA-PEG-NH2
Lipoic acid-PEG-Amine (LA-PEG-NH2) is a heterofunctional linker, which has lipoic group on one end for surface modification, and amine group on the other end. Lipoic acid (LA), also known as thiotic acid, is an important bioactive molecule participating in various biological processes. PEG functionalized lipoic acid can be used to bind to metallic particle or film surface with its -S-S-bond. Lipoic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipoic acid is water soluble and can be used directly in aqueous buffer.
various biological processes. PEG functionalized lipoic acid can be used to bind to metallic particle or film surface with its -S-S-bond. Lipoic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipoic acid is water soluble and can be used directly in aqueous buffer.

(3208)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 200mg, 500mg, 1g

LA-PEG-NHS
Lipoic acid-PEG-NHS (LA-PEG-NHS) is a heterofunctional linker, which has lipoic group on one end for surface modification, and amine-reactive N-hydroxysuccinimide esters (NHS) group on the other end for bioconjugation. Lipoic acid, also known as thioctic acid, is an important bioactive molecule participating in various biological processes. PEG functionalized lipoic acid can be used to bind to metallic particle or film surface with its -S-S-bond. Lipoic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipoic acid is water soluble and can be used directly in aqueous buffer.

(3214)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 200mg, 500mg, 1g

LA-PEG-OH
Lipoic acid-PEG-hydroxyl (LA-PEG-OH) is a heterofunctional linker for surface modification. Lipoic acid, also known as thioctic acid, is an important bioactive molecule participating in various biological processes. PEG functionalized lipoic acid can be used to bind to metallic particle or film surface with its -S-S-bond. Lipoic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipoic acid is water soluble and can be used directly in aqueous buffer.

(3189)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 200mg, 500mg, 1g

MAL-PEG-COOH
Maleimide-PEG-COOH (MAL-PEG-COOH) is a linear heterobifunctional PEG reagent with a maleimide and a carboxylic acid. It is a useful crosslinking reagent with a PEG spacer. Maleimide reacts with thiol, SH, sulfhydryl or mercapto, and carboxyl group can react with amine or hydroxyl under standard acid/amine or acid/alcohol coupling conditions. Maleimide contains a reactive C=C double bond and is light or oxygen sensitive.

(2594)
- Molecular weight: 1000, 2000, 3500, 5000
- Package size: 200mg, 500mg, 1g

MAL-PEG-FITC
Maleimide-PEG-FITC (MAL-PEG-FITC) is a heterofunctional linker, which has maleimide group on one end for conjugation of thiol-containing ligands, and fluorescent probe (green) on the other end for labeling.

(4521)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 50 mg

MAL-PEG-OH
Maleimide-PEG-hydroxyl (MAL-PEG-OH) is a linear heterobifunctional PEG reagent with a maleimide and a hydroxyl group. It is a useful crosslinking reagent with a PEG spacer. Maleimide reacts with thiol, SH, sulfhydryl or mercapto, and hydroxyl can react with carboxylic acid. Maleimide-PEG-OH can also be used to synthesize PEGylated block copolymer such as PLA-PEG (poly-L-lactic acid-co-polyethylene glycol) and PCL-PEG (polycaprolactone-co-polyethylene glycol) through hydroxyl initiated polymerization with lactide or caprolactone. Maleimide contains a reactive C=C double bond and is light or oxygen sensitive.

(2545)
- Molecular weight: 1000, 2000, 3500, 5000
- Packagesize: 500mg, 1g

MAL-PEG-RhB
Maleimide-PEG-Rhodamine (MAL-PEG-RhB) is a heterofunctional linker, which has maleimide group on one end for conjugation of thiol-containing ligands, and fluorescent probe (red) on the other end for labeling.

(4571)
- Molecular weight: 1000, 2000, 3400, 5000
Mal-PEG-SCM

MAL-PEG-SCM (MAL-PEG-NHS) is a linear heterobifunctional PEG reagent with a maleimide and a succinimidyl NHS ester group. It is a useful crosslinking reagent with a PEG spacer. Maleimide reacts with thiol, SH, sulphhydryl or mercapto, and SCM stands for succinimidyl carboxyl methyl ester and can react with primary amine. Maleimide contains a reactive C=C double bond and is light or oxygen sensitive.

(2597)

- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 200mg, 500mg, 1g

Maleimide-PEG-Amine/Mal-PEG-NH2

Maleimide-PEG-Amine (Mal-PEG-NH2) is a linear heterobifunctional PEG reagent with a maleimide and an amine. It is a useful crosslinking reagent with a PEG spacer. Maleimide reacts with thiol, SH, sulphhydryl or mercapto, and amine can react with carboxylic acid or activated NHS ester. MAL-PEG-NH2 can also be used to synthesize PEGylated block copolymers such as PEG-PLL (poly-L-lysine) and PEG-PLGA (poly-L-glutaric acid). It is typically provided as a TFA or HCl salt. Maleimide contains a reactive C=C double bond and is light or oxygen sensitive.

(2554)

- Molecular weight: 1000, 2000, 3500, 5000, 10k
- Package size: 100mg, 500mg, 1g

Azide-PEG-Biotin (N3-PEG-BIO) is a linear heterobifunctional PEG reagent with an azide and a biotin group on the PEG ends. It is a useful crosslinking reagent with a PEG spacer. Azide can be used for molecule conjugation by click chemistry, and biotin can bind to streptavidin. Azide-PEG-biotin may be used for bioconjugation, drug delivery, PEG hydrogel, crosslinker, and surface functionalization.

High quality azide-PEG-biotin (N3-PEG-BIO) with a standard quality specification of >90% Substitution.

Heterobifunctional PEG reagents from NSP are generally employed as crosslinking agents or as spacers between two different chemical entities. The PEG moiety in the heterofunctional PEG derivatives provides water solubility, biocompatibility, and flexibility. Applications are especially geared toward the development of antibody drug conjugates.

(9438)

- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g

Azide-PEG-carboxyl (N3-PEG-COOH) is a linear heterobifunctional PEG reagent with an azide and a carboxyl group on the PEG ends. It is a useful crosslinking reagent with a PEG spacer. Azide can be used for molecule conjugation by click chemistry, and carboxyl can react with amine groups. Azide-PEG-carboxyl may be used for bioconjugation, drug delivery, PEG hydrogel, crosslinker, and surface functionalization.

High quality azide-PEG-carboxyl (N3-PEG-COOH) with a standard quality specification of >90% Substitution.

Heterobifunctional PEG reagents from NSP are generally employed as crosslinking agents or as spacers between two different chemical entities. The PEG moiety in the heterofunctional PEG derivatives provides water solubility, biocompatibility, and flexibility. Applications are especially geared toward the development of antibody drug conjugates.

(9359)

- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 1g, 5g

Azide-PEG-lipoic acid (N3-PEG-LA) is a linear heterobifunctional PEG reagent with an azide and a lipoic acid group on the PEG ends. It is a useful crosslinking reagent with a PEG spacer. Azide can be used for molecule conjugation by click chemistry, and lipoic acid can be used to bond to metallic particle or film surface with its -S-S-bond. Azide-PEG-lipoic acid may be used for bioconjugation, drug delivery, PEG hydrogel, crosslinker, and surface functionalization.
Lipoic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipoic acid is water soluble and can be used directly in aqueous buffer. High quality azide-PEG-lipoic acid (N3-PEG-LA) with a standard quality specification of >90% Substitution.

Heterobifunctional PEG reagents from NSP are generally employed as crosslinking agents or as spacers between two different chemical entities. The PEG moiety in the heterofunctional PEG derivatives provides water solubility, biocompatibility, and flexibility. Applications are especially geared toward the development of antibody drug conjugates.

**N3-PEG-Mal**

Azide-PEG-maleimide (N3-PEG-Mal) is a linear heterobifunctional PEG reagent with an azide and a maleimide group on the PEG ends. It is a useful crosslinking reagent with a PEG spacer. Azide can be used for molecule conjugation by click chemistry, and maleimide can react with thiol groups. Azide-PEG-maleimide may be used to for bioconjugation, drug delivery, PEG hydrogel, crosslinker, and surface functionalization.

High quality azide-PEG-maleimide (N3-PEG-Mal) with a standard quality specification of >90% Substitution.

Heterobifunctional PEG reagents from NSP are generally employed as crosslinking agents or as spacers between two different chemical entities. The PEG moiety in the heterofunctional PEG derivatives provides water solubility, biocompatibility, and flexibility. Applications are especially geared toward the development of antibody drug conjugates.

**N3-PEG-NH2**

Azide-PEG-amine (N3-PEG-NH2) is a linear heterobifunctional PEG reagent with an azide and an amine group on the PEG ends. It is a useful crosslinking reagent with a PEG spacer. Azide can be used for molecule conjugation by click chemistry, and amine can react with carboxylic acid or NHS ester. The product is typically provided in the TFA or HCl salt form. Azide-PEG-Amine may be used to for bioconjugation, drug delivery, PEG hydrogel, crosslinker, and surface functionalization.

**N3-PEG-OH**

Azide-polyethylene glycol-Hydroxyl (N3-PEG-OH) is a bifunctional PEG derivative that can be used to modify proteins, peptides and other materials via Click Chemistry. Azide group can react with alkyne in aqueous solution catalyzed by copper, and hydroxyl group can react with COOH group from a peptide. PEGylation can increase solubility and stability and reduce immunogenicity of peptides and proteins. It can also suppress the non-specific binding of charged molecules to the modified surfaces.

**N3-PEG-SH**

Azide-PEG-thiol (Azide-PEG-SH, N3-PEG-SH) is a linear heterobifunctional PEG reagent with an azide and a thiol group on the PEG ends. It is a useful crosslinking reagent with a PEG spacer. Azide can be used for molecule conjugation by click chemistry, and thiol can react with -SH or maleimide groups. Azide-PEG-thiol may be used to for bioconjugation, drug delivery, PEG hydrogel, crosslinker, and surface functionalization.

High quality azide-PEG-thiol (N3-PEG-SH) with a standard quality specification of >90% Substitution.
NH2-PEG-COOH

Amine-PEG-Carboxyl

NH2-PEG-COOH is a linear heterobifunctional PEG reagent with one amine and one carboxyl. It is a useful crosslinking reagent with a PEG spacer. Typically, it is offered as its HCl or TFA salt.

Molecular weight: 1000, 2000, 3400, 5000, 10K
Package size: 200mg, 1g

NH2-PEG-COOtBu

Amine-PEG-tert Butyl protected carboxylic acid (NH2-PEG-COOtBu) is a linear heterobifunctional PEG reagent with one amine and one tertiary butyl ester protected carboxylic acid. It is a useful crosslinking reagent with a PEG spacer. The protected acid can be regenerated by mild acidic or basic conditions. Typically, the product is offered as its HCl or TFA salt.

Molecular weight: 1000, 2000, 3500, 5000, 10K
Package size: 100mg, 1g

NH2-PEG-OH

Amine-PEG-Hydroxyl (NH2-PEG-OH) is a linear heterobifunctional PEG derivative with one hydroxyl group and one amine group. It is a useful crosslinking reagent with a PEG spacer. Typically, it is offered as its HCl or TFA salt.

Molecular weight: 1000, 2000, 3400, 5000, 7500, 10k, 20k
Package size: 1g, 5g

OPSS-PEG-COOH

OPSS-PEG-COOH is a linear heterobifunctional PEG reagent with an OPSS and a carboxyl group. It is a useful crosslinking reagent with a PEG spacer. OPSS stands for orthopyridyl disulfide or ortho pyridyldithio and reacts with thiol, SH, sulfhydryl or mercapto to form a S-S bond. OPSS is sometimes called PDP, pyridyl dithio propionate. The COOH can react with amine or hydroxyl under standard acid/amine or acid/alcohol coupling conditions.

Molecular weight: 1000, 2000, 3500, 5000
Package size: 200mg, 500mg, 1g

OPSS-PEG-NH2

Ortho-pyridyl disulfide (OPSS) functionalized polyethylene glycol-amine (OPSS-PEG-NH2) is a thiol (-SH) group reactive PEG derivative that can be used to modify biomolecules or other materials via their available thiol groups. Ortho-pyridyl disulfide reacts with thiol group to form a stable disulfide bond while a thiol pyridyl group is released.

Molecular weight: 1000, 2000, 3500, 5000
Package size: 100mg, 500mg, 1g

OPSS-PEG-NHS

OPSS-PEG-NHS is a linear heterobifunctional PEG reagent with an OPSS and a NHS ester. It is a useful crosslinking reagent with a PEG spacer. OPSS stands for orthopyridyl disulfide or ortho pyridyldithio and reacts with thiol, SH, sulfhydryl or mercapto to form a S-S bond. OPSS is sometimes called PDP, pyridyl dithio propionate. NHS ester is an activated carboxylic acid and can react with amine.

Molecular weight: 1000, 2000, 3500, 5000, 10000
Package size: 100mg, 500mg, 1g

RhB-PEG-NHS

Rhodamine-PEG-succinimidyl ester (RhB-PEG-NHS) is a heterofunctional linker, which has active succinimidyl ester group on one end, and fluorescent probe (red) on the other end for labeling. NHS group can react with amine-containing groups.
**RhB-PEG-SH**

Thiol-Rhodamine (RhB-PEG-SH) is a heterofunctional linker, which has thiol group on one end for conjugation of thiol-containing ligands, and fluorescent probe (red) on the other end for labeling.

- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 50 mg

**Silane-PEG-Acrylate**

Silane-PEG-Acrylate (Acrylate-PEG-Silane, Silane-PEG-Acryl, or Acryl-PEG-Silane) is a linear heterobifunctional PEG reagent with an acrylate and a silane group. It is a useful crosslinking reagent with a PEG spacer. Acrylate can polymerize with UV light or radical initiator to form PEG hydrogel, and silane can react with glass or other hydroxylated surfaces.

- Molecular weight: 1000, 2000, 3500, 5000, 10K
- Package size: 200 mg, 500 mg, 1g

**Silane-PEG-Biotin**

Silane-PEG-Biotin is a linear heterobifunctional PEG reagent with a biotin and an silane.

- It is a useful crosslinking or bioconjugation reagent with a PEG spacer.
- Biotin can bind to avidin and streptavidin with high specificity and affinity. Silane can be used to react with glass, silica, or other hydroxylated particle surface.

- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g, 5g

**Silane-PEG-COOH**

Silane-PEG-COOH is a linear heterobifunctional PEG reagent with silane and carboxylic acid.

Ethoxy silane functionalized polyethylene glycol, silane PEG (PEG-Si) is a surface reactive PEG derivative that can be used to modify glass, silica and other surfaces via the reaction between hydroxyl group and ethoxy/methoxyl silane. Pegylation can greatly suppress the non-specific binding of charged molecules to the modified surfaces. And they have wide applications for medical device, biomems or biocompatible material development.

Typically, the functionalization of silica, known as silanization, begins with APTES and involves multiple steps to produce the desired functionality. However, with methoxy, azide, alkyne, and biotin functionalities, NSPs silane PEGs greatly reduces the steps required to create the desired functionality.

- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g, 5g

**Silane-PEG-Mal**

Silane-PEG-Maleimide (Silane-PEG-Mal) is a linear heterobifunctional PEG reagent with a maleimide and a silane.

- It is a useful crosslinking reagent with a PEG spacer. Maleimide reacts with thiols, SH, sulphydryl or mercapto, and silane group can react with glass or other hydroxylated surface or particle.
- It may be used to introduce thiol or cysteine reactive functional group on hydroxylated nanoparticle, microsphere, self-assembled monolayer or metal chips.
- Pegylation can greatly suppress the non-specific binding of charged molecules to the modified surfaces. And they have wide applications for medical device, biomems or biocompatible material development.

- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g, 5g
- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g, 5g

**Silane-PEG-Silane**

Silane-CH₂CH₂-O(CH₂CH₂)n-Silane

- Silane-PEG-silane is a linear bifunctional PEG with two reactive triethoxy silane groups.
- Silane PEG is often used to PEGylate glass and hydroxylated surfaces and particles.

(10247)
- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 1g, 5g

**tBoc-NH-PEG-NH₂**

t-Butoxycarbonyl-Amine-PEG-Amine (tBoc-NH-PEG-NH₂) is a linear heterobifunctional PEG reagent with Boc protected amine and a free amine. It is a useful crosslinking reagent with a PEG spacer. The free amine typically in the form of TFA or HCl salt can be used to react with carboxyl or NHS ester. The protected amine can be regenerated by mild acidic conditions.

![Typical method for Boc deprotection](image)

(2538)
- Molecular weight: 1000, 2000, 3500, 5000, 10k
- Package size: 1g, 5g

**tBoc-NH-PEG-OH**

tBoc-NH-PEG-OH is a linear heterobifunctional PEG derivative with one hydroxyl group and one Boc protected amine. It is a useful crosslinking reagent with a PEG spacer. The protected amine can be regenerated under mild acidic conditions.

(2548)
- Molecular weight: 1000, 2000, 3500, 5000, 10k
- Package size: 500mg, 1g, 5g

**Thiol-PEG-Amine/HS-PEG-NH₂**

Thiol-PEG-Amine (NH₂-PEG-SH, HS-PEG-NH₂) is a linear heterobifunctional PEGylation reagent with a thiol and an amine. It is a useful crosslinking or bioconjugation reagent with a PEG spacer. Thiol, or SH, sulfhydryl, or mercapto group selectively reacts with maleimide, OPSS, vinylsulfone and transition metal surface including gold, silver, etc.

(2585)
- Molecular Weight: 1000, 2000, 3500, 5000
- Package size: 100mg, 1g
Homobifunctional PEGs

AA-PEG-AA
Carboxyl methyl-PEG-carboxyl methyl (AA-PEG-AA) is one type of linear bifunctional PEG carboxylic acid reagents. There is a methylene (CH2) linkage between PEG and the COOH group. AA-PEG-AA is also called CM-PEG-CM, CM: carboxyl methyl. PEG acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

(2562)
- Molecular weight: 1000, 2000, 3400, 5000, 10K, 20K
- Package size: 1g, 5g, 10g

ACA-PEG-ACA
Acrylamide-PEG-Acrylamide (ACA-PEG-ACA) is a linear bifunctional crosslinking PEG reagent with one acrylamide at both ends of PEG. Acrylamide groups can be used for radical initiator induced polymerization or UV light sensitive photopolymerization. It is often used to form crosslinked polymer network and prepare PEG hydrogel.

(4399)
- Molecular weight: 1000, 2000, 3500, 5000, 10K, 20K
- Package size: 1g, 5g, 10g

ACRL-PEG-ACRL
Acrylate-PEG-Acrylate (ACRL-PEG-ACRL) is a linear bifunctional crosslinking PEG reagent with one acrylate at both ends of PEG. Acrylate groups can be used for radical initiator induced polymerization or UV light sensitive photopolymerization. It is often used to form crosslinked polymer network and prepare PEG hydrogel.

(3520)
- Molecular weight: 1000, 2000, 3500, 5000, 10K, 20K
- Package size: 1g, 5g, 10g

ALD-PEG-ALD
Aldehyde-PEG-Aldehyde (ALD-PEG-ALD) is a linear bifunctional crosslinking PEG reagent with one aldehyde at both ends of PEG. Aldehyde reacts with amine and N-terminal of peptide and protein to form an imine containing a C=N double bond, which can be further reduced to a more stable C-N bond. PEG aldehyde or ketone derivatives can be used in reversible PEGylation through its reaction with hydrazine or hydrazide forming a hydrolytic acyl hydrazone linkage.

(4411)
- Molecular weight: 1000, 2000, 5000, 10K, 20K
- Package size: 1g, 5g, 10g

ALK-PEG-ALK
Alkyne-PEG-Alkyne (ALK-PEG-ALK) is a linear bifunctional PEG reagent with two reactive alkyne or acetylene groups and it is used for PEGylation via a click chemistry reaction with azide.

(2623)
- Molecular weight: 1000, 2000, 3400, 5000, 10,000
- Package size: 1g, 5g, 10g

BIO-PEG-BIO
Biotin-PEG-biotin (BIO-PEG-BIO) can be used for crosslinking PEGylation by binding to streptavidin and avidin with high affinity and specificity. Biotin is conjugated to a linear PEG through a stable amide linker.

(2603)
- Molecular weight: 1000, 2000, 3500, 5000, 10k
- Package size: 1g, 5g, 10g

EPO-PEG-EPO
Epoxide-PEG-Epoxide (EPO-PEG-EPO) is a linear bifunctional crosslinking PEG reagent with one epoxide at both ends of PEG. Epoxide-PEG-Epoxide is often used to crosslink or PEGylate amine or hydroxyl containing molecules and surfaces.

(4405)
- Molecular weight: 1000, 2000, 5000, 10K, 20K
- Package size: 1g, 5g, 10g
GA-PEG-GA
Glutaric acid-PEG-Glutaryl acid (GA-PEG-GA) is one type of linear bifunctional PEG carboxylic acid reagents. There is a C3 ester linkage between PEG and the carboxy COOH group. PEG carboxyl acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

Molecular size: 1000, 2000, 3500, 5000, 10k, 20k
Package size: 1g, 5g, 10g

GAA-PEG-GAA
GAA-PEG-GAA is one type of linear bifunctional PEG carboxylic acid reagents. There is a C3 amide linkage between PEG and the carboxy COOH group. PEG carboxyl acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

Molecular size: 1000, 2000, 3500, 5000, 10k, 20k
Package size: 1g, 5g, 10g

GAS-PEG-GAS
Succinimidyl glutamic acid ester-PEG-succinimidyl glutamic acid ester (GAS-PEG-GAS) is a homobifunctional crosslinking PEG reagent to react with amine groups, and it is one type of NHS-PEG-NHS ester reagents. There is a C3 aliphatic amide linkage between PEG and the NHS ester.

Molecular weight: 1000, 2000, 3500, 5000, 10k
Package size: 1g, 5g

HS-PEG-SH
Thiol-PEG-Thiol (HS-PEG-SH) is a linear homobifunctional PEG with two reactive free thiol, SH, sulfhydryl, or mercapto groups that selectively react with maleimide and transition metal surface including gold, silver, etc. HS-PEG-SH can be easily air oxidized and polymerized via S-S disulfide bonds, which can be reversed with reducing agents. It is a useful reagent for reversible crosslinking PEGylation.

Molecular weight: 1000, 2000, 3500, 5000, 10k
Package size: 1g, 5g

IA-PEG-IA
Iodoacetyl-poly(ethylene glycol)-Iodoacetyl (IA-PEG-IA) is a linear bifunctional crosslinking PEG reagent with one iodoacetyl at both ends of PEG that can be used to modify biomolecules or other materials via their available thiol groups. Iodine group can be easily replaced by thiol group to form a stable carbon thiol bond.

MAL-PEG-MAL
Maleimide-PEG-maleimide (MAL-PEG-MAL) is a linear bifunctional PEGylation cross linker with two maleimide groups. MAL selectively reacts with free thiol, sulfhydryl, or mercapto group via Michael addition to form a stable carbon sulfur bond. MAL-PEG-MAL can be used for site specific protein and peptide crosslinking.

Molecular weight: 1000, 2000, 3500, 5000, 7500
Package size: 1g, 5g, 10g

N3-PEG-N3
Azide-PEG-Azide (N3-PEG-N3) is a linear bifunctional PEG reagent with two reactive azides and it is used for crosslinking PEGylation via a click chemistry reaction between azide and alkyne or acetylene.
NH2-PEG-NH2
Amine-PEG-Amine (NH2-PEG-NH2) is a linear bifunctional PEG crosslinking reagent with a reactive primary amine or NH2 group that can rapidly react with activated carboxylic acid or carboxyl groups such as NHS ester to form stable amide bonds.

NPC-PEG-NPC
Poly(ethylene glycol) bis(nitrophenyl carbonate) (NPC-PEG-NPC) is a linear PEG reagent with reactive nitrophenyl carbonate or NPC group on both ends that can rapidly react with amine group.

OPSS-PEG-OPSS
OPSS-PEG-OPSS is a bifunctional PEGylation reagent, also called PDP-PEG-PDP. POP 3-(2-pyridyldithio) propionic acid. The orthopropyli disulfide or pyridyldithio functional group selectively reacts with free thiol, SH, sulfhydryl or mercapto to form a oxidation, reduction reversible PEG disulfide bond.

SA-PEG-SA
Succinic acid-PEG-succinic acid (SA-PEG-SA) is one type of linear bifunctional PEG carboxylic acid reagents. There is a C2 ester linkage between PEG and the carboxy COOH group. PEG carboxyl acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

SAA-PEG-SAA
SAA-PEG-SAA is one type of linear bifunctional PEG carboxylic acid reagents. There is a C2 amide linkage between PEG and the carboxy COOH group. PEG carboxyl acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

SAS-PEG-SAS
SAS-PEG-SAS is a homobifunctional crosslinking PEG reagent to react with amine groups, and it is one type of NHS-PEG-NHS ester reagents. There is a C2 aliphatic amide linkage between PEG and the NHS ester.

SG-PEG-SG
SG-PEG-SG is a homobifunctional crosslinking PEG reagent to react with amine groups, and it is one type of NHS-PEG-NHS ester reagents. There is a C3 aliphatic ester linkage between PEG and the NHS ester.
SS-PEG-SS

SS-PEG-SS is a homobifunctional crosslinking PEG reagent to react with amine groups, and it is one type of NHS-PEG-NHS ester reagents. There is a C2 aliphatic ester linkage between PEG and the NHS ester.

(2574)
- Molecular weight: 1000, 2000, 3500, 5000, 10k
- Package size: 1g, 5g, 10g

VS-PEG-VS

Vinylsulfone-PEG-vinylsulfone (VS-PEG-VS) from Nanosoft Polymers is a thiol reactive homobifunctional PEG for sulfhydryl pegylation at high pH. Homobifunctional PEG derivatives have numerous applications as crosslinkers for PEGylation of proteins and peptides, nanoparticle and surface modifications. Conjugation with homobifunctional PEGs ensures an increased drug load compared to pegylation with linear PEGs.

(3513)
- Molecular weight: 1000, 2000, 3500, 5000, 20k
- Package size: 1g, 5g
Linear Monofunctional PEGs

**MPEG-AA**
Methoxyl poly(ethylene glycol) carboxyl acid (MPEG-AA) is one type of linear monofunctional PEG acid reagents. There is a methylene (CH2) linkage between PEG and the COOH group. MPEG-AA is also called MPEG-CM, carboxyl methyl. PEG acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

(2495)
- Molecular weight: 1000, 2000, 5000, 10K, 20K
- Package size: 1g, 5g, 10g

**MPEG-ACRL**
Methoxypoly(ethylene glycol) Acrylate (MPEG-ACRL) is a linear monofunctional PEG reagent with an acrylate group that can be used for radical initiator or UV light induced polymerization. It is often used to prepare PEG hydrogel. MPEG-methacyrulate is provided through our custom synthesis service.

(2523)
- Molecular weight: 1000, 2000, 5000, 10K, 20K
- Package size: 1g, 5g, 10g

**MPEG-ALD**
Methoxypoly(ethylene glycol) Aldehyde (propionaldehyde) (MPEG-ALD) reacts with amine and N-terminal of peptide and protein to form an imine containing a C=N double bond, which can be further reduced. PEG aldehyde or ketone derivatives can be used in reversible PEGylation through its reaction with hydrazine or hydrazide forming a hydrolytic acyl hydrazide linkage. PEG butyraldehyde may be offered through custom synthesis.

(2529)
- Molecular weight: 1000, 2000, 5000, 10K, 20K
- Package size: 1g, 5g

**MPEG-ALK**
Methoxy poly(ethylene glycol)-alkyne (MPEG-ALK) is one type of linear monofunctional PEG reagents with an alkyne group end. MPEG-ALK can be used to conjugate azide (N3) group-containing ligand by click chemistry.

(4302)
- Molecular weight: 1000, 2000, 5000, 10K, 20K
- Package size: 1g, 5g

**MPEG-BIO**
Methoxypoly(ethylene glycol)-biotin (MPEG-BIO) can be used for PEGylation by binding to streptavidin and avidin with high affinity and specificity. Biotin is conjugated to a linear PEG through a stable amide linker.

(2520)
- Molecular weight: 1000, 2000, 5000, 10K, 20K
- Package size: 1g, 5g

**MPEG-GA**
MPEG-GA is one type of linear monofunctional PEG carboxylic acid reagents. There is a C3 aliphatic ester linkage between PEG and the COOH group. PEG carboxyl acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

(4507)
- Molecular size: 1000, 2000, 5000, 10K, 20K
- Package size: 1g, 5g, 10g

**MPEG-GAA**
MPEG-GAA is one type of linear monofunctional PEG carboxylic acid reagents. There is a C3 amide linkage between PEG and the carboxy COOH group. PEG carboxyl acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

(4486)
- Molecular size: 1000, 2000, 5000, 10K, 20K
- Package size: 1g, 5g, 10g
MPEG-GAS
MPEG-glutaramide succinimidyl ester (MPEG-GAS) is one type of MPEG-NHS ester reagents. There is a C3 aliphatic amide linkage between PEG and the NHS ester. MPEG-GAS can be used to react with amine-containing molecules (peptides, proteins etc.).

(2535)
- Molecular weight: 1000, 2000, 5000, 10K, 20K
- Package size: 1g, 5g, 10g

MPEG-HZ
Methoxypoly(ethylene glycol) Hydrazide (MPEG-HZ) can react with carbonyl compounds including ketone or aldehyde to form an acyl hydrazone linkage, which is pH sensitive and can be used for reversible PEGylation. Hydrazine PEG is also used to PEGylate carboxyl, carboxylic acid groups.

(2517)
- Molecular weight: 2000, 5000, 10K, 20K
- Package size: 1g, 5g, 10g

MPEG-Iodoyacetyl
Methoxy poly(ethylene glycol)-Iodolacetyl (MPEG-IA) is one type of linear monofunctional PEG acid reagents. PEG-IA can be used to react with thiol groups.

Haloacetyl reaction chemistry: The most commonly used haloacetyl crosslinkers contain an iodoacetyl or a bromoacetyl group. Haloacetyls react with sulfhydryl groups at physiologic pH. The reaction of the iodoacetyl group proceeds by nucleophilic substitution of iodine with a sulfur atom from a sulfhydryl group, resulting in a stable thioether linkage.

(8962)
- Molecular weight: 1000, 2000, 5000, 10K, 20K
- Package size: 1g, 5g

MPEG-MAL
Methoxypoly(ethylene glycol) Maleimide
MPEG-MAL is a linear monofunctional methyl ether PEG with a reactive maleimide group. MAL selectively reacts with free thiol, sulfhydryl, or mercapto group via Michael addition to form a stable carbon sulfur bond. mPEG-MAL can be used for site specific protein and peptide modification.

(2510)
- Molecular weight: 1000, 2000, 5000, 10K, 20K, 30K
- Package size: 1g, 5g

mPEG-Mesylate
mPEG-Mesylate is a linear monofunctional PEG reagent with a mesyl, also called methanesulfonyl, which is good leaving group for nucleophilic substitution reaction (SN2).

(9690)
- Molecular weight: 1K, 2K, 5K, 10K, 20K, 30K
- Package size: 1g, 5g

MPEG-N3
Methoxypoly(ethylene glycol) Azide (MPEG-N3) is a linear monofunctional PEG reagent with a reactive azide (N3) and it is used for PEGylation via a click chemistry reaction with alkyne or acetylene.
Molecular weight: 1000, 2000, 5000, 10K, 20K, 30K
Package size: 1g, 5g, 10g

MPEG-NH₂

Methoxypoly(ethylene glycol) amine (MPEG-NH₂) is a linear methoxy PEG reagent with a reactive primary amine or NH₂ group that can rapidly react with activated carboxyl acid such as NHS ester to form stable amide bonds. Amine can also react with carbonyl such as ketone and aldehyde.

Molecular weight: 1000, 2000, 5000, 10K, 20K, 30K
Package size: 1g, 5g

MPEG-NPC

Methoxypoly(ethylene glycol) nitrophenyl carbonate (mPEG-NPC) is a linear methoxy PEG reagent with a reactive nitrophenyl carbonate or NPC group that can rapidly react with amine group.

Molecular weight: 1000, 2000, 5000, 10K, 20K, 30K
Package size: 1g, 5g, 10g

MPEG-OPSS

MPEG-Orthopyridyl Disulfide (mPEG-OPSS) has an orthopyridyl disulfide or pyridyldithio functional group which can selectively reacts with free thiol, SH, sulfhydryl or mercapto to form an oxidation, reduction reversible disulfide bond.

Molecular weight: 1000, 2000, 5000, 10K, 20K
Package size: 1g, 5g

MPEG-SA

MPEG-SA is one type of linear monofunctional PEG carboxylic acid reagents. There is a C₂ aliphatic ester linkage between PEG and the COOH group. PEG carboxyl acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

Molecular weight: 1000, 2000, 5000, 10K, 20K
Package size: 1g, 5g, 10g

MPEG-SAA

MPEG-SAA is one type of linear monofunctional PEG carboxylic acid reagents. There is a C₂ amide linkage between PEG and the carboxy COOH group. PEG carboxyl acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

Molecular weight: 1000, 2000, 5000, 10K, 20K
Package size: 1g, 5g, 10g

MPEG-SAS

MPEG-SAS is one type of MPEG-NHS ester reagents. There is a C₂ aliphatic amide linkage between PEG and the NHS ester.

Molecular weight: 1000, 2000, 5000, 10K, 20K
Package size: 1g, 5g, 10g

MPEG-SC

MPEG Succinimidyl Carbonate (MPEG-SC) is one type of mPEG-NHS reagents. There is a methylene (CH₂) linkage between PEG and the NHS ester. Active NHS ester can be used to conjugate amine-containing ligands.

Molecular weight: 1000, 2000, 5000, 10K, 20K
Package size: 1g, 5g, 10g
MPEG-SH

Methoxy poly(ethylene glycol) Thiol (MPEG-SH) is linear monofunctional PEG with a reactive free thiol, SH, cysteine, sulfhydryl, or mercapto group that selectively reacts with maleimide and transition metal surface including gold, silver, etc. MPEG-SH can be easily air oxidized to form a dimer via a S-S disulfide bond, which can be reversed with reducing agents. It is a useful reagent for reversible PEGylation.

(2514)
- Molecular weight: 2000, 5000, 10K, 20K
- Package size: 1g, 5g, 10g

MPEG-Silane

Methoxypoly(ethylene glycol) Silane

mPEG-silane is a linear monofunctional methyl ether PEG with a reactive tri-ethoxy silane group. mPEG-silane with methoxy is offered through custom synthesis. Silane PEG is often used to PEGylate glass and hydroxylated surfaces and particles.

(2526)
- Molecular weight: 1000, 2000, 5000, 10K, 20K
- Package size: 1g, 5g, 10g

MPEG-Silane

Methoxypoly(ethylene glycol) Silane

- MPEG-silane is a linear monofunctional methyl ether PEG with a reactive tri-ethoxy silane group.
- Silane PEG is often used to PEGylate glass and hydroxylated surfaces and particles.

(10096)
- Molecular weight: 1000, 2000, 5000, 10K, 20K
- Package size: 100mg, 1g, 5g

MPEG-SS

Methoxypoly(ethylene glycol) Succinimidyl Succinate (MPEG-SS) is one type of mPEG-NHS ester reagents. There is a C2 aliphatic ester linkage between PEG and the NHS ester. NHS stands for N-Hydroxyl succinimide.

(2532)
- Molecular weight: 2000, 5000, 10K, 20K
- Package size: 1g, 5g, 10g

MPEG-VS

Methoxyl-PEG-vinylsulfone (MPEG-VS) from Nanosoft Polymers is a thiol reactive monofunctional PEG for sulhydryl pegylation at high pH. MPEG derivatives have numerous applications as crosslinkers for PEGylation of proteins and peptides, nanoparticle and surface modifications. Conjugation with homobifunctional PEGs ensures an increased drug load compared to pegylation with linear PEGs.

(3515)
- Molecular weight: 2000, 5000, 20K
- Package size: 1g, 5g
Monomers

<table>
<thead>
<tr>
<th>Monomer</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>D-Lactide</strong></td>
<td>D-lactide is used to synthesize biodegradable polymer poly(D-Lactide).</td>
</tr>
<tr>
<td><strong>D,L-Lactide</strong></td>
<td>D,L-Lactide is used to synthesize poly(D,L-lactic acid) or poly(Lactic-go-glycolide) (PLGA), which is biodegradable and extensively used in (FDA) approved therapeutic devices or for drug delivery.</td>
</tr>
<tr>
<td><strong>L-Lactide</strong></td>
<td>L-Lactide is used to synthesize poly(L-lactic acid) by ring-opening polymerization.</td>
</tr>
<tr>
<td><strong>N6-Trifluoroacetyl-L-lysine NCA</strong></td>
<td></td>
</tr>
</tbody>
</table>
Chemical name: N6-Trifluoroacetyl-L-lysine N-Carboxyanhydride, N6-Trifluoroacetyl-L-lysine NCA

Synonyms: N-[4-[(4S)-2,5-Dioxo-4-oxazolidinyl]butyl]-2,2,2-trifluoroacetamide; (S)-N-[4-(2,5-Dioxo-4-oxazolidinyl)butyl]-2,2,2-trifluoroacetamide; Lys(Tfa)-NCA

CAS Number: 42267-27-8

Possible CAS #: NA

Molecular form: C₉H₁₁F₃N₂O₄

Appearance: White to Off-White Solid

Melting Point: 98-101°C

Mol. Weight: 268.19

Storage: -20˚C Freezer, Under Inert Atmosphere

Solubility: DMSO, Ethyl Acetate

Stability: No Data Available

Category: Amino Acids & Derivatives, Aromatics, Chiral Reagents, Heterocycles

Applications:
Used in the synthesis of new arborescent architectures of poly(L-lysine), called lysine dendrigraft (DGL) polymers. DGL polymers were prepd. through a multiple-generation scheme (up to generation 5) in a weakly acidic aq. medium by polycondensing N-vepsiln.-trifluoroacetyl-L-lysine-N-carboxyanhydride (Lys(Tfa)-NCA) onto the previous generation G(n-1) of DGL, which was used as a macroinitiator.

(4601)

Package size: 1g, 5g, 10g

β-Benzyl L-Aspartic Acid NCA

β-Benzyl L-Aspartic Acid NCA, (4S)-2,5-Dioxo-4-oxazolidineacetic Acid Phenylmethyl Ester; L-2,5-Dioxo-4-oxazolidineacetic Acid Benzyl Ester; L-Aspartic acid β-benzyl ester N-carboxylic acid anhydride; β-Benzyl L-aspartate N-carboxyanhydride

(10076)

Package Size: 1g, 5g, 10g

γ-Benzyl Glutamate NCA
Chemical Name: (4S)-2,5-Dioxo-4-oxazolidinepropanoic Acid Phenylmethyl Ester
Synonyms: (+)-(S)-Glutamic Acid γ-Benzyl Ester N-carboxyanhydride; 5-Benzyl L-Glutamate N-
Carboxyanhydride; L-Glutamic Acid γ-benzyl ester N-carboxyanhydride; L-γ-Benzylglutamic Acid
Carboxyanhydride; N-Carboxy-γ-benzyl L-glutamate N-carboxyanhydride; γ-Benzyl-L-glutamate N-carboxyanhydride; γ- Benzy1 L-Glutamate N-carboxyanhydride; γ-Benzyl N-carboxy L-
glutamic Anhydride; γ-Benzyl Glutamate N-carboxyanhydride; γ-Benzyl Glutamate NCA; γ-Benzyl-L-glutamic
Acid; γ-Benzyl Glutamate NCA
CAS Number: 3190-71-4
Possible CAS Number: NA
Appearance: White Solid
Melting Point: >225°C (dec.)
Mol. Weight: 263.25

(4608)
* Package size: 1g, 5g, 10g
Polyester-PEGs

**ACRL-PCL-PEG-ALK**
Acrylate-poly(caprolactone)-b-poly(ethylene glycol)-alkyne (ACRL-PCL-PEG-ALK) is a biofunctional amphiphilic block copolymer with alkyn group at the end of PEG and acrylate at the end of poly(caprolactone). Alkyne groups are useful for coupling via click chemistry reactions with azide, while acrylate groups can be used for radical initiator induced polymerization or UV light sensitive photo-polymerization. It is often used to form crosslinked polymer network and prepare PEG hydrogel. ACRL-PCL-PEG-Alkyn is used to prepare micelles or nanoparticles with alkyn on the micelle surface for bioconjugation via click chemistry and acrylate in the micelle core for crosslinking. Hydrophobic drugs is encapsulated in the PCL core for targeted drug delivery.

(9210)
- PCL Molecular Weight:10000, 5000
- PEG Molecular Weight:5000, 3400, 2000
- Package Size:100 mg

**ACRL-PLA-PEG-ALK**
Acrylate-poly[(L-lactide)-b-poly(ethylene glycol)]-alkyne (ACRL-PLA-PEG-ALK) is a biofunctional amphiphilic block copolymer with alkyn group at the end of PEG and acrylate at the end of poly(L-Lactide). Alkyne groups are useful for coupling via click chemistry reactions with azide, while acrylate groups can be used for radical initiator induced polymerization or UV light sensitive photo-polymerization. It is often used to form crosslinked polymer network and prepare PEG hydrogel. ACRL-PLA-PEG-Alkyn is used to prepare micelles or nanoparticles with alkyn on the micelle surface for bioconjugation via click chemistry and acrylate in the micelle core for crosslinking. Hydrophobic drugs is encapsulated in the PLA core for targeted drug delivery.

(9201)
- PLA Molecular Weight:10000, 5000
- PEG Molecular Weight:2000, 5000
- Package Size:100 mg

**ACRL-PLGA-PEG-ALK**
Acrylate-poly(Lactide-co-glycolide)-b-poly(ethylene glycol)-alkyne (ACRL-PLGA-PEG-ALK) is a biofunctional amphiphilic block copolymer with alkyn group at the end of PEG and acrylate at the end of poly(caprolactone). Alkyne groups are useful for coupling via click chemistry reactions with azide, while acrylate groups can be used for radical initiator induced polymerization or UV light sensitive photo-polymerization. It is often used to form crosslinked polymer network and prepare PEG hydrogel. ACRL-PLGA-PEG-Alkyn is used to prepare micelles or nanoparticles with alkyn on the micelle surface for bioconjugation via click chemistry and acrylate in the micelle core for crosslinking. Hydrophobic drugs is encapsulated in the PLGA-core for targeted drug delivery.

(9218)
- PLGA Molecular Weight:10000, 5000
- PEG Molecular Weight:5000, 3400, 2000
- Package Size:100 mg

**MPEG-PLA-COOH**
Methoxy poly(ethylene glycol)-poly(L-lactide) carboxylic acid (MPEG-PLA-COOH) is a functional biodegradable amphiphilic block copolymers (ABCs) which has -COOH group at the end of PLA block, is used to prepare nanoparticles and micelles for drug delivery. Micelle core can be further modified by -COOH group to increase drug loading efficiency or micelle stability.

(9818)
- PEG Molecular Weight:2000, 5000
- PLA Molecular Weight:2000, 5000, 10K
- Package Size:100mg, 1g

**MPEG-PLGA**
Poly[(lactide-co-glycolide)-b-poly(ethylene glycol)] methyl ether (MPEG-PLGA) is one of the most commonly used biodegradable amphiphilic block copolymers (ABCs) for drug delivery applications. PEG is the hydrophilic part and PLGA is the hydrophobic part. Amphiphilic block copolymers (AmBC) consist two chemically different homopolymer blocks. One of the block is hydrophilic and the other one is hydrophobic. These macromolecules have the properties to self-assemble into micelles when dissolved in an aqueous media.

(2753)
- PLGA Molecular Weight:1000, 2000, 3000, 4000, 5000, 10K
- PEG Molecular Weight:1000, 2000, 5000
- Package size:1g, 10g
mPEG-PLGA-COOH

- Methoxy poly(ethylene glycol)-b-Poly(lactide-co-glycolide) carboxylic acid (mPEG-PLGA-COOH) is a biodegradable biografted amphiphilic block copolymer (ABC) with terminated carboxylic group at the end of PLGA block for drug drug conjugation. PEG is the hydrophilic part and PLGA is the hydrophobic part.

- Amphiphilic block copolymers (ABC) consist of chemically different homopolymer blocks. One of the block is hydrophilic and the other one is hydrophobic. These macromolecules have the properties to self-assemble into micelles when dissolved in an aqueous medium.

(9780)
- PLGA Molecular Weight: 2K, 5K, 10K
- PEG Molecular Weight: 1K, 2K, 5K
- Package Size: 100mg, 1g

PCL-PEG-ALK

Poly(ε-caprolactone)-block-poly(ethylene glycol)-alkyne (PCL-PEG-ALK) is a functional amphiphilic block copolymer with alkyn group at the end of PEG. Alkyn groups are useful for coupling via click chemistry reactions with azide. PCL-PEG-Alkyne is used to prepare micelles or nanoparticles with alkyn on the micelle surface for bioconjugation via click chemistry. Hydrophobic drugs is encapsulated in the PCL core for targeted drug delivery.

(3473)
- PCL Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

PCL-PEG-BIO

Poly(ε-caprolactone)-block-poly(ethylene glycol)-Biotin (PCL-PEG-BIO) is a functional amphiphilic block copolymer (ABC) which has biotin group at the end of PEG block and is used to prepare nanoparticles and micelles for targeted drug delivery. PCL-PEG is one of the most commonly used biodegradable ABC polymers for drug delivery. Biotin can bind to avidin and streptavidin with high specificity and affinity.

(2673)
- PCL Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

PCL-PEG-COOH

Poly(ε-caprolactone)-block-poly(ethylene glycol)-carboxylic acid (PCL-PEG-COOH) is a functional amphiphilic block copolymer (ABC) which has carboxylic group at the end of PEG block and is used to prepare nanoparticles and micelles for targeted drug delivery. PCL-PEG is one of the most commonly used biodegradable ABC polymers for drug delivery.

(2655)
- PCL Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

PCL-PEG-FITC

Poly(ε-caprolactone)-block-poly(ethylene glycol)-Fluorescein (PCL-PEG-FITC) is a fluorescein-labeled amphiphilic block copolymer. PCL-PEG is one of the most commonly used biodegradable ABC polymers for micelle-based drug encapsulation, drug solubilization and drug delivery.

(2685)
- PCL Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 50mg

PCL-PEG-MAL

Poly(ε-caprolactone)-PEG-Maleimide (PCL-PEG-MAL) is a functional amphiphilic block copolymer to prepare targeted micelles or nanoparticles. Maleimide can conjugate with thiol, SH, sulfhydryl or mercapto group to form a disulfide bond.
Poly(ε-caprolactone)-block-poly(ethylene glycol)-azide (PCL-PEG-N3) is a functional amphiphilic block copolymer with azide group at the end of PEG. Azide groups are useful for coupling via click chemistry reactions with alkynes. PCL-PEG-N3 is used to prepare micelles or nanoparticles with azide on the micelle surface for bioconjugation via click chemistry. Hydrophobic drugs is encapsulated in the PCL core for targeted drug delivery.

Poly(ε-caprolactone)-block-poly(ethylene glycol)-Amine (PCL-PEG-NH2) is a functional amphiphilic block copolymer (ABC) which has amine group at the end of PEG block and is used to prepare nanoparticles and micelles for targeted drug delivery. PCL-PEG is one of the most commonly used biodegradable ABC polymers for drug delivery.

Poly(ε-caprolactone)-poly(ethylene glycol)-succinic ester (PCL-PEG-NHS)  is a biodegradable amphiphilic copolymer with amine-reactive ester group at the PEG end. PCL-PEG-NHS is used to prepare polymeric micelle where its PEG shell which can be modified by targeting moieties, and hydrophobic drugs like paclitaxel can be packaged in its PLA core.

Poly(ε-caprolactone)-block-poly(ethylene glycol)-orthopyridyl disulfide  (PCL-PEG-OPSS) is a functional amphiphilic block copolymer with orthopyridyl disulfide group at PEG end. Orthopyridyl disulfide or pyridyldithio functional group can selectively reacts with free thiol, SH, sulfhydryl or mercapto to form a oxidation, reduction reversible disulfide bond. Micelles or nanoparticles from PCL-PEG-OPSS can be modified via OPSS for targeted drug delivery.

Poly(ε-caprolactone)-PEg-Rhodamine (PCL-PEG-RhB) is a rhodamine-labeled amphiphilic block copolymer. PLA-PEG is one of the most commonly used biodegradable ABC polymers for micelle-based drug encapsulation, drug solubilization and drug delivery.

Poly(ε-caprolactone)-block-poly(ethylene glycol)-Thiol (PCL-PEG-SH) is a functional amphiphilic block copolymer to prepare targeted micelles or nanoparticles. Thiol, or SH, sulfhydryl, or mercapto group selectively reacts with maleimide, OPSS, vinylsulfone and transition metal surface including gold, silver, etc.
PCL-PEG-VS
Poly(ε-caprolactone)-block-poly(ethylene glycol)-vinylsulfone (PCL-PEG-VS) is a functional amphiphilic block copolymer with vinylsulfone group at the end of PEG. Vinylsulfone groups are useful for coupling via Michael addition reactions with thiol. PCL-PEG-VS is used to prepare micelles or nanoparticles with alkyne on the micelle surface for bioconjugation. Hydrophobic drugs is encapsulated in the PCL core for targeted drug delivery.

PDLLA-MPEG
Poly(D,L-lactide)-PEG-methyl ether (PDLLA-MPEG) is an amphiphilic block copolymer (ABC), which can self-assemble into polymeric micelles. PDLLA-PEG is one of the most commonly used biodegradable polymers for drug encapsulation, drug solubilization and drug delivery.

PLA-PEG-ALK
Poly(L-lactide)-b-poly(ethylene glycol)-alkyne (PLA-PEG-ALK) is a functional amphiphilic block copolymer with alkyne group at the end of PEG. Alkyne groups are useful for coupling via click chemistry reactions with azide. PLA-PEG-Alkyne is used to prepare micelles or nanoparticles with alkyne on the micelle surface for bioconjugation via click chemistry. Hydrophobic drugs is encapsulated in the PLA core for targeted drug delivery.

PLA-PEG-BIO
Poly(L-lactide)-block-poly(ethylene glycol)-Biotin (PLA-PEG-Bio) is a functional amphiphilic block copolymer (ABC) which has biotin group at the end of PEG and is used to prepare nanoparticles and micelles for targeted drug delivery. PLA-PEG is one of the most commonly used biodegradable ABC polymers for drug delivery. Biotin can bind to avidin and streptavidin with high specificity and affinity.

PLA-PEG-COOH
Poly(L-lactide)-block-poly(ethylene glycol)-carboxylic acid (PLA-PEG-COOH) is a functional amphiphilic block copolymer (ABC) which has carboxylic group at the end of PEG block and is used to prepare nanoparticles and micelles for targeted drug delivery. PLA-PEG is one of the most commonly used biodegradable ABC polymers for drug delivery.

PLA-PEG-FITC
Poly(L-Lactide)-PEG-FITC (PLA-PEG-FITC) is a fluorescein-labeled amphiphilic block copolymer. PLA-PEG is one of the most commonly used biodegradable ABC polymers for micelle-based drug encapsulation, drug solubilization and drug delivery.
PLA-PEG-MAL

Poly(L-lactide)-PEG-Maleimide (PLA-PEG-Mal) is a functional amphiphilic block copolymer to prepare targeted micelles or nanoparticles. Maleimide can conjugate with thiol, SH, sulfhydryl or mercapto group to form a disulfide bond.

Block copolymer micelles are widely used in drug delivery applications. PEG-PLA is a biodegradable polymeric micelle which is used as carriers for hydrophobic drugs like paclitaxel. PEG is the hydrophilic part and PLA is the hydrophobic part which forms the micelle core wherein the hydrophobic drug is loaded.

(2725)

- PLA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10000
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

PLA-PEG-N3

Poly(L-lactide)-b-poly(ethylene glycol)-azide (PLA-PEG-N3) is a functional amphiphilic block copolymer with azide group at the end of PEG. Azide groups are useful for coupling via click chemistry reactions with alkynes. PLA-PEG-N3 is used to prepare micelles or nanoparticles with azide on the micelle surface for bioconjugation via click chemistry. Hydrophobic drugs is encapsulated in the PLA core for targeted drug delivery.

(2715)

- PLA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10000
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

PLA-PEG-NH2

Poly(L-lactide)-block-poly(ethylene glycol)-Amine (PLA-PEG-NH2) is a functional amphiphilic block copolymer (ABC) which has amine group at the end of PEG block and is used to prepare nanoparticles and micelles for targeted drug delivery. PLA-PEG is one of the most commonly used biodegradable ABC polymers for drug delivery.

Specified molecular weight and molecular ratio may be available by custom synthesis. Please call for ask.

(2707)

- PLA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10000
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

PLA-PEG-NHS

Poly(L-lactide)-block-poly(ethylene glycol)-succinic ester (PLA-PEG-NHS) is a biodegradable amphiphilic block copolymer with amine-reactive ester group at the PEG end. PLA-PEG-NHS is used to prepare polymeric micelles where its PEG shell which can be modified by targeting moieties, and hydrophobic drugs like paclitaxel can be packaged in its PLA core.

(2719)

- PLA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10000
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

PLA-PEG-OPSS

Poly(L-lactide)-PEG-OPSS (PLA-PEG-OPSS) is a functional amphiphilic block copolymer which has orthopyridyl disulfide group at PEG end. Orthopyridyl disulfide or pyridyl disulfide functional group can selectively reacts with free thiol, SH, sulfhydryl or mercapto to form a oxidation, reduction reversible disulfide bond. Micelles or nanoparticles from PLA-PEG-OPSS can be modified via OPSS for targeted drug delivery.

(3304)

- PLA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
PEG Molecular Weight: 1000, 2000, 3000, 5000
Package size: 100mg, 1g

PLA-PEG-RhB
Poly(L-lactide)-PEG-Rhodamine (PLA-PEG-RhB) is a rhodamine-labeled amphiphilic block copolymer. PLA-PEG is one of the most commonly used biodegradable ABC polymers for micelle-based drug encapsulation, drug solubilization and drug delivery.

(4557)
- PLA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10000
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 50mg

PLA-PEG-SH
Poly(L-lactide)-PEG-Thiol (PLA-PEG-SH) is a functional amphiphilic block copolymer to prepare targeted micelles or nanoparticles. Thiol, or SH, sulfhydryl, or mercapto group selectively reacts with maleimide, OPSS, vinylsulfone and transition metal surface including gold, silver, etc.

(3298)
- PLA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

PLA-PEG-VS
Poly(L-lactide)-b-poly(ethylene glycol)-vinylsulfone (PLA-PEG-VS) is a functional amphiphilic block copolymer with vinylsulfone (VS) group at the end of PEG. Vinylsulfone groups are useful for coupling thiol-containing targeting ligands via Michael addition. PLA-PEG-VS is used to prepare micelles or nanoparticles with vinylsulfone on the micelle surface for bioconjugation. Hydrophobic drugs is encapsulated in the PLA core for targeted drug delivery.

(8562)
- PLA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10000
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg

PLGA-PEG-ALK/PLGA-PEG-Alkyne
Poly(Lactide-co-glycolide)-b-poly(ethylene glycol)-alkyne (PLGA-PEG-ALK, PLGA-PEG-Alkyne) is a functional amphiphilic block copolymer with alkyne group at the end of PEG. Alkyne groups are useful for coupling via click chemistry reactions with azide. PLGA-PEG-Alkyne is used to prepare micelles or nanoparticles with alkyne on the micelle surface for bioconjugation via click chemistry. Hydrophobic drugs is encapsulated in the PLGA core for targeted drug delivery.

(3491)
- PLGA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg

PLGA-PEG-COOH
Poly(lactide-co-glycolide)-block-poly(ethylene glycol) - carboxylic acid (PLGA-PEG-COOH) has a carboxylic acid group at the PEG ends, which is used in the preparation of targeted nanoparticles (micelles) for differential delivery and controlled release of drugs.
PLGA-PEG-DBCO
Poly(L-lactide-co-glycolide)-poly(ethylene glycol) with dibenzocyclooctyne (PLGA-PEG-DBCO) is a linear heterobifunctional PEGylation reagent with a PLGA and an DBCO for Cu-free chemistry. PLGA-PEG-DBCO can go Click Chemistry reaction without a need of any metal catalysts. The strain-promoted 1,3-dipolar cycloaddition of cyclooctynes and azides, also termed as the Cu-free click reaction, is a bioorthogonal reaction that enables the conjugation of two molecules in aqueous solution. DBCO reagents can be used to label azide-modified biomolecules spontaneous without the need for toxic Cu catalysts. The reaction of azides with strained alkenes, such as cyclooctynes, readily forms a triazole product without the need for a toxic catalyst. PEGylation can increase solubility and stability and reduce immunogenicity of peptides and proteins. It can also suppress the non-specific binding of charged molecules to the modified surfaces.

Poly(lactide-co-glycolide)-b-poly(ethylene glycol) ) is one the most commonly used biodegradable amphiphilic block copolymers (ABCs) for drug delivery applications. PEG is the hydrophilic part and PLGA is the hydrophobic part. Amphiphilic block copolymers (AmBC) consist two chemically different homopolymer blocks. One of the block is hydrophilic and the other one is hydrophobic. These macromolecules have the properties to self-assemble into micelles when dissolved in an aqueous media.

PLGA-PEG-FITC
Poly(L-lactide-co-glycolide)-PEG-FITC (PLGA-PEG-FITC) is a fluorescein-labeled amphiphilic block copolymer. PLGA-PEG is one of the most commonly used biodegradable and biocompatible ABC polymers for micelle-based drug encapsulation, drug solubilization and drug delivery.

PLGA-PEG-IA
Poly(lactide-co-glycolide)-b-poly(ethylene glycol)-iodolacetyl (PLGA-PEG-IA) is a functional amphiphilic block copolymer with iodolacetyl group at the end of PEG. Iodolacetyl (IA) is a thiol (-SH) reactive group that can be used to modify biomolecules or other materials via their available thiol groups. Iodine group can be easily replaced by thiol group to form a stable carbon thiol bond. PLGA-PEG-IA is used to prepare micelles or nanoparticles with iodolacetyl group on the micelle surface for bioconjugation via thiol substitution. Hydrophobic drugs is encapsulated in the PLGA core for targeted drug delivery.

PLGA-PEG-MAL
Poly(lactide-co-glycolide)-PEG-Maleimide (PLGA-PEG-MAL, PLGA-PEG-Maleimide) is a functional amphiphilic block copolymer with maleimide group at the end of PEG. PLGA-PEG-MAL can self assemble into micelles/nanoparticles. Maleimide on the micelle surface can conjugate with thiol, SH, sulfhydryl or mercapto group to form a disulfide bond. Hydrophobic drugs is encapsulated in the PLGA core for targeted drug delivery.

PLGA-PEG-N3
Poly(L-lactide-co-glycolide)-b-poly(ethylene glycol)-azide (PLGA-PEG-N3, PLGA-PEG-azide) is a functional amphiphilic block copolymer with azide group at the end of PEG. Azide groups are useful for coupling via click chemistry reactions with alkynes.
PLGA-PEG-N3 is used to prepare micelles or nanoparticles with azide on the micelle surface for bioconjugation via click chemistry. Hydrophobic drugs is encapsulated in the PLGA core for targeted drug delivery.

(2774)
- PLGA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

PLGA-PEG-NH2
Poly(L-lactide-co-glycolide)-block-poly(ethylene glycol)-Amine (PLGA-PEG-NH2) is a functional amphiphilic block copolymer (ABC) which has amine group at the end of PEG block and is used to prepare nanoparticles and micelles for targeted drug delivery. PLGA-PEG is one of the most commonly used biodegradable ABC polymers for drug delivery.

(2758)
- PLGA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

PLGA-PEG-NHS
Poly(lactide-co-glycolide)-block-poly(ethylene glycol)-succinimidyl ester (PLGA-PEG-NHS) is a functional amphiphilic block copolymer, which has amine-reactive ester at the PEG end for bioconjugation. PLGA-PEG is one the most commonly used biodegradable amphiphilic block copolymers for drug delivery applications. PEG is the hydrophilic part and PLGA is the hydrophobic part.

(2801)
- PLGA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

PLGA-PEG-OPSS
Poly(lactide-co-glycolide)-block-PEG-OPSS (PLGA-PEG-OPSS) is a functional amphiphilic block copolymer which has orthopyridyl disulfide group at PEG end. Orthopyridyl disulfide or pyridylthio functional group can selectively reacts with free thiol, SH, sulphydryl or mercapto to form a oxidation, reduction reversible disulfide bond. Micelles or nanoparticles from PLGA-PEG-OPSS can be modified via OPSS for targeted drug delivery.

(3479)
- PLGA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

PLGA-PEG-RhB
Poly(lactide-co-glycolide)-PEG-Rhodamine (PLGA-PEG-RhB) is a rhodamine-labeled amphiphilic block copolymer. PLA-PEG is one of the most commonly used biodegradable ABC polymers for micelle-based drug encapsulation, drug solubilization and drug delivery.

Poly (lactic-co-glycolic acid) (PLGA) is one of the most effective biodegradable polymeric nanoparticles (NPs). It has been approved by the US FDA to use in drug delivery systems due to controlled and sustained release properties, low toxicity, and biocompatibility with tissue and cells.

(4563)
- PLGA Molecular Weight: 1000, 2000, 5000, 10000
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 50mg

PLGA-PEG-SH
Poly(lactide-co-glycolic acid)-PEG-Thiol (PLGA-PEG-SH) is a functional amphiphilic block copolymer to prepare targeted micelles or nanoparticles. Thiol, or SH, sulphydryl, or mercapto group selectively reacts with maleimide, OPSS, vinylsulfone and transition metal surface including gold, silver, etc.

(3485)
- PLGA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g
PLGA-PEG-VS

Poly(L-lactide-co-glycolide)-b-poly(ethylene glycol)-vinylsulfone (PLGA-PEG-VS) is a functional amphiphilic block copolymer with vinylsulfone group at the end of PEG. Vinylsulfone groups are useful for coupling via Michael addition reactions with thiol. PLGA-PEG-VS is used to prepare micelles or nanoparticles with vinylsulfone on the micelle surface for bioconjugation. Hydrophobic drugs is encapsulated in the PLGA core for targeted drug delivery.

(8588)
- PLGA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g
PCL-PEGs

ACRL-PCL-PEG-ALK

Acrylate-poly(caprolactone)-b-poly(ethylene glycol)-alkyne (ACRL-PCL-PEG-ALK) is a biofunctional amphiphilic block copolymer with alkyn group at the end of PEG and acrylate at the end of polycaprolactone. Alkyn groups are useful for coupling via click chemistry reactions with azide, while acrylate groups can be used for radical initiator induced polymerization or UV light sensitive photo-polymerization. It is often used to form crosslinked polymer network and prepare PEG hydrogel. ACRL-PCL-PEG-Alkyne is used to prepare micelles or nanoparticles with alkyn on the micelle surface for bioconjugation via click chemistry and acrylate in the micelle core for crosslinking. Hydrophobic drugs is encapsulated in the PCL core for targeted drug delivery.

PCL Molecular Weight: 10000, 5000
PEG Molecular Weight: 5000, 3400, 2000
Package Size: 100 mg

PCL-PEG-BIO

Poly(ε-caprolactone)-block-poly(ethylene glycol)-Biotin (PCL-PEG-BIO) is a functional amphiphilic block copolymer which has biotin group at the end of PEG. Biotin group is useful for coupling via click chemistry reactions with avidin, PCL-PEG-Biotin is used to prepare micelles or nanoparticles with biotin on the micelle surface for bioconjugation via click chemistry. Hydrophobic drugs is encapsulated in the PCL core for targeted drug delivery.

PCL Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
PEG Molecular Weight: 1000, 2000, 3000, 5000
Package Size: 100mg, 1g

PCL-PEG-COOH

Poly(ε-caprolactone)-block-poly(ethylene glycol)-carboxylic acid (PCL-PEG-COOH) is a functional amphiphilic block copolymer which has carboxyl group at the end of PEG block and is used to prepare nanoparticles and micelles for targeted drug delivery. PCL-PEG is one of the most commonly used biodegradable ABC polymers for drug delivery.

PCL Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
PEG Molecular Weight: 1000, 2000, 3000, 5000
Package Size: 100mg, 1g

PCL-PEG-FITC

Poly(ε-caprolactone)-block-poly(ethylene glycol)-fluorescein (PCL-PEG-FITC) is a fluorescein-labeled amphiphilic block copolymer. PCL-PEG is one of the most commonly used biodegradable ABC polymers for micelle-based drug encapsulation, drug solubilization and drug delivery.

PCL Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
PEG Molecular Weight: 1000, 2000, 3000, 5000
Package Size: 50mg

PCL-PEG-MAL

Poly(ε-caprolactone)-PEG-Maleimide (PCL-PEG-MAL) is a functional amphiphilic block copolymer to prepare targeted micelles or nanoparticles. Maleimide can conjugate with thiol, SH, sulfhydryl or mercapto group to form a disulfide bond.

PCL Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
PEG Molecular Weight: 1000, 2000, 3000, 5000
Package Size: 100mg, 1g

PCL-PEG-ALK

Poly(ε-caprolactone)-block-poly(ethylene glycol)-alkyne (PCL-PEG-ALK) is a functional amphiphilic block copolymer with alkyn group at the end of PEG block and is used to prepare micelles or nanoparticles with alkyn on the micelle surface for bioconjugation via click chemistry and alkyn in the micelle core for crosslinking. Hydrophobic drugs is encapsulated in the PCL core for targeted drug delivery.

PCL Molecular Weight: 10000, 5000
PEG Molecular Weight: 5000, 3400, 2000
Package Size: 100 mg
PCL-PEG-N3

Poly(ε-caprolactone)-block-poly(ethylene glycol)-azide (PCL-PEG-N3) is a functional amphiphilic block copolymer with azide group at the end of PEG. Azide groups are useful for coupling via click chemistry reactions with alkynes. PCL-PEG-N3 is used to prepare micelles or nanoparticles with azide on the micelle surface for bioconjugation via click chemistry. Hydrophobic drugs is encapsulated in the PCL core for targeted drug delivery.

PCL-PEG-NH2

Poly(ε-caprolactone)-block-poly(ethylene glycol)-Amine (PCL-PEG-NH2) is a functional amphiphilic block copolymer (ABC) which has amine group at the end of PEG block and is used to prepare nanoparticles and micelles for targeted drug delivery. PCL-PEG is one of the most commonly used biodegradable ABC polymers for drug delivery.

PCL-PEG-NHS

Poly(ε-caprolactone)-block-poly(ethylene glycol)-succinic ester (PCL-PEG-NHS) is a biodegradable amphiphilic copolymer with amine-reactive ester group at the PEG end. PCL-PEG-NHS is used to prepare polymeric micelle where its PEG shell which can be modified by targeting moieties, and hydrophobic drugs like paclitaxel can be packaged in its PLA core.

PCL-PEG-OPSS

Poly(ε-caprolactone)-block-poly(ethylene glycol)-orthopyridyl disulfide (PCL-PEG-OPSS) is a functional amphiphilic block copolymer which has orthopyridyl disulfide group at PEG end. Orthopyridyl disulfide or pyridylthio functional group can selectively reacts with free thiol, SH, sulfhydryl or mercapto to form a oxidation, reduction reversible disulfide bond. Micelles or nanoparticles from PCL-PEG-OPSS can be modified via OPSS for targeted drug delivery.

PCL-PEG-PCL

Poly(ε-caprolactone)-block-poly(ethylene glycol)-poly(ε-caprolactone) (PCL-PEG-PCL) is a linear A-B-A type amphiphilic triblock copolymers. It can be used in preparation of hydrogel for drug encapsulation and drug delivery.

PCL-PEG-RhB

Poly(ε-caprolactone)-PEG-Rhodamine (PCL-PEG-RhB) is a rhodamine-labeled amphiphilic block copolymer. PLA-PEG is one of the most commonly used biodegradable ABC polymers for micelle-based drug encapsulation, drug solubilization and drug delivery.
PCL-PEG-SH
Poly(ε-caprolactone)-block-PEG-Thiol (PCL-PEG-SH) is a functional amphiphilic block copolymer to prepare targeted micelles or nanoparticles. Thiol, or SH, sulfhydryl, or mercapto group selectively reacts with maleimide, OPSS, vinylsulfone and transition metal surface including gold, silver, etc.

(3467)
- Package size: 50mg, 100mg, 500mg, 1g
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- PCL Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k

PCL-PEG-VS
Poly(ε-caprolactone)-block-PEG-vinylsulfone (PCL-PEG-VS) is a functional amphiphilic block copolymer with vinylsulfone group at the end of PEG. Vinylsulfone groups are useful for coupling via Michael addition reactions with thiol. PCL-PEG-VS is used to prepare micelles or nanoparticles with alkyne on the micelle surface for bioconjugation. Hydrophobic drugs is encapsulated in the PCL core for targeted drug delivery.

(8639)
- PCL Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g
PLA-PEGs

ACRL-PLA-PEG-ALK
Acrylate-poly(l-lactide)-b-poly(ethylene glycol)-alkyne (ACRL-PLA-PEG-ALK) is a biofunctional amphiphilic block copolymer with alkyne group at the end of PEG and acrylate at the end of poly(l-lactide). Alkyne groups are useful for coupling via click chemistry reactions with azide, while acrylate groups can be used for radical initiator induced polymerization or UV light sensitive photopolymerization. It is often used to form crosslinked polymer network and prepare PEG hydrogel. ACRL-PLA-PEG-Alkyne is used to prepare micelles or nanoparticles with alkyne on the micelle surface for bioconjugation via click chemistry and acrylate in the micelle core for crosslinking. Hydrophobic drugs is encapsulated in the PLA core for targeted drug delivery.

(MPEG-PLA-COOH)
Methoxy poly(ethylene glycol)-poly(l-lactide) carboxylic acid (MPEG-PLA-COOH) is a functional biodegradable amphiphilic block copolymers (ABCs) which has -COOH group at the end of PLA block, is used to prepare nanoparticles and micelles for drug delivery. Micelle core can be further modified by -COOH group to increase drug loading efficiency or micelle stability.

(PDLLA-MPEG)
Poly(D,L-lactide)-PEG-methyl ether (PDLLA-MPEG) is an amphiphilic block copolymer (ABC), which can self-assemble into polymeric micelles. PDLLA-PEG is one of the most commonly used biodegradable polymers for drug encapsulation, drug solubilization and drug delivery.

(PLA-PEG-ALK)
Poly(l-lactide)-b-poly(ethylene glycol)-alkyne (PLA-PEG-ALK) is a functional amphiphilic block copolymer with alkyne group at the end of PEG. Alkyne groups are useful for coupling via click chemistry reactions with azide. PLA-PEG-Alkyne is used to prepare micelles or nanoparticles with alkyne on the micelle surface for bioconjugation via click chemistry. Hydrophobic drugs is encapsulated in the PLA core for targeted drug delivery.

(PLA-PEG-BIO)
Poly(l-lactide)-block-poly(ethylene glycol)-Biotin (PLA-PEG-Bio) is a functional amphiphilic block copolymer (ABC) which has biotin group at the end of PEG block and is used to prepare nanoparticles and micelles for targeted drug delivery. PLA-PEG-Bio is one of the most commonly used biodegradable ABC polymers for drug delivery. Biotin can bind to avidin and streptavidin with high specificity and affinity.

(PLA-PEG-COOH)
Poly(l-lactide)-block-poly(ethylene glycol)-carboxylic acid (PLA-PEG-COOH) is a functional amphiphilic block copolymer (ABC) which has carboxylic group at the end of PEG block and is used to prepare nanoparticles and micelles for targeted drug delivery. PLA-PEG-COOH is one of the most commonly used biodegradable ABC polymers for drug delivery.
PLA-PEG-FITC

Poly(L-lactide)-PEG-FITC (PLA-PEG-FITC) is a fluorescein-labeled amphiphilic block copolymer. PLA-PEG is one of the most commonly used biodegradable ABC polymers for micelle-based drug encapsulation, drug solubilization and drug delivery.

(2741)

- PLA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10K
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

PLA-PEG-Folate

Poly(L-lactide)-block-poly(ethylene glycol)-Folate (PLA-PEG-Folate, PLA-PEG-Folic acid, or PLA-PEG-FOL) is a functional amphiphilic block copolymer (ABC) which has Folic acid group at the end of PEG block and is used to prepare nanoparticles and micelles for targeted drug delivery. PLA-PEG is one of the most commonly used biodegradable ABC polymers for drug delivery. Folate receptors are cellular surface markers for numerous solid tumors and myeloid leukemias.

Folate targeted drug delivery has emerged as an alternative therapy for the treatment and imaging of many cancers and inflammatory diseases. Due to its small molecular size and high binding affinity for cell surface folate receptors (FR), folate conjugates have the ability to deliver a variety of molecular complexes to pathologic cells without causing harm to normal tissues. Complexes that have been successfully delivered to FR expressing cells, to date, include protein toxins, immune stimulants, chemotherapeutic agents, liposomes, nanoparticles, and imaging agents. This review will summarize the applications of folic acid as a targeting ligand and highlight the various methods being developed for delivery of therapeutic and imaging agents to FR-expressing cells.

(11440)

- PLA Molecular Weight: 5000, 10k, 20k
- PEG Molecular Weight: 2000, 5000
- Package size: 50mg, 100mg

PLA-PEG-MAL

Poly(L-lactide)-PEG-Maleimide (PLA-PEG-Mal) is a functional amphiphilic block copolymer to prepare targeted micelles or nanoparticles. Maleimide can conjugate with thiol, SH, sulfhydryl or mercapto group to form a disulfide bond.

Block copolymer micelles are widely used in drug delivery applications. PEG-PLA is a biodegradable polymeric micelle which is used as carriers for hydrophobic drugs like paclitaxel. PEG is the hydrophilic part and PLA is the hydrophobic part which forms the micelle core wherein the hydrophobic drug is loaded.

(2725)

- PLA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10000
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

PLA-PEG-N3

Poly(L-lactide)-b-poly(ethylene glycol)-azide (PLA-PEG-N3) is a functional amphiphilic block copolymer with azide group at the end of PEG. Azide groups are useful for coupling via click chemistry reactions with alkynes. PLA-PEG-N3 is used to prepare micelles or nanoparticles with azide on the micelle surface for bioconjugation via click chemistry. Hydrophobic drugs is encapsulated in the PLA core for targeted drug delivery.

(2713)

- PLA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10000
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

PLA-PEG-NH2

Poly(L-lactide)-block-poly(ethylene glycol)-Amine (PLA-PEG-NH2) is a functional amphiphilic block copolymer (ABC) which has amine group at the end of PEG block and is used to prepare nanoparticles and micelles for targeted drug delivery. PLA-PEG is one of the most commonly used biodegradable ABC polymers for drug delivery.
Specified molecular weight and molecular ratio may be available by custom synthesis. Please call for ask.

(2701)
- PLA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10000
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

**PLA-PEG-NHS**

Poly(L-lactide)-block-poly(ethylene glycol)-succinic ester (PLA-PEG-NHS) is a biodegradable amphiphilic copolymer with amine-reactive ester group at the PEG end. PLA-PEG-NHS is used to prepare polymeric micelle where its PEG shell which can be modified by targeting moieties, and hydrophobic drugs like paclitaxel can be packaged in its PLA core.

(2719)
- PLA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10000
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

**PLA-PEG-OPSS**

Poly(L-lactide)-PEG-OPSS (PLA-PEG-OPSS) is a functional amphiphilic block copolymer which has orthopyridyl disulfide group at PEG end. Orthopyridyl disulfide or pyridylthio functional group can selectively reacts with free thiol, SH, sulfhydryl or mercapto to form a oxidation, reduction reversible disulfide bond. Micelles or nanoparticles from PLA-PEG-OPSS can be modified via OPSS for targeted drug delivery.

(3304)
- PLA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

**PLA-PEG-PLA Diacrylate**

Poly(lactide)-block-poly(ethylene glycol)-block-polylactide diacrylate (PLA-PEG-PLA diacrylate) is a A-B-A type triblock copolymers used in drug encapsulation and drug delivery. It can be used to prepare hydrogel.

Acrylate group can be used for radical initiator or UV light induced polymerization for gel cross-linking. It is often used to prepare PEG hydrogel.

(10589)
- PLA Molecular weight: 1000, 2000
- PEG Molecular weight: 1000, 2000, 3000
- Package size: 100mg, 1g

**PLA-PEG-RhB**

Poly(L-Lactide)-PEG-Rhodamine (PLA-PEG-RhB) is a rhodamine-labeled amphiphilic block copolymer. PLA-PEG is one of the most commonly used biodegradable ABC polymers for micelle-based drug encapsulation, drug solubilization and drug delivery.

(4557)
- PLA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10000
- PEG Molecular Weight: 1000, 2000, 3000
- Package size: 50mg

**PLA-PEG-SH**

Poly(L-lactide)-PEG-Thiol (PLA-PEG-SH) is a functional amphiphilic block copolymer to prepare targeted micelles or nanoparticles. Thiol, or SH, sulfhydryl or mercapto group selectively reacts with maleimide, OPSS, vinylsulfone and transition metal surface including gold, silver, etc.

(3298)
- PLA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g
PLA-PEG-VS
Poly(L-lactide)-b-poly(ethylene glycol)-vinylsulfone (PLA-PEG-VS) is a functional amphiphilic block copolymer with vinylsulfone (VS) group at the end of PEG. Vinylsulfone groups are useful for coupling thiol-containing targeting ligands via Michael addition. PLA-PEG-VS is used to prepare micelles or nanoparticles with vinylsulfone on the micelle surface for bioconjugation. Hydrophobic drugs is encapsulated in the PLA core for targeted drug delivery.

(8562)
- PLA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10000
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg

PLLA-MPEG
Poly(L-lactide)-PEG-methyl ether (PLLA-MPEG) is an amphiphilic block copolymer (ABC), which can self-assemble into polymeric micelles. PLA-PEG is one of the most commonly used biodegradable polymers for drug encapsulation, drug solubilization and drug delivery.

(2693)
- PLA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10000
- PEG Molecular Weight: 1000, 2000, 5000
- Package size: 1g, 10g

PLLA-PEG-PLLA
Poly(L-lactide)-block-poly(ethylene glycol)-block-poly(L-lactide) (PLLA-PEG-PLLA) is used in drug encapsulation and drug delivery. It can be used to prepare hydrogel.

(2815)
- PLA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 6000, 8000
- PEG Molecular Weight: 1000, 2000, 3000, 4000, 6000, 8000
- Package size: 1g
ACRL-PLGA-PEG-ALK
Acrylate-poly(Lactide-co-glycolide)-b-poly(ethylene glycol)-alkyne (ACRL-PLGA-PEG-ALK) is a biofunctional amphiphilic block copolymer with alkyne group at the end of PEG and acrylate at the end of polycaprolactone. Alkyne groups are useful for coupling via click chemistry reactions with azide, while acrylate groups can be used for radical initiator induced polymerization or UV light sensitive photo-polymerization. It is often used to form crosslinked polymer network and prepare PEG hydrogel. ACRL-PLGA-PEG-Alkyne is used to prepare micelles or nanoparticles with alkyne on the micelle surface for bioconjugation via click chemistry and acrylate in the micelle core for crosslinking. Hydrophobic drugs is encapsulated in the PLGA-core for targeted drug delivery.

MPEG-PLGA
Poly(lactide-co-glycolide)-b-poly(ethylene glycol) methyl ether (MPEG-PLGA) is one of the most commonly used biodegradable amphiphilic block copolymers (ABCs) for drug delivery applications. PEG is the hydrophilic part and PLGA is the hydrophobic part. Amphiphilic block copolymers (AmBC) consist two chemically different homopolymer blocks. One of the block is hydrophilic and the other one is hydrophobic. These macromolecules have the properties to self-assemble into micelles when dissolved in an aqueous media.

mPEG-PLGA-COOH
Methoxy poly(ethylene glycol)-b-poly(lactide-co-glycolide) carboxylic acid (mPEG-PLGA-COOH) is a biodegradable amphiphilic block copolymers (ABCs) with terminated -COOH with PLGA block for drug drug conjugation. PEG is the hydrophilic part and PLGA is the hydrophobic part. Amphiphilic block copolymers (ABC) consist two chemically different homopolymer blocks. One of the block is hydrophilic and the other one is hydrophobic. These macromolecules have the properties to self-assemble into micelles when dissolved in an aqueous media.

PLGA-PEG-ALK/PLGA-PEG-Alkyne
Poly(L-lactide-co-glycolide)-b-poly(ethylene glycol)-alkyne (PLGA-PEG-ALK, PLGA-PEG-Alkyne) is a functional amphiphilic block copolymer with alkyne group at the end of PEG. Alkyne groups are useful for coupling via click chemistry reactions with azide. PLGA-PEG-Alkyne is used to prepare micelles or nanoparticles with alkyne on the micelle surface for bioconjugation via click chemistry. Hydrophobic drugs is encapsulated in the PLGA-core for targeted drug delivery.

PLGA-PEG-BIO
Poly(L-lactide-co-glycolide)-block-poly(ethylene glycol)-Biotin (PLGA-PEG-BIO, PLGA-PEG-Biotin) is a functional amphiphilic block copolymer (ABC) which has biotin group at the end of PEG block and is used to prepare nanoparticles and micelles for targeted drug delivery. PLGA-PEG-Biotin is one of the most commonly used biodegradable ABC polymers for drug delivery. Biotin can bind to avidin and streptavidin with high specificity and affinity.
PLGA-PEG-COOH
Poly(lactide-co-glycolide)-block-poly(ethylene glycol)-carboxylic acid (PLGA-PEG-COOH) has a carboxylic acid group at the PEG ends, which is used in the preparation of targeted nanoparticles (micelles) for differential delivery and controlled release of drugs.

- PLGA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

PLGA-PEG-DBCO
Poly(lactide-co-glycolide)-poly(ethylene glycol) with dibenzocyclooctyne (PLGA-PEG-DBCO) is a linear heterobifunctional PEGylation reagent with a PLGA and a DBCO for Cu-free chemistry. PLGA-PEG-DBCO can go Click Chemistry reaction without the need of any metal catalysts. The strain-promoted 1,3-dipolar cycloaddition of cyclooctynes and azides, also termed as the Cu-free click reaction, is a bioorthogonal reaction that enables the conjugation of two molecules in aqueous solution. DBCO reagents can be used to label azide-modified biomolecules spontaneously without the need for toxic Cu catalysts. The reaction of azides with strained alkynes, such as cyclooctynes, readily forms a trisloe product without the need for a toxic catalyst/PEGylation can increase solubility and stability and reduce immunogenicity of peptides and proteins. It can also suppress the non-specific binding of charged molecules to the modified surfaces.

Poly(lactide-co-glycolide)-b-poly(ethylene glycol) is one of the most commonly used biodegradable amphiphilic block copolymers (ABCs) for drug delivery applications. PEG is the hydrophilic part and PLGA is the hydrophobic part. Amphiphilic block copolymers (AmBC) consist of two chemically different homopolymer blocks. One of the block is hydrophilic and the other one is hydrophobic. These macromolecules have the properties to self-assemble into micelles when dissolved in an aqueous media.

- PLGA Molecular Weight: 5K, 10K
- PEG Molecular Weight: 2K, 5K
- Package size: 100mg

PLGA-PEG-FITC
Poly(L-lactide-co-glycolide)-PEG-FITC (PLGA-PEG-FITC) is a fluorescein-labeled amphiphilic block copolymer. PLGA-PEG is one of the most commonly used biodegradable and biocompatible ABC polymers for micelle-based drug encapsulation, drug solubilization and drug delivery.

- PLGA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 50mg

PLGA-PEG-Folate
Poly(lactide-co-glycolide)-block-poly(ethylene glycol)-Folate (PLGA-PEG-Folate, PLGA-PEG-Folic acid, or PLGA-PEG-FOL) is a functional amphiphilic block copolymer (ABC) which has Folic acid group at the end of PEG block and is used to prepare nanoparticles and micelles for targeted drug delivery. PLGA-PEG is one of the most commonly used biodegradable ABC polymers for drug delivery. Folate receptors are cellular surface markers for numerous solid tumors and myeloid leukemias.

Folate targeted drug delivery has emerged as an alternative therapy for the treatment and imaging of many cancers and inflammatory diseases. Due to its small molecular size and high binding affinity for cell surface folate receptors (FR), folate conjugates have the ability to deliver a variety of molecular complexes to pathologic cells without causing harm to normal tissues. Complexes that have been successfully delivered to FR expressing cells, to date, include protein toxins, immune stimulants, chemotherapeutic agents, liposomes, nanoparticles, and imaging agents. This review will summarize the applications of folic acid as a targeting ligand and highlight the various methods being developed for delivery of therapeutic and imaging agents to FR-expressing cells.

- PLGA Molecular Weight: 5000, 10k, 20k
- PEG Molecular Weight: 2000, 5000
- Package size: 50mg, 100mg

PLGA-PEG-IA
Poly(L-lactide-co-glycolide)-b-poly(ethylene glycol)-iodolacetyl (PLGA-PEG-IA) is a functional amphiphilic block copolymer with iodolacetyl group at the end of PEG. Iodolacetyl (IA) is a thiol (-SH) reactive group that can be used to modify biomolecules or other materials via their available thiol groups. Iodine group can be easily replaced by thiol group to form a stable carbon thiol bond. PLGA-PEG-IA is used to prepare micelles or nanoparticles with iodolacetyl group on the micelle surface for bioconjugation via thiol substitution. Hydrophobic drugs is encapsulated in the PLGA core for targeted drug delivery.
PLGA-PEG-MAL
Poly(lactide-co-glycolide)-PEG-Maleimide (PLGA-PEG-MAL, PLGA-PEG-Maleimide) is a functional amphiphilic block copolymer with maleimide group at the end of PEG. PLGA-PEG-MAL can self assemble into micelles/nanoparticles. Maleimide on the micelle surface can conjugate with thiol, SH, sulfhydryl or mercapto group to form a disulfide bond. Hydrophobic drugs is encapsulated in the PLGA core for targeted drug delivery.

(2794)
- PLGA Molecular Weight: 2000, 5000, 10K, 20K
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

PLGA-PEG-N3
Poly(L-lactide-co-glycolide)-b-poly(ethylene glycol)-azide (PLGA-PEG-N3, PLGA-PEG-azide) is a functional amphiphilic block copolymer with azide group at the end of PEG. Azide groups are useful for coupling via click chemistry reactions with alkynes. PLGA-PEG-N3 is used to prepare micelles or nanoparticles with azide on the micelle surface for bioconjugation via click chemistry. Hydrophobic drugs is encapsulated in the PLGA core for targeted drug delivery.

(2774)
- PLGA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

PLGA-PEG-NH2
Poly(L-lactide-co-glycolide)-block-poly(ethylene glycol)-Amine (PLGA-PEG-NH2) is a functional amphiphilic block copolymer (ABC) which has amine group at the end of PEG block and is used to prepare nanoparticles and micelles for targeted drug delivery. PLGA-PEG is one of the most commonly used biodegradable ABC polymers for drug delivery.

(2758)
- PLGA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

PLGA-PEG-NHS
Poly(lactide-co-glycolide)-block-poly(ethylene glycol)-succinimidyl ester (PLGA-PEG-NHS) is a functional amphiphilic block copolymer, which has amine-reactive ester at the PEG end for bioconjugation. PLGA-PEG is one the most commonly used biodegradable amphiphilic block copolymers for drug delivery applications. PEG is the hydrophilic part and PLGA is the hydrophobic part.

(2801)
- PLGA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

PLGA-PEG-OPSS
Poly(L-lactide-co-glycolide)-block-PEG-OPSS (PLGA-PEG-OPSS) is a functional amphiphilic block copolymer which has orthopyridyl disulfide group at PEG end. Orthopyridyl disulfide or pyridylidithio functional group can selectively reacts with free thiol, SH, sulfhydryl or mercapto to form a oxidation, reduction reversible disulfide bond. Micelles or nanoparticles from PLGA-PEG-OPSS can be modified via OPSS for targeted drug delivery.

(3479)
- PLGA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g
Amphiphilic block copolymers comprised of poly(lactic acid-co-glycolic acid) and poly(ethylene glycol) are thermogelling materials with biodegradable blocks. The thermogel forming biodegradable delivery system has two major benefits: 1) First, thermogelation allows for delivery over the course of a period of time after introduction of what is initially a liquid; 2) The material safely biodegrades away once it is no longer necessary. Lactic and glycolic acids as well as the water-soluble poly(ethylene glycol) block, which at molecular weights below 20KDa are safely eliminated from the body by the kidneys.

The thermogelation properties of poly(lactic acid-co-glycolic acid)-block-poly(ethylene glycol)-block-poly(lactic acid-co-glycolic acid) (PLGA-PEG-PLGA) copolymers have been extensively used in research for controlled delivery.

**PLGA-PEG-PLGA**

Poly(lactide-co-glycolide)-PEG-Rhodamine (PLGA-PEG-RhB) is a rhodamine-labeled amphiphilic block copolymer. PLA-PEG is one of the most commonly used biodegradable ABC polymers for micelle-based drug encapsulation, drug solubilization and drug delivery.

Poly(lactic-co-glycolic acid) (PLGA) is one of the most effective biodegradable polymeric nanoparticles (NPs). It has been approved by the US FDA to use in drug delivery systems due to controlled and sustained-release properties, low toxicity, and biocompatibility with tissue and cells.

**PLGA-PEG-RhB**

Poly(lactide-co-glycolide)-PEG-Thiol (PLGA-PEG-SH) is a functional amphiphilic block copolymer to prepare targeted micelles or nanoparticles. Thiol, or SH, sulfhydryl, or mercapto group selectively reacts with maleimide, OPSS, vinylsulfone and transition metal surface including gold, silver, etc.

**PLGA-PEG-SH**

Poly(lactide-co-glycolide)-b-poly(ethylene glycol)-vinylsulfone (PLGA-PEG-VS) is a functional amphiphilic block copolymer with vinylsulfone group at the end of PEG. Vinylsulfone groups are useful for coupling via Michael addition reactions with thiol. PLGA-PEG-VS is used to prepare micelles or nanoparticles with vinylsulfone on the micelle surface for bioconjugation. Hydrophobic drugs is encapsulated in the PLGA core for targeted drug delivery.

**PLGA-PEG-VS**
Polymers by functional groups

**DSPE-PEG-DBCO**

1,2-Oleoyl-sn-Glycero-3-Phosphoethanolamine (DSPE) conjugated polyethylene glycol with dibenzocycloctyne (DSPE-PEG-DBCO) is a linear heterobifunctional PEGylation reagent with a DSPE phospholipid and an DBCO for Cu-free chemistry. DSPE derivatives can go Click Chemistry reaction without a need of any metal catalysts. The strain-promoted 1,3-dipolar cycloaddition of cyclooctynes and azides, also termed as the Cu-free click reaction, is a bioorthogonal reaction that enables the conjugation of two molecules in aqueous solution. DBCO reagents can be used to label azide-modified biomolecules spontaneous without the need for toxic Cu catalysts. The reaction of azides with strained alkynes, such as cyclooctynes, readily forms a triazole product without the need for a toxic catalyst. PEGylation can increase solubility and stability and reduce immunogenicity of peptides and proteins. It can also suppress the non-specific binding of charged molecules to the modified surfaces.

(9311)
- Molecular weight: 2000, 3400, 5000
- Package size: 50mg, 100mg

**PLGA-PEG-DBCO**

Poly(Lactide-co-glycolide)-poly(ethylene glycol) with dibenzocycloctyne (PLGA-PEG-DBCO) is a linear heterobifunctional PEGylation reagent with a PLGA and an DBCO for Cu-free chemistry. PLGA-PEG-DBCO can go Click Chemistry reaction without a need of any metal catalysts. The strain-promoted 1,3-dipolar cycloaddition of cyclooctynes and azides, also termed as the Cu-free click reaction, is a bioorthogonal reaction that enables the conjugation of two molecules in aqueous solution. DBCO reagents can be used to label azide-modified biomolecules spontaneous without the need for toxic Cu catalysts. The reaction of azides with strained alkynes, such as cyclooctynes, readily forms a triazole product without the need for a toxic catalyst. PEGylation can increase solubility and stability and reduce immunogenicity of peptides and proteins. It can also suppress the non-specific binding of charged molecules to the modified surfaces.

Poly(lactide-co-glycolide)-b-poly(ethylene glycol) is one the most commonly used biodegradable amphiphilic block copolymers (ABCs) for drug delivery applications. PEG is the hydrophilic part and PLGA is the hydrophobic part. Amphiphilic block copolymers (AmBC) consist two chemically different homopolymer blocks. One of the block is hydrophilic and the other one is hydrophobic. These macromolecules have the properties to self-assemble into micelles when dissolved in an aqueous media.

(9765)
- PLGA Molecular Weight: 5K, 10K
- PEG Molecular Weight: 2K, 5K
- Package size: 100mg
DBCO

**DBCO-PEG-COOH**

DBCO (dibenzocyclooctyne) PEG acid or DBCO-PEG-carboxylic acid (DBCO-PEG-COOH) is a heterobifunctional reactive PEG derivative that can go Click Chemistry reaction without the need of any metal catalysts. The strain-promoted 1,3-dipolar cycloaddition of cyclooctynes and azides, also termed as the Cu-free click reaction, is a bioorthogonal reaction that enables the conjugation of two molecules in aqueous solution. DBCO PEG derivatives possess fast kinetics and stability in aqueous buffer. DBCO reagents can be used to label azide-modified biomolecules spontaneously without the need for toxic Cu catalysts. Carboxylic acid group, on the other hand, can be activated to react with amines, hydroxy and other functional groups.

(11062)
- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 50mg, 100mg

**DSPE-PEG-DBCO**

1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine (DSPE) conjugated polyethylene glycol with dibenzocyclooctyne (DSPE-PEG-DBCO) is a linear heterobifunctional PEGylation reagent with a DSPE phospholipid and an DBCO for Cu-free chemistry. DSPE derivatives can go Click Chemistry reaction without a need of any metal catalysts. The strain-promoted 1,3-dipolar cycloaddition of cyclooctynes and azides, also termed as the Cu-free click reaction, is a bioorthogonal reaction that enables the conjugation of two molecules in aqueous solution. DBCO reagents can be used to label azide-modified biomolecules spontaneously without the need for toxic Cu catalysts. The reaction of azides with strained alkynes, such as cyclooctynes, readily forms a triazole product without the need for a toxic catalyst. PEGylation can increase solubility and stability and reduce immunogenicity of peptides and proteins. It can also suppress the non-specific binding of charged molecules to the modified surfaces.

(9311)
- Molecular weight: 2000, 3400, 5000
- Package size: 50mg, 100mg

**PLGA-PEG-DBCO**

Poly(Lactide-co-glycolide)- poly(ethylene glycol) with dibenzocyclooctyne (PLGA-PEG-DBCO) is a linear heterobifunctional PEGylation reagent with a PLGA and an DBCO for Cu-free chemistry. PLGA-PEG-DBCO can go Click Chemistry reaction without the need of any metal catalysts. The strain-promoted 1,3-dipolar cycloaddition of cyclooctynes and azides, also termed as the Cu-free click reaction, is a bioorthogonal reaction that enables the conjugation of two molecules in aqueous solution. DBCO reagents can be used to label azide-modified biomolecules spontaneously without the need for toxic Cu catalysts. The reaction of azides with strained alkynes, such as cyclooctynes, readily forms a triazole product without the need for a toxic catalyst. PEGylation can increase solubility and stability and reduce immunogenicity of peptides and proteins. It can also suppress the non-specific binding of charged molecules to the modified surfaces.

Poly(lactide-co-glycolide)-b-poly(ethylene glycol) is one of the most commonly used biodegradable amphiphilic block copolymers (ABCs) for drug delivery applications. PEG is the hydrophilic part and PLGA is the hydrophobic part. Amphiphilic block copolymers (AmBCs) consist of two chemically different homopolymer blocks. One of the block is hydrophilic and the other one is hydrophobic. These macromolecules have the properties to self-assemble into micelles when dissolved in an aqueous media.

(9765)
- PLGA Molecular Weight: 5K, 10K
- PEG Molecular Weight: 2K, 5K
- Package size: 100mg
Folic acid (Fol)

DSPE-PEG-Folate

Nanosoft Polymers offers DSPE-PEG-Folate (DSPE-PEG-FOL) conjugate, which can be incorporated into liposomes as a targeting ligand. Folate receptors are cellular surface markers for numerous solid tumors and myeloid leukemias.

Folate targeted drug delivery has emerged as an alternative therapy for the treatment and imaging of many cancers and inflammatory diseases. Due to its small molecular size and high binding affinity for cell surface folate receptors (FR), folate conjugates have the ability to deliver a variety of molecular complexes to pathologic cells without causing harm to normal tissues. Complexes that have been successfully delivered to FR expressing cells, to date, include protein toxins, immune stimulants, chemotherapeutic agents, liposomes, nanoparticles, and imaging agents. This review will summarize the applications of folic acid as a targeting ligand and highlight the various methods being developed for delivery of therapeutic and imaging agents to FR-expressing cells.

(4666)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 50mg

Folate-PEG-Amine

NSP offers heterobifunctional Folate-PEG-Amine (Folate-PEG-NH2, Folic acid-PEG-NH2) with high quality. Folic acid, or vitamin B9, can selectively bind to folate receptor, while Primary amine can react with a variety of functional groups such as succinimidyl ester (NHS), carboxylic acids (COOH), anhydride and many others. The PEG moiety in the heterofunctional PEG derivatives provides water solubility, biocompatibility, and flexibility. This reaction allows attachment of folic acid ligand to proteins, antibodies, peptides or particle surfaces. Folic acid functionalized substrates have been used for targeted drug delivery, imaging, and bioassay development.

(11409)
- Molecular weight: 1000, 2000, 3500, 5000, 10K
- Package size: 50mg, 100 mg

Folate-PEG-COOH

NSP offers heterobifunctional Folate PEG Acetic Acid products (Folate-PEG-COOH, Folic acid-PEG-COOH) with high quality. Folic acid, or vitamin B9, can selectively bind to folate receptor, while the carboxylic group can reactive with amine-containing moieties. The PEG moiety in the heterofunctional PEG derivatives provides water solubility, biocompatibility, and flexibility.

(11379)
- Molecular weight: 1000, 2000, 3500, 5000, 10K
- Package size: 50mg, 100 mg

Folate-PEG-Maleimide

NSP offers heterobifunctional Folate PEG Maleimide (Folate-PEG-Mal, Folic acid-PEG-maleimide) with high quality. Folic acid, or vitamin B9, can selectively bind to folate receptor, while maleimide can react with sulfhydryl (-SH) in pH 6.5-7.5 quickly and efficiently. The PEG moiety in the heterofunctional PEG derivatives provides water solubility, biocompatibility, and flexibility. This reaction allows attachment of folic acid ligand to proteins, antibodies, peptides or particle surfaces. Folic acid functionalized substrates have been used for targeted drug delivery, imaging, and bioassay development.

(11495)
- Molecular weight: 1000, 2000, 3500, 5000, 10K
- Package size: 50mg, 100 mg

Folate-PEG-NHS

NSP offers heterobifunctional Folate PEG NHS products (Folate-PEG-NHS, Folic acid-PEG-NHS) with high quality. Folic acid, or vitamin B9, can selectively bind to folate receptor, while the NHS ester can reactive with amine-containing moieties in alkaline conditions quickly and efficiently. The PEG moiety in the heterofunctional PEG derivatives provides water solubility, biocompatibility, and flexibility. Folic acid functionalized substrates have been used for targeted drug delivery, imaging, and bio-assay development.

(11395)
- Molecular weight: 1000, 2000, 3500, 5000, 10K
- Package size: 50mg, 100 mg

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NSP-Functional Polymers & Copolymers catalog
www.nanosoftpolymers.com; Tel: 336-749-8700; Email: info@nanosoftpolymers.com
Folate-PEG-OH

NSP offers heterobifunctional Folate PEG Hydroxyl products (Folate-PEG-OH, Folic acid-PEG-OH) with high quality. Folic acid, or vitamin B9, can selectively bind to folate receptor, while the OH group can be further modified for bioconjugation. The PEG moiety in the heterofunctional PEG derivatives provides water solubility, biocompatibility, and flexibility.

- Molecular weight: 1000, 2000, 3500, 5000, 10K
- Package size: 50mg, 100mg

PLA-PEG-Folate

Poly(L-lactide)-block-poly(ethylene glycol)-Folate (PLA-PEG-Folate, PLA-PEG-Folic acid, or PLA-PEG-FOL) is a functional amphiphilic block copolymer (ABC) which has Folic acid group at the end of PEG block and is used to prepare nanoparticles and micelles for targeted drug delivery. PLA-PEG is one of the most commonly used biodegradable ABC polymers for drug delivery. Folate receptors are cellular surface markers for numerous solid tumors and myeloid leukemias.

Folate targeted drug delivery has emerged as an alternative therapy for the treatment and imaging of many cancers and inflammatory diseases. Due to its small molecular size and high binding affinity for cell surface folate receptors (FR), folate conjugates have the ability to deliver a variety of molecular complexes to pathologic cells without causing harm to normal tissues. Complexes that have been successfully delivered to FR expressing cells, to date, include protein toxins, immune stimulants, chemotherapeutic agents, liposomes, nanoparticles, and imaging agents. This review will summarize the applications of folic acid as a targeting ligand and highlight the various methods being developed for delivery of therapeutic and imaging agents to FR-expressing cells.

- PLA Molecular Weight: 5000, 10k, 20k
- PEG Molecular Weight: 2000, 5000
- Package size: 50mg, 100mg

PLGA-PEG-Folate

Poly(lactide-co-glycolide)-block-poly(ethylene glycol)-Folate (PLGA-PEG-Folate, PLGA-PEG-Folic acid, or PLGA-PEG-FOL) is a functional amphiphilic block copolymer (ABC) which has Folic acid group at the end of PEG block and is used to prepare nanoparticles and micelles for targeted drug delivery. PLGA-PEG is one of the most commonly used biodegradable ABC polymers for drug delivery. Folate receptors are cellular surface markers for numerous solid tumors and myeloid leukemias.

Folate targeted drug delivery has emerged as an alternative therapy for the treatment and imaging of many cancers and inflammatory diseases. Due to its small molecular size and high binding affinity for cell surface folate receptors (FR), folate conjugates have the ability to deliver a variety of molecular complexes to pathologic cells without causing harm to normal tissues. Complexes that have been successfully delivered to FR expressing cells, to date, include protein toxins, immune stimulants, chemotherapeutic agents, liposomes, nanoparticles, and imaging agents. This review will summarize the applications of folic acid as a targeting ligand and highlight the various methods being developed for delivery of therapeutic and imaging agents to FR-expressing cells.

- PLGA Molecular Weight: 5000, 10k, 20k
- PEG Molecular Weight: 2000, 5000
- Package size: 50mg, 100mg
Sulfonate (tosyl, mesyl)

**mPEG-Mesylate**

mPEG-Mesylate is a linear monofunctional PEG reagent with a mesyl, also called methanesulfonyl, which is a good leaving group for nucleophilic substitution reaction (SN2).

(9690)
- Molecular weight: 1K, 2K, 5K, 10K, 20K, 30K
- Package size: 1g, 5g, 10g

**MPEG-tosylate**

MPEG-Tosylate is a linear monofunctional PEG reagent with a tosyl also called toluenesulfonyl, which is a very good leaving group for nucleophilic substitution reaction.

(9715)
- Molecular weight: 1K, 2K, 5K, 10K, 20K, 30K
- Package size: 1g, 5g, 10g

**Tosylate-PEG-Tosylate**

Tosylate-PEG-Tosylate is a linear bifunctional PEG reagent with a toluenesulfonyl group on both sides, which is a very good leaving group for nucleophilic substitution reaction.

(9736)
- Molecular weight: 1K, 2K, 3K, 5K, 8K, 10K
- Package size: 1g, 5g, 10g
Acrylates and Methacrylates

4-Arm PEG-ACRL
4-Arm PEG-acrylate (4-arm PEG-ACRL) is a multiarm PEG derivative with acrylate groups at each terminal of the four arms connected to one pentaerythritol core.

Molecular weight: 2K, 5K, 10K, 20K
Package size: 1g, 5g, 10g

8-arm PEG-ACRL
8-Arm PEG-Acrylate (8-arm PEG-ACRL) is a multiarm PEG derivative with acrylate groups at each terminal of the eight arms connected to one hexaglycerol core. The 8-arm PEG acrylate can be used for radical initiator or UV light induced polymerization to synthesize PEG hydrogel. 8-Arm PEG-methacrylate may be offered by our custom synthesis service.

Molecular weight: 10k, 20k, 40k
Package size: 1g, 5g, 10g

ACA-PEG-ACA
Acrylamide-PEG-Acrylamide (ACA-PEG-ACA) is a linear bifunctional crosslinking PEG reagent with one acrylamide at both ends of PEG. Acrylamide groups can be used for radical initiator induced polymerization or UV light sensitive photopolymerization. It is often used to form crosslinked polymer network and prepare PEG hydrogel.

Molecular weight: 1000, 2000, 3500, 5000, 10K, 20K
Package size: 1g, 5g, 10g

ACRL-PCL-PEG-ALK
Acrylate-polycaprolactone-b-poly(ethylene glycol)-alkyne (ACRL-PCL-PEG-ALK) is a biofunctional amphiphilic block copolymer with alkyn group at the end of PEG and acrylate at the end of polycaprolactone. Alkyne groups are useful for coupling via click chemistry reactions with azide, while acrylate groups can be used for radical initiator induced polymerization or UV light sensitive photo-polymerization. It is often used to form crosslinked polymer network and prepare PEG hydrogel. ACRL-PCL-PEG-Alkyne is used to prepare micelles or nanoparticles with alkyn on the micelle surface for bioconjugation via click chemistry and acrylate in the micelle core for crosslinking. Hydrophobic drugs is encapsulated in the PCL core for targeted drug delivery.

PCL Molecular Weight: 10000, 5000
PEG Molecular Weight: 5000, 3400, 2000
Package Size: 100 mg

ACRL-PEG-ACRL
Acrylate-PEG-Acrylate (ACRL-PEG-ACRL) is a linear bifunctional crosslinking PEG reagent with one acrylate at both ends of PEG. Acrylate groups can be used for radical initiator induced polymerization or UV light sensitive photopolymerization. It is often used to form crosslinked polymer network and prepare PEG hydrogel.

Molecular weight: 1000, 2000, 3500, 5000, 10K, 20K
Package size: 1g, 5g, 10g

ACRL-PEG-COOH
Acrylate-PEG-Carboxylic acid (ACRL-PEG-COOH) is a linear heterobifunctional PEG reagent with an acrylate and -COOH. It is a useful crosslinking reagent with a PEG spacer. Acrylate can polymerize with UV light or radical initiator, and COOH can react with amine. Acrylate-PEG-COOH may be used to introduce carboxylic acid group in PEG hydrogel.

Molecular weight: 1000, 2000, 3500, 5000, 10K
Package size: 500 mg, 1g

ACRL-PEG-MAL
Acrylate-PEG-Maleimide (ACRL-PEG-MAL) is a linear heterobifunctional PEG reagent with an acrylate and maleimide. It is a useful...
crosslinking reagent with a PEG spacer. Acrylate can polymerize with UV light or radical initiator, and maleimide can react with
thiol-containing groups. Acrylate-PEG-Mal may be used to introduce maleimide in PEG hydrogel.

(4373)
- Molecular weight: 1000, 2000, 3500, 5000, 10K
- Package size: 200 mg, 500 mg, 1g

**ACRL-PEG-NH2**

Acrylate-PEG-amine (ACRL-PEG-NH2) is a linear heterobifunctional PEG reagent with an acrylate and an amine. It is a useful
crosslinking reagent with a PEG spacer. Acrylate can polymerize with UV light or radical initiator, and amine can react with
carboxylic acid or NHS ester. Acrylate-PEG-Amine may be used to introduce an amine functional group in PEG hydrogel. The
product is typically provided in the TFA or HCl salt form.

(2588)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 100 mg, 1g, 5g

**ACRL-PEG-NHS**

Acrylate-PEG-succinimidyl ester (ACRL-PEG-NHS) is a linear heterobifunctional PEG reagent with an acrylate and NHS active
ester. It is a useful crosslinking reagent with a PEG spacer. Acrylate can polymerize with UV light or radical initiator, and NHS ester
can react with amine. Acrylate-PEG-NHS may be used to introduce NHS-containing group in PEG hydrogel.

(4361)
- Molecular weight: 1000, 2000, 3500, 5000, 10K
- Package size: 200 mg, 500 mg, 1g

**ACRL-PLA-PEG-ALK**

Acrylate-poly(L-lactide)-b-poly(ethylene glycol)-alkyne (ACRL-PLA-PEG-ALK) is a biofunctional amphiphilic block copolymer with
alkyne group at the end of PEG and acrylate at the end of polylactide. Alkynyl groups are useful for coupling via click chemistry
reactions with azide, while acrylate groups can be used for radical initiator induced polymerization or UV light sensitive photo-
polymerization. It is often used to form crosslinked polymer network and prepare PEG hydrogel. ACRL-PLA-PEG-Alkyl is used to
prepare micelles or nanoparticles with alkyne on the micelle surface for bioconjugation via click chemistry and acrylate in the
micelle core for crosslinking. Hydrophobic drugs is encapsulated in the PLA core for targeted drug delivery.

(9201)
- PLA Molecular Weight: 10000, 5000
- PEG Molecular Weight: 2000, 5000
- Package Size: 100 mg

**ACRL-PLGA-PEG-ALK**

Acrylate-poly(Lactide-co-glycolide)-b-poly(ethylene glycol)-alkyne (ACRL-PLGA-PEG-ALK) is a biofunctional amphiphilic block copolymer with
alkyne group at the end of PEG and acrylate at the end of polylactide. Alkynyl groups are useful for coupling via click chemistry
reactions with azide, while acrylate groups can be used for radical initiator induced polymerization or UV light sensitive photo-
polymerization. It is often used to form crosslinked polymer network and prepare PEG hydrogel. ACRL-PLA-PEG-Alkyl is used to
prepare micelles or nanoparticles with alkyne on the micelle surface for bioconjugation via click chemistry and acrylate in the
micelle core for crosslinking. Hydrophobic drugs is encapsulated in the PLA-core for targeted drug delivery.

(9218)
- PLGA Molecular Weight: 10000, 5000
- PEG Molecular Weight: 5000, 3400, 2000
- Package Size: 100 mg

**MPEG-ACRL**

Methoxypoly(ethylene glycol) Acrylate (MPEG-ACRL) is a linear monofunctional PEG reagent with an acrylate group that can be
used for radical initiator or UV light induced polymerization. It is often used to prepare PEG hydrogel. MPEG-methacrylate is
provided through our custom synthesis service.

(2523)
- Molecular weight: 1000, 2000, 5000, 10K, 20K
- Package size: 1g, 5g, 10g

**PLA-PEG-PLA Diacrylate**

Poly(lactide-block-poly(ethylene glycol))-block-poly(lactide diacrylate) (PLA-PEG-PLA diacrylate) is a A-B-A type triblock copolymers
used in drug encapsulation and drug delivery. It can be used to prepare hydrogel.
Acrylate group can be used for radical initiator or UV light induced polymerization for gel cross-linking. It is often used to prepare PEG hydrogel.

- PLA: Molecular weight: 1000, 2000
- PEG: Molecular weight: 1000, 2000, 3000
- Package size: 100mg, 1g

Silane-PEG-Acrylate

Silane-PEG-Acrylate (Acrylate-PEG-Silane, Silane-PEG-Acryl, or Acryl-PEG-Silane) is a linear heterobifunctional PEG reagent with an acrylate and a silane group. It is a useful cross-linking reagent with a PEG spacer. Acrylate can polymerize with UV light or radical initiator to form PEG hydrogel, and silane can react with glass or other hydroxylated surfaces.

- Molecular weight: 1000, 2000, 3500, 5000, 10K
- Package size: 200 mg, 500 mg, 1g
Active esters (SAS, SC, SCM, SG)

4-arm PEG-ALK

4-arm PEG-alkyne (4-arm PEG-ALK) is a multiarm PEG derivative with alkyne groups at each terminal of the eight arms connected to one pentaerythritol core. PEG-ALK is one type of click chemistry reagents. Alkyne can be used to conjugate azide-containing groups in mild condition.

- Molecular weight: 2K, 5K, 10K, 20K
- Package size: 1g, 5g, 10g

4-Arm PEG-SCM

Nanosoft Polymers offer 4 arm PEG Succinimidyl Carboxymethyl Ester (4-arm PEG-SCM) derivatives which can be cross-linked into PEG hydrogels. PEG hydrogels have a variety of applications in medical devices and regenerative medicine, and are especially of interest for controlled drug release. Nanosoft Polymers’ 4 arm PEGs are synthesized by ethoxylation of pentaerythritol (4ARM PEG). The number of ethylene oxide units in the PEG chain may not be equal for all arms.

- Molecular weight: 2K, 5K, 10K, 20K
- Package size: 1g, 5g, 10g

4-arm PEG-SS

4-arm PEG succinimidyl succinate ester (4-arm PEG-SS) is a multiarm PEG derivative with succinimidyl NHS active ester groups at each terminal of the 4 arms connected to one pentaerythritol core. PEG-SS (succinimidyl succinate ester) is one type of PEG-NHS reagents. There is a C2 hydrocarbon ester linkage between PEG and the NHS ester. NHS is a good leaving group which can react with amine-containing moieties.

- Molecular weight: 2K, 5K, 10K, 20K
- Package size: 1g, 5g, 10g

4-arm PLGA

4-arm poly(lactide-co-glycolide) (4-arm PLGA) is a multiarm PLGA connected to one pentaerythritol core. 4-arm PLGA is terminated with hydroxyl group for further modification. Otherwise noted, multiarm PLGA is composed of d,l-lactide and glycolide (50:50 ratio).

- Molecular weight: 5K, 10K, 20K, 30K, 40K
- Package size: 1g, 5g

8-arm PEG-GAS

8-Arm PEG-succinimidyl glutaramide ester (8-arm PEG-GAS) is a multiarm PEG derivative with succinimidyl NHS ester groups at each terminal of the eight arms connected to one hexaglycerol core. PEG-GAS is one type of PEG-NHS reagents. There is a C3 hydrocarbon amide linkage between PEG and the NHS ester.

- Molecular weight: 10k, 20k, 40k
- Package size: 1g, 5g, 10g

8-arm PEG-SAS

8-Arm PEG-succinimidyl succinamide ester (8-arm PEG-SAS) is a multiarm PEG derivative with succinimidyl NHS ester groups at each terminal of the eight arms connected to one hexaglycerol core. PEG-SAS is one type of PEG-NHS reagents. There is a C2 hydrocarbon amide linkage between PEG and the NHS ester.

- Molecular weight: 10k, 20k, 40k
- Package size: 1g, 5g, 10g
8-arm PEG-SCM
8-Arm PEG-succinimidyl carboxyl methyl ester (8-arm PEG-SCM) is a multiarm PEG derivative with succinimidyl NHS ester groups at each terminal of the eight arms connected to one hexaglycerol core. PEG-SCM is one type of PEG-NHS reagents. There is a methylene (CH₂) linkage between PEG and the NHS ester. NHS is a good leaving group which can react with amine-containing moieties.

Molecular weight: 10k, 20k, 40k
Package size: 1g, 5g, 10g

8-arm PEG-SG
8-arm PEG succinimidyl glutamate ester (8-arm PEG-SG) is a multiarm PEG derivative with succinimidyl NHS active ester groups at each terminal of the eight arms connected to one hexaglycerol core. PEG-SG (succinimidyl glutamate ester) is one type of PEG-NHS reagents. There is a C₃ hydrocarbon ester linkage between PEG and the NHS ester. NHS is a good leaving group which can react with amine-containing moieties.

Molecular weight: 10k, 20k, 40k
Package size: 1g, 5g, 10g

8-arm PEG-SS
8-arm PEG succinimidyl succinate ester (8-arm PEG-SS) is a multiarm PEG derivative with succinimidyl NHS active ester groups at each terminal of the eight arms connected to one hexaglycerol core. PEG-SG (succinimidyl succinate ester) is one type of PEG-NHS reagents. There is a C₂ hydrocarbon ester linkage between PEG and the NHS ester. NHS is a good leaving group which can react with amine-containing moieties.

Molecular weight: 10k, 20k, 40k
Package size: 1g, 5g, 10g

ACRL-PEG-NHS
Acrylate-PEG-succinimidyl ester (ACRL-PEG-NHS) is a linear heterobifunctional PEG reagent with an acrylate and NHS active ester. It is a useful crosslinking reagent with a PEG spacer. Acrylate can polymerize with UV light or radical initiator, and NHS ester can react with amine. Acrylate-PEG-NHS may be used to introduce NH₂-containing group in PEG hydrogel.

Molecular weight: 1000, 2000, 3500, 5000, 10K
Package size: 200 mg, 500 mg, 1g

BIO-PEG-NHS
Biotin-poly(ethylene glycol)-succinimidyl ester (BIO-PEG-NHS) is a linear bifunctional PEG derivative with a biotin group on reactive NHS ester. It is a useful crosslinking or bioconjugation reagent with a PEG spacer. Biotin can bind to avidin and streptavidin with high specificity and affinity and achieve non-covalent PEGylation; NHS can react with amine-containing ligands.

Molecular weight: 1000, 2000, 3500, 5000, 7500
Package size: 200 mg, 500 mg, 1g

Cholesterol-PEG-NHS
Cholesterol functionalized poly(ethylene glycol) with terminal N-hydroxysuccinimide (cholesterol-PEG-NHS) is a lipophilic lipid PEG conjugate with good water solubility. PEG cholesterol derivatives can be used to make targeted liposome to improve circulation time for encapsulated drugs. Cholesterol-PEG-NHS can be used to conjugate amine-containing peptides, antibodies or ligands for active targeting.

Molecular weight: 1000, 2000, 3400, 5000
Package size: 100 mg, 500 mg, 1g

DSPE-NHS
1,2-Distearoyl-sn-glycero-3-phosphoethanolamine-NHS ester (DSPE-NHS) is a phospholipid capped with NHS group. The active NHS ester capped head can be used to react with amine-containing groups for bioconjugation.

Phospholipids belong to the lipid family of biological polymers. A phospholipid is composed of two fatty acids, a glycerol unit, a phosphate group and a polar molecule. The phosphate group and polar head region of the molecule is hydrophilic (attracted to...
w ater), while the fatty acid tail is hydrophobic (repelled by w ater). When placed in w ater, phospholipids w ill orient themselves into a bilayer in which the non-polar tail region faces the inner area of the bilayer. The polar head region faces outward and interacts w ith the w ater.

DSPE-PEG-NHS

1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine (DSPE-PEG-NHS) is a linear heterobifunctional PEGylation reagent w ith a DSPE phospholipid and an active ester group. It is a useful self-assembly reagent to prepare PEGylated liposome or micelle while also providing a NHS group for conjugation w ith amine-containing moieties or ligands. It is often used in targeted drug delivery w ith the lipid bilayer to improve drug solubility, the PEG to provide stealth property, extend circulation half-life and reduce non-specific protein binding or cell adhesion, and the acid group to bioconjugate targeting molecules including antibody, aptamer, protein, and peptide.

FITC-PEG-NHS

FITC-PEG-succinimidyl ester (FITC-PEG-NHS) is a heterofunctional linker, w hich has active succinimidyl ester group on one end, and fluorescent probe (green) on the other end for labeling. NHS group can react w ith amine-containing groups.

Folate-PEG-NHS

NSP offers heterobifunctional Folate PEG NHS products (Folate-PEG-NHS, Folic acid-PEG-NHS) w ith high quality. Folic acid, or vitamin B9, can selectively bind to folate receptor, w hile the NHS ester can reactive w ith amine-containing moieties in alkaline conditions quickly and efficiently. This reaction allows attachment of folic acid ligand to proteins, antibodies, peptides or particle surfaces. The PEG moieties in the heterofunctional PEG derivatives provides w ater solubility, biocompatibility, and flexibility. Folic acid functionalized substrates have been used for targeted drug delivery, imaging, and bio-assay development.

GAS-PEG-GAS

Succinimidyl glutamic acid ester-PEG-succinimidyl glutamic acid ester (GAS-PEG-GAS) is a homobifunctional crosslinking PEG reagent to react w ith amine groups, and it is one type of NHS-PEG-NHS ester reagents. There is a C3 aliphatic amide linkage between PEG and the NHS ester.

HO-PEG-NHS

Hydroxy PEG Succinimidyl NHS ester (HO-PEG-NHS) is a linear heterobifunctional PEG derivative w ith one hydroxyl group and one NHS ester. It is a useful crosslinking reagent w ith a PEG spacer. There is a methylene (CH2) linkage between PEG and the succinimidyl carboxylate. Heterobifunctional PEG products w ith other NHS esters such as succinimidyl glutarate, succinate, glutaramide, and succinamide may be offered through our custom synthesis service.

LA-PEG-NHS

Lipoic acid-PEG-NHS (LA-PEG-NHS) is a heterofunctional linker, w hich has lipoic group on one end for surface modification, and amine-reactive N-hydroxysuccinimide esters (NHS) group on the other end for bioconjugation. Lipoic acid, also known as thioctic acid, is an important bioactive molecule participating in various biological processes. PEG functionalized lipoic acid can be used to bind to metallic particle or film surface w ith its -S-S-bond. Lipoic acid group has high affinity to metallic surfaces and have been w idely used for gold nanoparticles and quantum dots surfaces. PEGylated lipoic acid is w ater soluble and can be used directly in aqueous buffer.
MAL-PEG-SCM
MAL-PEG-SCM (MAL-PEG-NHS) is a linear heterobifunctional PEG reagent with a maleimide and a succinimidyl NHS ester group. It is a useful crosslinking reagent with a PEG spacer. Maleimide reacts with thiol, SH, sulfhydryl or mercapto, and SCM stands for succinimidyl carboxyl methyl ester and can react with primary amine. Maleimide contains a reactive O=C double bond and is light or oxygen sensitive.

MPEG-GAS
MPEG-glutaramide succinimidyl ester (MPEG-GAS) is one type of MPEG-NHS ester reagents. There is a C3 aliphatic amide linkage between PEG and the NHS ester. MPEG-GAS can be used to react with amine-containing molecules (peptides, proteins etc.).

MPEG-SAS
MPEG-SAS is one type of MPEG-NHS ester reagents. There is a C2 aliphatic amide linkage between PEG and the NHS ester.

MPEG-SC
MPEG Succinimidyl Carbonate (MPEG-SC) is one type of mPEG-NHS reagents. There is a methylene (CH2) linkage between PEG and the NHS ester. Active NHS ester can be used to conjugate amine-containing ligands.

MPEG-SS
Methoxypoly(ethylene glycol) Succinimidyl Succinate (MPEG-SS) is one type of mPEG-NHS ester reagents. There is a C2 aliphatic ester linkage between PEG and the NHS ester. NHS stands for N-Hydroxyl succinimide.

OPSS-PEG-NHS
OPSS-PEG-NHS is a linear heterobifunctional PEG reagent with an OPSS and a NHS ester. It is a useful crosslinking reagent with a PEG spacer. OPSS stands for ortho-pyridyl disulfide or ortho pyridyldithio and reacts with thiol, SH, sulfhydryl or mercapto to form a S-S bond. OPSS is sometimes called PDP, pyridyl dithio propionate. NHS ester is an activated carboxylic acid and can react with amine.

PCL-PEG-NHS
Poly(ε-caprolactone)-poly(ethylene glycol)-succinic ester (PCL-PEG-NHS) is a biodegradable amphiphilic copolymer with amine-reactive ester group at the PEG end. PCL-PEG-NHS is used to prepare polymeric micelle where its PEG shell which can be modified by targeting moieties, and hydrophobic drugs like paclitaxel can be packaged in its PLA core.
PLA-PEG-NHS
Poly(L-lactide)-block-poly(ethylene glycol)-succinic ester (PLA-PEG-NHS) is a biodegradable amphiphilic copolymer with amine-reactive ester group at the PEG end. PLA-PEG-NHS is used to prepare polymeric micelle where its PEG shell which can be modified by targeting moieties, and hydrophobic drugs like paclitaxel can be packaged in its PLA core.

- PLA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10000
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

PLGA-PEG-NHS
Poly(lactide-co-glycolide)-block-poly(ethylene glycol)-succinimidyl ester (PLGA-PEG-NHS) is a functional amphiphilic block copolymer, which has amine-reactive ester at the PEG end for bioconjugation. PLGA-PEG is one the most commonly used biodegradable amphiphilic block copolymers for drug delivery applications. PEG is the hydrophilic part and PLGA is the hydrophobic part.

- PLGA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

RhB-PEG-NHS
Rhodamine-PEG-succinimidyl ester (RhB-PEG-NHS) is a heterofunctional linker, which has active succinimidyl ester group on one end, and fluorescent probe (red) on the other end for labeling. NHS group can react with amine-containing groups.

- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 50 mg

SAS-PEG-SAS
SAS-PEG-SAS is a homobifunctional crosslinking PEG reagent to react with amine groups, and it is one type of NHS-PEG-NHS ester reagents. There is a C2 aliphatic amide linkage between PEG and the NHS ester.

- Molecular weight: 1000, 2000, 3500, 5000, 10K
- Package size: 1g, 5g, 10g

SG-PEG-SG
SG-PEG-SG is a homobifunctional crosslinking PEG reagent to react with amine groups, and it is one type of NHS-PEG-NHS ester reagents. There is a C3 aliphatic ester linkage between PEG and the NHS ester.

- Molecular weight: 1000, 2000, 3500, 5000, 10K, 20K
- Package size: 1g, 5g, 10g

SS-PEG-SS
SS-PEG-SS is a homobifunctional crosslinking PEG reagent to react with amine groups, and it is one type of NHS-PEG-NHS ester reagents. There is a C2 aliphatic ester linkage between PEG and the NHS ester.

- Molecular weight: 1000, 2000, 3500, 5000, 10K
- Package size: 1g, 5g, 10g

Stearic acid-PEG-NHS
Stearic acid-PEG-N-hydroxysuccinimide ester (Stearic acid-PEG-NHS) is an amphiphilic surfactant with terminated -NHS active ester for targeted drug delivery. NHS group can be used to react with amine-containing moieties.

Stearic acid is an 18 carbon saturated fatty acid lipid with excellent hydrophobicity. PEG modified stearic acid is an excellent amphiphilic polymer with both hydrophilicity and hydrophobility. PEGylated stearyl is an amphiphilic, PEG surfactant and can be used to form micelles, drug delivery systems to enhance drug solubility and improve drug formulation and bioavailability. PEGylated lipids are also excellent liposome formation materials that can be used for drug delivery, gene transfection and vaccine delivery as well. These materials can also be used for targeted drug delivery by modifying their surfaces with targeting ligands such as antibodies, peptides.
PEG molecular weight: 1000, 2000, 3400, 5000
Package size: 100mg, 1g
**Alkyne (ALK)**

8-arm PEG-ALK

8-Arm PEG-alkyne (8-arm PEG-ALK) is a multiamarm PEG derivative with alkyne groups at each terminal of the eight arms connected to one hexaglycerol core. PEG-ALK is one type of click chemistry reagents. Alkyne can be used to conjugate azide-containing groups in mild condition.

- Molecular weight: 10k, 20k, 40k
- Package size: 1g, 5g, 10g

ACRL-PCL-PEG-ALK

Acrylate-polycaprolactone-b-poly(ethylene glycol)-alkyne (ACRL-PCL-PEG-ALK) is a biofunctional amphiphilic block copolymer with alkyne group at the end of PEG and acrylate at the end of polycaprolactone. Alkyne groups are useful for coupling via click chemistry reactions with eth azide, while acrylate groups can be used for radical initiator induced polymerization or UV light sensitive photo-polymerization. It is often used to form cross-linked polymer network and prepare PEG hydrogel. ACRL-PCL-PEG-Alkyne is used to prepare micelles or nanoparticles with alkyne on the micelle surface for bioconjugation via click chemistry and acrylate in the micelle core for crosslinking. Hydrophobic drugs is encapsulated in the PCL core for targeted drug delivery.

- PCL Molecular Weight: 10000, 5000
- PEG Molecular Weight: 5000, 3400, 2000
- Package Size: 100 mg

ACRL-PLA-PEG-ALK

Acrylate-poly(L-lactide)-b-poly(ethylene glycol)-alkyne (ACRL-PLA-PEG-ALK) is a biofunctional amphiphilic block copolymer with alkyne group at the end of PEG and acrylate at the end of poly(L-lactide). Alkyne groups are useful for coupling via click chemistry reactions with eth azide, while acrylate groups can be used for radical initiator induced polymerization or UV light sensitive photo-polymerization. It is often used to form cross-linked polymer network and prepare PEG hydrogel. ACRL-PLA-PEG-Alkyne is used to prepare micelles or nanoparticles with alkyne on the micelle surface for bioconjugation via click chemistry and acrylate in the micelle core for crosslinking. Hydrophobic drugs is encapsulated in the PLA core for targeted drug delivery.

- PLA Molecular Weight: 10000, 5000
- PEG Molecular Weight: 5000, 3400, 2000
- Package Size: 100 mg

ACRL-PLGA-PEG-ALK

Acrylate-poly(L-Lactide-co-glycolide)-b-poly(ethylene glycol)-alkyne (ACRL-PLGA-PEG-ALK) is a biofunctional amphiphilic block copolymer with alkyne group at the end of PEG and acrylate at the end of polycaprolactone. Alkyne groups are useful for coupling via click chemistry reactions with eth azide, while acrylate groups can be used for radical initiator induced polymerization or UV light sensitive photo-polymerization. It is often used to form cross-linked polymer network and prepare PEG hydrogel. ACRL-PLGA-PEG-Alkyne is used to prepare micelles or nanoparticles with alkyne on the micelle surface for bioconjugation via click chemistry and acrylate in the micelle core for crosslinking. Hydrophobic drugs is encapsulated in the PLA-core for targeted drug delivery.

- PLGA Molecular Weight: 10000, 5000
- PEG Molecular Weight: 5000, 3400, 2000
- Package Size: 100 mg

ALK-PEG-ALK

Alkyne-PEG-alkyne (ALK-PEG-ALK) is a linear bifunctional PEG reagent with two reactive alkyne or acetylene groups and it is used for PEGylation via a click chemistry reaction with azide.

- Molecular weight: 1000, 2000, 3400, 5000, 10,000
- Package size: 1g, 5g, 10g

ALK-PEG-MAL

Alkyne-polyethylene glycol-maleimide (ALK-PEG-MAL) is a bifunctional PEG derivative that can be used to modify proteins, peptides and other materials via Click Chemistry. Alkyne group can react with azide in aqueous solution catalyzed by copper, and maleimide group can react with thiol group from a peptide. PEGylation can increase solubility and stability and reduce immunogenicity of peptides and proteins. It can also suppress the non-specific binding of charged molecules to the modified surfaces.
Alkyne-poly-L-Glutamic acid/Alk-pGlu

Alkyne capped poly-L-Glutamic acid (Alkyne-poly-L-Glutamic acid, ALK-PGlu, Alkyne-PGlu) is a negatively charged synthetic polypeptide acid. It is a crystalline solid soluble in water. Applications for poly-L-glutamic acid include the conjugation to active molecules for improved activities and the layer-by-layer deposition techniques for surface coating.

Alkyne-terminated polymers were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

Amine alkyne-PEG-COOH

Amine and Alkyne conjugated PEG-carboxylic acid (Amine alkyne-PEG-COOH, Alkyne amine-PEG-COOH) is a trifunctional PEG derivative, which has amine and alkyne group sharing one end and -COOH group on the other end.

Amine group can react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Alkyne were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

COOH can react with amine or OH containing entities.

Amine Alkyne-PEG-OH

Amine and Alkyne conjugated PEG-OH (Amine Alkyne-PEG-OH) is a trifunctional PEG derivative, which has amine and alkyne group sharing one PEG end and hydroxyl group on the other end. Multiple entities may be linked together by NSP’s trifunctional PEGs.

Amine group can react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Alkyne were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

OH can be further derivatized for bioconjugation.

Boc-amino alkyne-PEG-COOH

Boc-protected amine and alkyne conjugated PEG-carboxylic acid (Boc-amino alkyne-PEG-COOH, Alkyne Boc-amino-PEG-COOH) is a trifunctional PEG derivative, which has Boc-protected amine and alkyne group sharing one end and -COOH group on the other end.

tBoc-amino can be deprotected by acid (TFA) to free amine, which react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Alkyne were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

COOH can react with amine or OH containing entities.

Molecular weight: 1000, 2000, 3500, 5000
Package size: 100mg, 500mg, 1g

Molecular weight: 2500 (x=20), 5000 (x=38), 10K (x=76), 20K (x=154)
Package size: 100mg, 500mg, 1g

Molecular weight: 1000, 2000, 3400, 5000, 10K
Package size: 100mg, 1g

Molecular weight: 2000, 3400, 5000
Package size: 100mg, 1g

NSP-Functional Polymers & Copolymers catalog
www.nanosoftpolymers.com; Tel: 336-749-8700; Email: info@nanosoftpolymers.com
Boc-amine alkyne-PEG-OH

Boc-protected amine and alkyne conjugated PEG-OH (Boc-amine alkyne-PEG-OH) is a trifunctional PEG derivative, which has amine and alkyne group sharing one PEG end and hydroxyl group on the other end. Multiple entities may be linked together by NSP’s trifunctional PEGs.

Boc-amine can be deprotected by acid (TFA) to free amine, which react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Alkyne were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

OH can be further derivatized for bioconjugation.

MPEG-ALK

Methoxy poly(ethylene glycol)-alkyne (MPEG-ALK) is one type of linear monofunctional PEG reagents with alkyne group end. MPEG-ALK can be used to conjugate azide (N3) group-containing ligand by click chemistry.

PCL-PEG-ALK

Poly(ε-caprolactone)-block-poly(ethylene glycol)-alkyne (PCL-PEG-ALK) is a functional amphiphilic block copolymer with alkyne group at the end of PEG. Alkyne groups are useful for coupling via click chemistry reactions with azide. PCL-PEG-Alkyne is used to prepare micelles or nanoparticles with alkyne on the micelle surface for bioconjugation via click chemistry. Hydrophobic drugs is encapsulated in the PCL core for targeted drug delivery.

PLA-PEG-ALK

Poly(L-lactide)-b-poly(ethylene glycol)-alkyne (PLA-PEG-ALK) is a functional amphiphilic block copolymer with alkyne group at the end of PEG. Alkyne groups are useful for coupling via click chemistry reactions with azide. PLA-PEG-Alkyne is used to prepare micelles or nanoparticles with alkyne on the micelle surface for bioconjugation via click chemistry. Hydrophobic drugs is encapsulated in the PLA core for targeted drug delivery.

PLGA-PEG-ALK/PLGA-PEG-Alkyne

Poly(Lactide-co-glycolide)-b-poly(ethylene glycol)-alkyne (PLGA-PEG-ALK, PLGA-PEG-Alkyne) is a functional amphiphilic block copolymer with alkyne group at the end of PEG. Alkyne groups are useful for coupling via click chemistry reactions with azide. PLGA-PEG-Alkyne is used to prepare micelles or nanoparticles with alkyne on the micelle surface for bioconjugation via click chemistry. Hydrophobic drugs is encapsulated in the PLGA core for targeted drug delivery.
Alkyne terminated poly-L-lysine hydrochloride or Poly-L-lysine hydrochloride alkyne (PLL-Alkyne) is a positively charged synthetic polyamino acid having one HCl per lysine unit and alkyne group on the N-terminal. It is a crystalline solid soluble in water. Applications for poly-L-lysine hydrobromide include the promotion of cell adhesion to solid substrates for culture dishes or slides, the conjugation to active molecules for improved activities, the layer-by-layer deposition techniques, and the complexation with nucleic acids for gene expression.

Alkyne-terminated polymers were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

Molecular weight:
- 3300 (X=20), 8,200 (X=50), 16,000 (X=100), 32,000 (X=200)

Package size:
- 100mg, 500mg, 1g
Amines (NH2)

4-arm PEG-NH2
4-Arm PEG-Amine (4-arm PEG-NH2) is a multiarm PEG derivative with amine groups at each terminal of the four arms connected to one pentaerythritol core. The reactive primary amine or NH2 group can rapidly react with activated carboxyl acid such as NHS ester to form stable amide bonds.

- Molecular weight: 2,000, 5,000, 10,000, 20,000
- Package size: 1g, 5g, 10g

8-arm PEG-NH2
8-Arm PEG-Amine (8-arm PEG-NH2) is a multiarm PEG derivative with amine groups at each terminal of the eight arms connected to one hexaglycerol core. The reactive primary amine or NH2 group can rapidly react with activated carboxyl acid such as NHS ester to form stable amide bonds.

- Molecular weight: 10k, 20k, 40k
- Package size: 1g, 5g, 10g

Acetal-Poly-L-lysine
Acetal-capped poly-L-lysine (Acetal-poly-L-Lysine, Acetal-PLL) is a positively charged synthetic polyanimo acid. It is a crystalline solid soluble in water. Applications for poly-L-lysine include the promotion of cell adhesion to solid substrates for culture dishes or slides, the conjugation to active molecules for improved activities, the layer-by-layer deposition techniques, and the complexation with nucleic acids for gene expression.

Acetal-functionalized polymers can be easily reduced to aldehyde group using acidic aqueous conditions (pH=2-4). Aldehyde group can selectively react with amine or thiol group in aqueous solution.

- Molecular weight: 3300 (X=20), 8,200 (X=50), 16,000 (X=100), 32,000 (X=200)
- Package size: 100mg, 500mg, 1g

ACRL-PEG-NH2
Acrylate-PEG-amine (ACRL-PEG-NH2) is a linear heterobifunctional PEG reagent with an acrylate and an amine. It is a useful crosslinking reagent with a PEG spacer. Acrylate can polymerize with UV light or radical initiator, and amine can react with carboxylic acid or NHS ester. Acrylate-PEG-Amine may be used to introduce an amine functional group in PEG hydrogel. The product is typically provided in the TFA or HCl salt form.

- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 100mg, 1g, 5g

Amine alkyn e-PEG-COOH
Amine and Alkyn e conjugated PEG-carboxylic acid (Amine alkyn e-PEG-COOH, Alkyn e amine-PEG-COOH) is a trifunctional PEG derivative, w hich has amine and alkyn e group sharing one end and -COOH group on the other end.

Amine group can react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Alkyn e were used to react azide group “click” chemistry in mild condition, w hich is very useful for bioconjugation.

COOH can react with amine or OH containing entities.

- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g
Amine Alkyne-PEG-OH
Amine and Alkyne conjugated PEG-OH (Amine Alkyne-PEG-OH) is a trifunctional PEG derivative, which has amine and alkyne group sharing one PEG end and hydroxyl group on the other end. Multiple entities may be linked together by NSP's trifunctional PEGs.

Amine group can react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Alkyne were used to react azide group "click" chemistry in mild condition, which is very useful for bioconjugation.

OH can be further derivatized for bioconjugation.

(10337)
- Molecular weight: 2000, 3400, 5000, 10K
- Package size: 100mg, 1g

Amine-PEG3-Amine
1,11-Diamine-3,6,9-trioxaundecane (Amine-PEG3-Amine, NH2-PEG3-NH2), is a linear bifunctional monodisperse PEG crosslinking reagent with a reactive primary amine or NH2 group that can rapidly react with activated carboxylic acid or carboxyl groups such as NHS ester to form stable amide bonds.

(11196)
- Package size: 500mg, 1g

Azide amine-PEG-COOH
Amine and azide conjugated PEG-carboxylic acid (Amine azide-PEG-COOH, azide amine-PEG-COOH) is a trifunctional PEG derivative, which has amine and azide group sharing one end and -COOH group on the other end.

Amine group can react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Azide were used to react azide group "click" chemistry in mild condition, which is very useful for bioconjugation.

-COOH can react with amine or OH containing entities.

(10379)
- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g

Azide Amine-PEG-OH
Azide and amine conjugated PEG-OH (Azide amine-PEG-OH) is a trifunctional PEG derivative, which has azide and amine group sharing one PEG end and hydroxyl group on the other end. Multiple entities may be linked together by NSP's trifunctional PEGs.

Azide group can react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Azide were used to react azide group "click" chemistry in mild condition, which is very useful for bioconjugation.

OH can be further derivatized for bioconjugation.

(10366)
- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g

BIO-PEG-NH2
Biotin-PEG-amine (BIO-PEG-NH2) is a linear heterobifunctional PEG reagent with a biotin and an amine. It is a useful crosslinking or bioconjugation reagent with a PEG spacer. Biotin can bind to avidin and streptavidin with high specificity and affinity.

(2541)
- Molecular weight: 1000, 2000, 3500, 5000, 10K
- Package size: 200mg, 500mg, 1g
Biotin-poly-L-Glutamic acid/Biotin-pGlu

Biotin-Poly-L-glutamic acid (Biotin-pGlu) is a negatively charged synthetic polyamino acid with biotin on one end. It is a crystalline solid soluble in water.

Applications for poly-L-glutamic acid include the conjugation to active molecules for improved activities and the layer-by-layer deposition techniques for surface coating.

(11287)
- Molecular weight: 2500 (x=20), 5000 (x=38), 10K (x=76), 20K (x=154)
- Package size: 100mg, 500mg, 1g

Cholesterol-PEG-NH₂

Cholesterol functionalized polyethylene glycol with amine (cholesterol-PEG-NH₂, cholesterol-PEG-Amine) is a lipophilic lipid PEG conjugate with good water solubility. PEG cholesterol derivatives can be used to make targeted liposome to improve circulation time for encapsulated drugs. They may also be used for non-viral transfection reagents.

(3036)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 100mg, 500mg, 1g

DSPE-PEG-Amine/DSPE-PEG-NH₂

1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine (DSPE)-polyethylene glycol-amine (DSPE-PEG-Amine, DSPE-PEG-NH₂) is a linear heterobifunctional PEGylation reagent with a DSPE phospholipid and an amine. DSPE-PEG-NH₂ is used to modify liposome surface with biomolecules containing amine reactive groups (NHS, thiolate). It is a useful self-assembling reagent to prepare grafted or PEGylated liposome or middle while also providing an amine group for bioconjugation. It is often used in targeted drug delivery with the lipid bilayer to improve drug solubility, the PEG to provide stealth property, extend circulation half-life and reduce non-specific protein binding or cell adhesion, and the amine group to bioconjugate targeting molecules including antibody, aptamer, protein, and peptide.

(2828)
- Molecular weight: 600, 1000, 2000, 3400, 5000
- Package size: 100mg, 500mg, 1g

Folate-PEG-Amine

NSP offers heterobifunctional Folate-PEG-Amine (Folate-PEG-NH₂, Folic acid-PEG-NH₂) with high quality. Folic acid, or vitamin B9, can selectively bind to folate receptor, while Primary amine can react with a variety of functional groups such as succinimidyl ester (NHS), carboxylic acids (COOH), anhydride and many others. The PEG moiety in the heterobifunctional PEG derivatives provides water solubility, biocompatibility, and flexibility. This reaction allows attachment of folic acid ligand to proteins, antibodies, peptides or particle surfaces. Folic acid functionalized substrates have been used for targeted drug delivery, imaging, and bioassay development.

(11409)
- Molecular weight: 1000, 2000, 3500, 5000, 10K
- Package size: 50mg, 100 mg

Folate-PEG-COOH

NSP offers heterobifunctional Folate PEG Acetic Acid products (Folate-PEG-COOH, Folic acid-PEG-COOH) with high quality. Folic acid, or vitamin B9, can selectively bind to folate receptor, while the carboxylic group can reactive with amine-containing moieties. The PEG moiety in the heterobifunctional PEG derivatives provides water solubility, biocompatibility, and flexibility.

(11379)
- Molecular weight: 1000, 2000, 3500, 5000, 10K
- Package size: 50mg, 100 mg

LA-PEG-NH₂

Lipoic acid-PEG-Amine (LA-PEG-NH₂) is a heterobifunctional linker, which has lipoic group on one end for surface modification, and amine group on the other end. Lipoic acid (LA), also known as thioctic acid, is an important bioactive molecule participating in various biological processes. PEG functionalized lipoic acid can be used to bind to metallic particle or film surface with its -S-S-bond. Lipoic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipoic acid is water soluble and can be used directly in aqueous buffer.

(3208)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 200mg, 500mg, 1g

**Maleimide-PEG-Amine/Mal-PEG-NH2**

Maleimide-PEG-Amine (Mal-PEG-NH2) is a linear heterobifunctional PEG reagent with a maleimide and an amine. It is a useful crosslinking reagent with a PEG spacer. Maleimide reacts with thiol, SH, sulphydryl or mercapto, and amine can react with carboxylic acid or activated NHS ester. Mal-PEG-NH2 can also be used to synthesize PEGylated block copolymers such as PEG-PLL (poly-L-lysine) and PEG-PLGA (poly-L-glutaric acid). It is typically provided as a TFA or HCl salt. Maleimide contains a reactive C=C double bond and is light or oxygen sensitive.

(2554)

- Molecular weight: 1000, 2000, 3500, 5000, 10k
- Package size: 100mg, 500mg, 1g

**MPEG-NH2**

Methoxypoly(ethylene glycol) amine (MPEG-NH2) is a linear methoxy PEG reagent with a reactive primary amine or NH2 group that can rapidly react with activated carboxyl acid such as NHS ester to form stable amide bonds. Amine can also react with carbonyl such as ketone and aldehyde.

(2402)

- Molecular weight: 1000, 2000, 5000, 10K, 30K
- Package size: 1g, 5g

**N3-PEG-NH2**

Azide-PEG-amine (N3-PEG-NH2) is a linear heterobifunctional PEG reagent with an azide and an amine group on the PEG ends. It is a useful crosslinking reagent with a PEG spacer. Azide can be used for molecule conjugation by click chemistry, and amine can react with carboxylic acid or NHS ester. The product is typically provided in the TFA or HCl salt form. Azide-PEG-Amine may be used for bioconjugation, drug delivery, PEG hydrogel, crosslinker, and surface functionalization.

(9347)

- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 1g, 5g

**N3-PEG2-NH2**

8-Azido-3,6-dioxaundecan-1-amine (Azide-PEG2-Amine, N3-PEG-NH2) is a mono-dispersed heterofunctional PEG with an azide and an amine group on the PEG ends. It is a useful crosslinking reagent with a PEG spacer. Azide can be used for molecule conjugation by click chemistry, and amine can react with carboxylic acid or NHS ester. The product is typically provided in HCl salt form. Azide-PEG-Amine may be used for bioconjugation, drug delivery, PEG hydrogel, crosslinker, and surface functionalization.

(11209)

- Package size: 500mg, 1g

**NH2-PEG-COOH**

Amine-PEG-Carboxyl

NH2-PEG-COOH is a linear heterobifunctional PEG reagent with one amine and one carboxyl. It is a useful crosslinking reagent with a PEG spacer. Typically, it is offered as its HCl or TFA salt.

(2481)

- Molecular weight: 1000, 2000, 3500, 5000, 10k
- Package size: 200mg, 500mg, 1g

**NH2-PEG-COOtBu**

Amine-PEG-tert Butyl protected carboxylic acid (NH2-PEG-COOtBu) is a linear heterobifunctional PEG reagent with one amine and one tertiary butyl ester protected carboxylic acid. It is a useful crosslinking reagent with a PEG spacer. The protected acid can be regenerated by mild acidic or basic conditions. Typically, the product is offered as its HCl or TFA salt.

(10535)

- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g
NH2-PEG-NH2

Amine-PEG-Amine (NH2-PEG-NH2) is a linear bifunctional PEG crosslinking reagent with a reactive primary amine or NH2 group that can rapidly react with activated carboxylic acid or carboxyl groups such as NHS ester to form stable amide bonds.

- Molecular size: 1000, 2000, 3500, 5000, 10K, 20k
- Package size: 1g, 5g, 10g

NH2-PEG-OH

Amine-PEG-Hydroxyl (NH2-PEG-OH) is a linear heterobifunctional PEG derivative with one hydroxyl group and one amine group. It is a useful crosslinking reagent with a PEG spacer. Typically, it is offered as its HCl or TFA salt.

- Molecular weight: 1000, 2000, 3400, 5000, 7500, 10k, 20k
- Package size: 1g, 5g

OPSS-PEG-NH2

Ortho-pyridyl disulfide (OPSS) functionalized polyethylene glycol-amine (OPSS-PEG-NH2) is a thiol (-SH) group reactive PEG derivative that can be used to modify biomolecules or other materials via their available thiol groups. Ortho-pyridyl disulfide reacts with thiol group to form a stable disulfide bond while a thiol pyridyl group is released.

- Molecular weight: 1000, 2000, 3500, 5000
- Package size: 100mg, 500mg, 1g

PCL-PEG-NH2

Poly(ε-caprolactone)-block-poly(ethylene glycol)-Amine (PCL-PEG-NH2) is a functional amphiphilic block copolymer (ABC) which has amine group at the end of PEG block and is used to prepare nanoparticles and micelles for targeted drug delivery. PCL-PEG is one of the most commonly used biodegradable ABC polymers for drug delivery.

- PCL Molecular Weight: 1000, 2000, 3000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

PDLLA-amine/PDLLA-NH2

Amine capped poly(D,L-Lactide) (PDLLA-Amine, PDLLA-NH2, PLA-Amine, PLA-NH2, NH2-PLA) can be used to prepare nanoparticles, which can be further modified by amine-reactive entities.

Poly(lactides) is a family of biodegradable and bioactive thermoplastic aliphatic polyester. It is used to fabricate resorbable medical devices that degrade over months in physiological conditions. Due to their history, poly(lactides) are one of the easiest and most affordable biodegradable polymers for medical devices. PDLLA polymer is amorphous because the polymer composed randomly by the repeating units from L-lactic acid and D-lactic acid. Therefore, the polymer did not show melting point and has inferior mechanical properties than PLLA, so that the polymer is mainly applied for the coating of suture.

- Molecular weight: 2000, 5000, 10K, 16K, 20K
- Package size: 100mg, 1g

PLA-PEG-NH2

Poly(L-lactide)-block-poly(ethylene glycol)-Amine (PLA-PEG-NH2) is a functional amphiphilic block copolymer (ABC) which has amine group at the end of PEG block and is used to prepare nanoparticles and micelles for targeted drug delivery. PLA-PEG is one of the most commonly used biodegradable ABC polymers for drug delivery.

Specified molecular weight and molecular ratio may be available by custom synthesis. Please call for ask.

- PLA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10000
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g
**PLGA-Amine/PLGA-NH₂ (50:50)**

Amine capped poly(D,L-lactide-co-glycolide) (PLGA-Amine, PLGA-NH₂, NH₂-PLGA, LA/GA: 50:50) can be used to prepare nanoparticles, which can be further modified by amine-reactive entities. PLGA-amine can be used to prepare polymer-drug conjugates.

Poly (lactic-co-glycolic acid) (PLGA) is one of the most effective biodegradable polymeric nanoparticles (NPs). It has been approved by the US FDA to use in drug delivery systems due to controlled and sustained-release properties, low toxicity, and biocompatibility with tissue and cells.

- Molecular weight: 5000, 10K, 20K, 40K
- Package size: 100mg, 1g

**PLGA-PEG-NH₂**

Poly(L-lactide-co-glycolide)-block-poly(ethylene glycol)-Amine (PLGA-PEG-NH₂) is a functional amphiphilic block copolymer (ABC) which has amine group at the end of PEG block and is used to prepare nanoparticles and micelles for targeted drug delivery. PLGA-PEG is one of the most commonly used biodegradable ABC polymers for drug delivery.

- PLGA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

**PLL-PEG**

Poly(L-Lysine)-PEG methyl ether (PLL-PEG, PEG-PLL) is a linear amphiphilic block copolymer which has PLL as the hydrophobic section and PEG as the hydrophilic section. PLL section has pendant free amine groups. PLL-PEG can self assemble into micelles with functional PLL core for drug and gene delivery.

- PLL MW: 3000, 7500, 15K
- PEG MW: 1000, 2000, 5000
- Package size: 200mg, 500mg, 1g

**PLL-PEG-N3**

Poly(L-Lysine)-poly(ethylene glycol)-azide (PLL-PEG-N3) is amphiphilic block copolymer that has PLL as the core-forming block and azide-functionalized PEG as the shell-forming block. PLL-PEG-N3 has pendant free amine in PLL block and azide in PEG block. It can self assemble into micelles with azide on the micelle surface for shell modification by click chemistry.

- Molecular weight of PLL: 3000, 7500, 15K
- Molecular weight of PEG: 5000
- Package size: 50mg, 200mg, 500mg

**Stearic acid-PEG-NH₂**

Stearic acid-PEG-amine (Stearic acid-PEG-NH₂, or C18-PEG-NH₂) is an amphiphilic surfactant with terminal amine group, which can be used to design micelles or nanoparticles for targeted drug delivery.

PEGylated stearin is an amphiphilic, PEG surfactant and can be used to form micelles, drug delivery systems to enhance drug solubility and improve drug formulation and bioavailability. PEG is attached to the C18 alkyl (octadecanoic acid) through an amide bond.

- PEG molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g
tBoc-NH-PEG-NH₂

1-Butoxycarbonyl-Amine-PEG-Amine (tBoc-NH-PEG-NH₂) is a linear heterobifunctional PEG reagent with Boc protected amine and a free amine. It is a useful crosslinking reagent with a PEG spacer. The free amine typically in the form of TFA or HCl salt can be used to react with carboxyl or NHS ester. The protected amine can be regenerated by mild acidic conditions.

Typical method for Boc deprotection

\[
\text{TFA/CH₂Cl₂ (20\%)} \quad 2 \text{ h}
\]

- Molecular weight: 1000, 2000, 3500, 5000, 10k
- Package size: 1g, 5g

Thiol-PEG-Amine/HS-PEG-NH₂

NH₂–(CH₂CH₂O)₅–CH₂CH₂–SH

Thiol-PEG-Amine (NH₂-PEG-SH, HS-PEG-NH₂) is a linear heterobifunctional PEGylation reagent with a thiol and an amine. It is a useful crosslinking or bioconjugation reagent with a PEG spacer. Thiol, or SH, sulfhydryl, or mercapto group selectively reacts with maleimide, OPSS, vinylsulfone and transition metal surface including gold, silver, etc.

- Molecular Weight: 1000, 2000, 3500
- Package size: 100mg, 1g
Azide (N₃)

4-arm PEG-N₃

4-arm PEG Azide (4-arm PEG-N₃) is a multiam arm PEG derivative which has -N₃ at each PEG end and can be cross-linked into PEG hydrogels. Azide groups are useful for coupling via click chemistry reactions with alkynes. PEG hydrogels have a variety of applications in medical devices and regenerative medicine, and are especially of interest for controlled release of drugs, for 2D and 3D cell culture, and for wound sealing and healing. Nanosoft Polymers 4 arm PEGs are synthesized by ethoxylation of pentaerythritol (4 ARM PEG). The number of ethylene oxide units in the PEG chain may not be equal for all arms.

(2427)

- Molecular weight: 2K, 5K, 10K, 20K
- Package size: 1 g, 5 g, 10 g

8-arm PEG-N₃

8-arm PEG Azide (8-arm PEG-N₃) is a multiam arm PEG derivative which has -N₃ at each PEG end and can be cross-linked into PEG hydrogels. Azide groups are useful for coupling via click chemistry reactions with alkynes. PEG hydrogels have a variety of applications in medical devices and regenerative medicine, and are especially of interest for controlled release of drugs, for 2D and 3D cell culture, and for wound sealing and healing. Nanosoft Polymers 8 arm PEGs are synthesized by ethoxylation of hexaglycerol corepentaerythritol (8 ARM PEG). The number of ethylene oxide units in the PEG chain may not be equal for all arms.

(4455)

- Molecular weight: 10K, 20K, 40K
- Package size: 1 g, 5 g, 10 g

Amine and azide conjugated PEG-carboxylic acid (Amine azide-PEG-COOH, azide amine-PEG-COOH) is a trifunctional PEG derivative, which has amine and azide group sharing one end and -COOH group on the other end. Amine group can react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde. Azide were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

COOH can react with amine or OH containing entities.

(10379)

- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g

Amine Amine-PEG-OH

Amine and amine conjugated PEG-OH (Amine amine-PEG-OH) is a trifunctional PEG derivative, which has amine and amine group sharing one PEG end and hydroxyl group on the other end. Multiple entities may be linked together by NSP’s trifunctional PEGs. Amine group can react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde. Azide were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

OH can be further derivatized for bioconjugation.

(10366)

- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g

Boc-amine Azide-PEG-COOH

Boc protected amine and azide conjugated PEG-carboxylic acid (Boc-amine Azide-PEG-COOH, Azide Boc-amine-PEG-COOH) is a trifunctional PEG derivative, which has amine and alkyn group sharing one end and -COOH group on the other end. tBoc-amine can be deprotected by acid (TFA) to free amine, which react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.
Azide were used to react azide group "click" chemistry in mild condition, which is very useful for bioconjugation.

COOH can react with amine or OH containing entities.

(10393)
- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g

Boc-amine azide-PEG-OH
Azide and Boc-protected amine conjugated PEG-OH (Boc-amine azide-PEG-OH) is a trifunctional PEG derivative, which has azide and amine group sharing one PEG end and hydroxyl group on the other end. Multiple entities may be linked together by NSP’s trifunctional PEGs.

Boc-amine can be deprotected by acid (TFA) to free amine, which react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Azide were used to react azide group "click" chemistry in mild condition, which is very useful for bioconjugation.

OH can be further derivatized for bioconjugation.

(10509)
- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g

Cholesterol-PEG-N3
Cholesterol functionalized polyethylene glycol with terminal azide group (Cholesterol-PEG-N3), is a lipophilic lipid PEG conjugate with good water solubility. Cholesterol-PEG derivatives can be used to make targeted liposome to improve circulation time for encapsulated drugs. They may also be used for non-viral transfection reagents. The formed nanoparticles can be modified by ligands containing alkyne group by click chemistry.

(3018)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 100mg, 500mg, 1g

DSPE-Azide/DSPE-N3
1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine-N-azide (DSPE-azide, DSPE-N3) is a phospholipid capped with azide group. The azide capped head can be used to react with alkynes cyclooctyne in aqueous solution with or without copper catalyst.

Phospholipids belong to the lipid family of biological polymers. A phospholipid is composed of two fatty acids, a glycerol unit, a phosphate group and a polar molecule. The phosphate group and polar head region of the molecule is hydrophilic (attracted to water), while the fatty acid tail is hydrophobic (repelled by water). When placed in water, phospholipids will orient themselves into a bilayer in which the non-polar tail region faces the inner area of the bilayer. The polar head region faces outward and interacts with the water.

Phospholipids are excellent natural biomaterials for drug delivery.

(10731)
- Package size: 100mg, 200mg, 500mg, 1g

DSPE-PEG-Azide/DSPE-PEG-N3
DSPE-PEG-azide (DSPE-PEG-N3) is lipid-PEG conjugate with terminated azide. NSP azide PEG DSPE products can be used to prepare pegylated liposome using Click Chemistry. Azide reacts readily with alkyne or cyclooctyne in aqueous solution with or without copper catalyst.

PEG conjugated 1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine (DSPE), DSPE-PEG is a phospholipid PEG conjugate which has both hydrophilicity and hydrophobicity. Pegylated phospholipids are excellent liposome formation materials that can be used for drug delivery, gene transfection and vaccine delivery as well. Pegylation of phospholipids significantly improves the blood circulation time and stability for encapsulated drugs. These materials can also be used for targeted drug delivery by modifying their surfaces with targeting ligands such as antibodies, peptides.

(2274)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 100mg, 500mg, 1g
**Fmoc amine azide-PEG-COOH**

Fmoc protected amine and azide conjugated PEG-carboxylic acid (Fmoc amine azide-PEG-COOH, azide Fmoc amine-PEG-COOH) is a trifunctional PEG derivative, which has Fmoc-protected amine and azide group sharing one end and -COOH group on the other end.

Fmoc protected amine can be deprotected by piperidine to free amine which can react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Azide were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

COOH can react with amine or OH containing entities.

Molecular weight: 1000, 2000, 3400, 5000
Package size: 100mg, 1g

**MPEG-N3**

Methoxypoly(ethylene glycol) Azide (MPEG-N3) is a linear monofunctional PEG reagent with a reactive azide (N3) and it is used for PEGylation via a click chemistry reaction with alkyne or acetylene.

Molecular weight: 1000, 2000, 5000, 10K, 20K, 30K
Package size: 1g, 5g, 10g

**N3-PEG-BIO**

Azide-PEG-Biotin (N3-PEG-BIO) is a linear heterobifunctional PEG reagent with an azide and a biotin group on the PEG ends. It is a useful crosslinking reagent with a PEG spacer. Azide can be used for molecule conjugation by click chemistry, and biotin can bind to streptavidin. Azide-PEG-biotin may be used to for bioconjugation, drug delivery, PEG hydrogel, crosslinker, and surface functionalization.

High quality azide-PEG-biotin (N3-PEG-BIO) with a standard quality specification of >90% Substitution.

Heterobifunctional PEG reagents from NSP are generally employed as crosslinking agents or as spacers between two different chemical entities. The PEG moiety in the heterofunctional PEG derivatives provides water solubility, biocompatibility, and flexibility. Applications are especially geared toward the development of antibody drug conjugates.

Molecular weight: 1000, 2000, 3400, 5000, 10K
Package size: 100mg, 1g

**N3-PEG-COOH**

Azide-PEG-carboxyl (N3-PEG-COOH) is a linear heterobifunctional PEG reagent with an azide and a carboxyl group on the PEG ends. It is a useful crosslinking reagent with a PEG spacer. Azide can be used for molecule conjugation by click chemistry, and carboxyl can react with amine groups. Azide-PEG-carboxyl may be used to for bioconjugation, drug delivery, PEG hydrogel, crosslinker, and surface functionalization.

High quality azide-PEG-carboxyl (N3-PEG-COOH) with a standard quality specification of >90% Substitution.

Heterobifunctional PEG reagents from NSP are generally employed as crosslinking agents or as spacers between two different chemical entities. The PEG moiety in the heterofunctional PEG derivatives provides water solubility, biocompatibility, and flexibility. Applications are especially geared toward the development of antibody drug conjugates.

Molecular weight: 1000, 2000, 3400, 5000, 10K
Package size: 1g, 5g

**N3-PEG-LA**

Azide-PEG-Lipoic acid (N3-PEG-LA) is a linear heterobifunctional PEG reagent with an azide and a lipoic acid group on the PEG ends. It is a useful crosslinking reagent with a PEG spacer. Azide can be used for molecule conjugation by click chemistry, and lipoic acid can be used to bind to metallic particle or film surface with its -S-S-bond. Azide-PEG-Lipoic acid may be used to for bioconjugation, drug delivery, PEG hydrogel, crosslinker, and surface functionalization.
Lipoic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipoic acid is water soluble and can be used directly in aqueous buffer. High quality azide-PEG-lipoic acid (N3-PEG-LA) with a standard quality specification of >90% Substitution.

Heterobifunctional PEG reagents from NSP are generally employed as crosslinking agents or as spacers between two different chemical entities. The PEG moiety in the heterofunctional PEG derivatives provides water solubility, biocompatibility, and flexibility. Applications are especially geared towards the development of antibody drug conjugates.

N3-PEG-Mal
Azide-PEG-maleimide (N3-PEG-Mal) is a linear heterobifunctional PEG reagent with an azide and a maleimide group on the PEG ends. It is a useful crosslinking reagent with a PEG spacer. Azide can be used for molecule conjugation by click chemistry, and maleimide can react with thiol groups. Azide-PEG-maleimide may be used to for bioconjugation, drug delivery, PEG hydrogel, crosslinker, and surface functionalization.

High quality azide-PEG-maleimide (N3-PEG-Mal) with a standard quality specification of >90% Substitution.

Heterobifunctional PEG reagents from NSP are generally employed as crosslinking agents or as spacers between two different chemical entities. The PEG moiety in the heterofunctional PEG derivatives provides water solubility, biocompatibility, and flexibility. Applications are especially geared towards the development of antibody drug conjugates.

N3-PEG-N3
Azide-PEG-Azide (N3-PEG-N3) is a linear bifunctional PEG reagent with two reactive azides and it is used for crosslinking PEGylation via a click chemistry reaction between azide and alkyne or acetylene.

N3-PEG-NH2
Azide-PEG-amine (N3-PEG-NH2) is a linear heterobifunctional PEG reagent with an azide and an amine group on the PEG ends. It is a useful crosslinking reagent with a PEG spacer. Azide can be used for molecule conjugation by click chemistry, and amine can react with carboxylic acid or NHS ester. The product is typically provided in the TFA or HCl salt form. Azide-PEG-Amine may be used to for bioconjugation, drug delivery, PEG hydrogel, crosslinker, and surface functionalization.

N3-PEG-OH
Azide-polyethylene glycol-Hydroxyl (N3-PEG-OH) is a bifunctional PEG derivative that can be used to modify proteins, peptides and other materials via Click Chemistry. Azide group can react with alkyne in aqueous solution catalyzed by copper, and hydroxyl group can react with COOH group from a peptide. PEGylation can increase solubility and stability and reduce immunogenicity of peptides and proteins. It can also suppress the non-specific binding of charged molecules to the modified surfaces.

N3-PEG-SH
Azide-PEG-thiol (Azide-PEG-SH, N3-PEG-SH) is a linear heterobifunctional PEG reagent with an azide and a thiol group on the PEG ends. It is a useful crosslinking reagent with a PEG spacer. Azide can be used for molecule conjugation by click chemistry, and thiol can react with -SH or maleimide groups. Azide-PEG-thiol may be used to for bioconjugation, drug delivery, PEG hydrogel, crosslinker, and surface functionalization.
High quality azide-PEG-thiol (N3-PEG-SH) with a standard quality specification of >90% Substitution.

Heterobifunctional PEG reagents from NSP are generally employed as crosslinking agents or as spacers between two different chemical entities. The PEG moiety in the heterofunctional PEG derivatives provides water solubility, biocompatibility, and flexibility. Applications are especially geared towards the development of antibody drug conjugates.

(9371)
- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 200mg, 1g

N3-PEG2-NH2
8-Azido-3,6-dioxaundecan-1-amine (Azide-PEG2-Amine, N3-PEG-NH2) is a mono-dispersed heterofunctional PEG with an azide and an amine group on the PEG ends. It is a useful crosslinking reagent with a PEG spacer. Azide can be used for molecule conjugation by click chemistry, and amine can react with carboxylic acid or NHS ester. The product is typically provided in the H2O salt form. Azide-PEG-Amine may be used for bioconjugation, drug delivery, PEG hydrogel, crosslinker, and surface functionalization.

(11209)
- Package size: 500mg, 1g

N3-Poly-L-Glutamic acid/N3-pGlu
N3-Poly-L-glutamic acid (pGlu) is a negatively charged synthetic polyamino acid.
- It is a crystalline solid soluble in water.
- Applications for poly-L-glutamic acid include the conjugation to active molecules for improved activities and the layer-by-layer deposition techniques for surface coating.
- Azide group can be used for bioconjugation by click chemistry

(11237)
- Molecular weight: 2500 (x=20), 5000 (x=38), 10K (x=76), 20K (x=154)
- Package size: 100mg, 500mg, 1g

PCL-PEG-N3
Poly(ε-caprolactone)-block-poly(ethylene glycol)-azide (PCL-PEG-N3) is a functional amphiphilic block copolymer with azide group at the end of PEG. Azide groups are useful for coupling via click chemistry reactions with alkynes. PCL-PEG-N3 is used to prepare micelles or nanoparticles with azide on the micelle surface for bioconjugation via click chemistry. Hydrophobic drugs is encapsulated in the PCL core for targeted drug delivery.

(2679)
- PCL Molecular Weight: 1000, 2000, 3000, 4000, 5000
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

PDLLA-Azide/PDLLA-N3
Azide capped poly(D,L-lactide) (PDLLA-Azide, PDLLA-N3, N3-PDLLA) can be used to prepare azide functionalized nanoparticles. Azide can be used to react with alkynes cyclooctyne in aqueous solution with or without copper catalyst.

Poly lactides are a family of biodegradable and bioactive thermoplastic aliphatic polyester. It is used to fabricate resorbable medical devices that degrade over months in physiological conditions. Due to their history, poly lactides are one of the easiest and most affordable biodegradable polymers for medical devices. PDLLA polymer is amorphous because the polymer composed randomly by the repeating units from L-lactic acid and D-lactic acid. Therefore, the polymer did not show melting point and has inferior mechanical properties than PLLA, so that the polymer is mainly applied for the coating of suture.

(109653)
- Molecular weight: 5000, 10K, 20K
- Package size: 100mg, 1g
pGlu-PEG-N3
Poly(L-Glutamic acid)-PEG-Azide (pGlu-PEG-N3) is a linear amphiphilic block copolymer (ABC) which has poly(L-Glutamic acid) as the hydrophobic section and azide-functionalized PEG as the hydrophilic section. ABC can self-assemble into micelles. P(L-Glu)-PEG-N3 has reactive groups on both sections, i.e., the pendant free -COOH on P(L-Glu) can be used to modify micelle core and -N3 group on PEG can be used to modify micelle shell by click chemistry.

(2929)
- Poly(L-glutamic acid) MW: 3000, 7500
- PEG MW: 2000, 5000
- Package size: 100mg, 500mg

PLA-PEG-N3
Poly(L-lactide)-b-poly(ethylene glycol)-azide (PLA-PEG-N3) is a functional amphiphilic block copolymer with azide group at the end of PEG. Azide groups are useful for coupling via click chemistry reactions with alkynes. PLA-PEG-N3 is used to prepare micelles or nanoparticles with azide on the micelle surface for bioconjugation via click chemistry. Hydrophobic drugs is encapsulated in the PLA core for targeted drug delivery.

(2713)
- PLA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10000
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

PLGA-PEG-N3
Poly(L-lactide-co-glycolide)-b-poly(ethylene glycol)-azide (PLGA-PEG-N3, PLGA-PEG-azide) is a functional amphiphilic block copolymer with azide group at the end of PEG. Azide groups are useful for coupling via click chemistry reactions with alkynes. PLGA-PEG-N3 is used to prepare micelles or nanoparticles with azide on the micelle surface for bioconjugation via click chemistry. Hydrophobic drugs is encapsulated in the PLGA core for targeted drug delivery.

(2774)
- PLGA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

PLL-PEG-N3
Poly(L-Lysine)-poly(ethylene glycol)-azide (PLL-PEG-N3) is amphiphilic block copolymer that has PLL as the core-forming block and azide-functionalized PEG as the shell-forming block. PLL-PEG-N3 has pendant free amine in PLL block and azide in PEG block. It can self-assemble into micelle with azide on the micelle surface for shell modification by click chemistry.

(3635)
- Molecular weight of PLL: 3000, 7500, 15K
- Molecular weight of PEG: 5000
- Package size: 50mg, 200mg, 500mg
Biotins (BIO)

**BIO-PEG-BIO**
Biotin-PEG-biotin (BIO-PEG-BIO) can be used for crosslinking PEGylation by binding to streptavidin and avidin with high affinity and specificity. Biotin is conjugated to a linear PEG through a stable amide linker.

- Molecular weight: 1000, 2000, 3500, 5000, 10k
- Package size: 1g, 5g, 10g

**BIO-PEG-COOH**
Biotin conjugated PEG-COOH (BIO-PEG-COOH) is a linear heterobifunctional PEG reagent with a biotin and a carboxylic acid. It is a useful crosslinking or bioconjugation reagent with a PEG spacer. Biotin can bind to avidin and streptavidin with high specificity and affinity and achieve non-covalent PEGylation.

- Molecular weight: 1000, 2000, 3500, 5000, 10k
- Package size: 200mg, 500mg, 1g

**BIO-PEG-FITC**
Biotin-PEG-FITC (BIO-PEG-FITC) is a heterofunctional linker which has biotin group on one end, and fluorescent probe (green) on the other end for labeling. Biotin can bind to avidin and streptavidin with high specificity and affinity.

- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 50 mg

**BIO-PEG-MAL**
Biotin-PEG-Maleimide (BIO-PEG-MAL) is a linear heterobifunctional PEGylation reagent with a biotin and a maleimide. It is a useful crosslinking, bioconjugation reagent with a PEG spacer. Biotin can bind to avidin and streptavidin with high specificity and affinity. Maleimide can conjugate with thiol, SH, sulfhydryl or mercapto group to form a disulfide bond.

- Molecular weight: 1000, 2000, 3500, 5000, 7500, 10k
- Package size: 500mg, 1g

**BIO-PEG-NH2**
Biotin-PEG-amine (BIO-PEG-NH2) is a linear heterobifunctional PEG reagent with a biotin and an amine. It is a useful crosslinking or bioconjugation reagent with a PEG spacer. Biotin can bind to avidin and streptavidin with high specificity and affinity.

- Molecular weight: 1000, 2000, 3500, 5000, 10k
- Package size: 200mg, 500mg, 1g

**BIO-PEG-NHS**
Biotin-poly(ethylene glycol)-succinimidyl ester (BIO-PEG-NHS) is a linear bifunctional PEG derivative with a biotin group on reactive NHS ester. It is a useful crosslinking or bioconjugation reagent with a PEG spacer. Biotin can bind to avidin and streptavidin with high specificity and affinity and achieve non-covalent PEGylation. NHS can react with amine-containing ligands.

- Molecular weight: 1000, 2000, 3500, 5000, 7500
- Package size: 200mg, 500mg, 1g

**BIO-PEG-OH**
Biotin-PEG-OH (BIO-PEG-OH) is a linear heterobifunctional PEGylation reagent with a biotin and an hydroxyl. It is a useful crosslinking or bioconjugation reagent with a PEG spacer. Biotin can bind to avidin and streptavidin with high specificity and affinity.

- Molecular weight: 1000, 2000, 3400, 5000, 10k
- Package size: 100mg, 1g
BIO-PEG-RhB
Biotin-PEG-Rhodamine (BIO-PEG-RhB) is a heterofunctional linker, which has Biotin group on one end, and fluorescent probe (red) on the other end for labeling. Biotin group can react with amine-containing groups.

Molecular weight: 1000, 2000, 3400, 5000
Package size: 50 mg

Biotin-PEG2-Maleimide
Biotin-PEG2-Maleimide (BIO-PEG2-MAL) is a linear heterobifunctional PEGylation reagent with a biotin and a maleimide. It is a useful crosslinking, bioconjugation reagent with a PEG spacer. Biotin can bind to avidin and streptavidin with high specificity and affinity. Maleimide can conjugate with thiol, SH, sulfhydryl or mercapto group to form a disulfide bond.

Molecular weight: 2500 (x=20), 5000 (x=38), 10K (x=76), 20K (x=154)
Package size: 25mg, 50mg, 100mg

Biotin-poly-L-Glutamic acid/Biotin-pGlu
Biotin-Poly-L-glutamic acid (Biotin-pGlu) is a negatively charged synthetic polyamino acid with biotin on one end. It is a crystalline solid soluble in water.
Applications for poly-L-glutamic acid include the conjugation to active molecules for improved activities and the layer-by-layer deposition techniques for surface coating.

Molecular weight: 2500 (x=20), 5000 (x=38), 10K (x=76), 20K (x=154)
Package size: 100mg, 500mg, 1g

Cholesterol-PEG-BIO
Cholesterol functionalized polyethylene glycol with conjugated terminal biotin (Cholesterol-PEG-BIO, cholesterol-PEG-Biotin), is a lipophilic lipid PEG conjugate with good water solubility. PEG cholesterol derivatives can be used to make targeted liposomes to improve circulation time for encapsulated drugs. They may also be used for non-viral transfection reagents. The biotin-functionalized nanoparticles can bind to streptavidin and avidin with high affinity and specificity.

Molecular weight: 1000, 2000, 3400, 5000
Package size: 100mg, 500mg, 1g

DSPE-Biotin/DSPE-Bio
1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine -Biotin (DSPE-Biotin, DSPE-Bio) is a phosphalipid capped with Biotin group. Biotin can specifically binds to avidin or streptavidin.
Phospholipids belong to the lipid family of biological polymers. A phospholipid is composed of two fatty acids, a glycerol unit, a phosphate group and a polar molecule. The phosphate group and polar head region of the molecule is hydrophilic (attracted to water), while the fatty acid tail is hydrophobic (repelled by water). When placed in water, phospholipids will orient themselves into a bilayer in which the non-polar tail region faces the inner area of the bilayer. The polar head region faces outward and interacts with the water.
Phospholipids are excellent natural biomaterials for drug delivery.

Package size: 50mg, 100mg, 1g

DSPE-PEG-Biotin/DSPE-PEG-BIO
DSPE-PEG-Biotin (DSPE-PEG-BIO) is a linear heterobifunctional PEGylation reagent with a DSPE phospholipid and a biotin. It is a useful self-assembling reagent to prepare grafted or PEGylated liposome or micelle while also providing an biotin group for binding to avidin or streptavidin.

It is often used in targeted drug delivery with the lipid bilayer to improve drug solubility, the PEG to provide stealth property, extend circulation half-life and reduce non-specific protein binding or cell adhesion, and the biotin group to non-covalently bind to targeting
molecules including antibody, aptamer, protein, and peptide.

- **LA-PEG-BIO**
  - Lipoic acid-PEG-Biotin (LA-PEG-BIO) is a heterofunctional linker, which has lipoic group on one end for surface modification, and biotin group on the other end for avidin. Lipoic acid, also known as thioctic acid, is an important bioactive molecule participating in various biological processes. PEG functionalized lipoic acid can be used to bind to metallic particle or film surface with its -S-S- bond. Lipoic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipoic acid is water soluble and can be used directly in aqueous buffer.

- **MPEG-BIO**
  - Methoxypoly(ethylene glycol) Biotin (MPEG-BIO) can be used for PEGylation by binding to streptavidin and avidin with high affinity and specificity. Biotin is conjugated to a linear PEG through a stable amide linker.

- **N3-PEG-BIO**
  - Azide-PEG-Biotin (N3-PEG-BIO) is a linear heterobifunctional PEG reagent with an azide and a biotin group on the PEG ends. It is a useful crosslinking reagent with a PEG spacer. Azide can be used for molecule conjugation by click chemistry, and biotin can bind to streptavidin. Azide-PEG-biotin may be used to for bioconjugation, drug delivery, PEG hydrogel, crosslinker, and surface functionalization.

- **PCL-PEG-BIO**
  - Poly(ε-caprolactone)-block-poly(ethylene glycol)-Biotin (PCL-PEG-BIO) is a functional amphiphilic block copolymer (ABC) which has biotin group at the end of PEG block and is used to prepare nanoparticles and micelles for targeted drug delivery. PCL-PEG is one of the most commonly used biodegradable ABC polymers for drug delivery. Biotin can bind to avidin and streptavidin with high specificity and affinity.

- **PDLLA-Biotin/PDLLA-Bio**
  - Biotinylated poly(D,L-lactide) (PDLLA-Biotin, PDLLA-Bio, Bio-PDLLA) can be used to prepare nanoparticles. Biotinylate-PDLLA can be used to prepare targeted nanoparticles that can specifically bind to avidin or streptavidin.

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**NSP-Functional Polymers & Copolymers catalog**

[www.nanosoftpolymers.com](http://www.nanosoftpolymers.com); Tel: 336-749-8700; Email: info@nanosoftpolymers.com
PLA-PEG-BIO
Poly(L-lactide)-block-poly(ethylene glycol)-Biotin (PLA-PEG-Bio) is a functional amphiphilic block copolymer (ABC) which has biotin group at the end of PEG block and is used to prepare nanoparticles and micelles for targeted drug delivery. PLA-PEG is one of the most commonly used biodegradable ABC polymers for drug delivery. Biotin can bind to avidin and streptavidin with high specificity and affinity.

- Molecular weight: 5000, 10K, 20K
- Package size: 100mg, 1g

PLA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10000
PEG Molecular Weight: 1000, 2000, 5000
Package size: 100mg, 1g

PLGA-Biotin/PLGA-Bio
Biotin functionalized poly(L-lactide-co-glycolide) (PLGA-Biotin, PLGA-Bio, Biotinylate-PLGA) can be used to prepare targeted nanoparticles. Biotin can specifically bind to avidin or streptavidin.

Poly (lactic-co-glycolic acid) (PLGA) is one of the most effective biodegradable polymeric nanoparticles (NPs). It has been approved by the US FDA to use in drug delivery systems due to controlled and sustained-release properties, low toxicity, and biocompatibility with tissue and cells.

- Molecular weight: 5000, 10K, 20K
- Package size: 100mg, 1g

PLGA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10000
PEG Molecular Weight: 1000, 2000, 3000, 5000
Package size: 100mg, 500mg, 1g

PLGA-PEG-BIO
Poly(L-lactide-co-glycolide)-block-poly(ethylene glycol)-Biotin (PLGA-PEG-Bio, PLGA-PEG-Biotin) is a functional amphiphilic block copolymer (ABC) which has biotin group at the end of PEG block and is used to prepare nanoparticles and micelles for targeted drug delivery. PLGA-PEG is one of the most commonly used biodegradable ABC polymers for drug delivery. Biotin can bind to avidin and streptavidin with high specificity and affinity.

- Molecular weight: 3300 (X=20), 8,200 (X=50), 16,000 (X=100), 32,000 (X=200)
- Package size: 100mg, 500mg, 1g

Poly-L-lysine hydrochloride biotin
Biotinylated poly-L-lysine hydrochloride or Poly-L-lysine hydrochloride biotin (PLL-biotin) is a positively charged synthetic polypeptide with one biotin per lysine unit and biotin on the N-terminal. It is a crystalline solid soluble in water. Applications for poly-L-lysine hydrobromide include the promotion of cell adhesion to solid substrates for culture dishes or slides, the conjugation to active molecules for improved activities, the layer-by-layer deposition techniques, and the complexation with nucleic acids for gene expression.

Biotins (BIO)-functionalized polymers can bind to streptavidin and avidin with high affinity and specificity.

- Molecular weight: 3300 (X=20), 8,200 (X=50), 16,000 (X=100), 32,000 (X=200)
- Package size: 100mg, 500mg, 1g

Silane-PEG-Biotin
Silane-PEG-Biotin is a linear heterobifunctional PEG reagent with a biotin and an silane.

- It is a useful crosslinking or bioconjugation reagent with a PEG spacer.
- Biotin can bind to avidin and streptavidin with high specificity and affinity. Silane can be used to react with glass, silica, or other hydroxylated particle surface.
- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g, 5g
Carboxylic acids (COOH)

4-arm PEG-COOH

4-Arm PEG-carboxylic acid (4-arm PEG-COOH) is a multiarm PEG derivative with carboxylic acid groups at each terminal of the four arms connected to one hexaglycerol core. There is a methylene (CH2) linkage between PEG and the COOH group, often called acetic acid (AA) or carboxyl methyl (CM). More details can be found at the FAQ webpage. PEG acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

(2418)
- Molecular weight: 2000, 5000, 10K, 20K
- Package size: 1g, 5g, 10g

4-arm PEG-GA

4-Arm PEG-glutamic acid (4-arm PEG-GA) is a multiarm PEG derivative with carboxylic acid groups at each terminal of the four arms connected to one pentaerythritol core. There is a C3 hydrocarbon ester between PEG and the glutamic acid COOH group. PEG acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

(4170)
- Molecular weight: 2K, 5K, 10K, 20K
- Package size: 1g, 5g, 10g

4-arm PEG-GAA

4-Arm PEG-amino glutamic acid (4-arm PEG-GAA) is a multiarm PEG derivative with carboxylic acid groups at each terminal of the eight arms connected to one pentaerythritol core. There is a C3 amide linkage between PEG and the glutamic acid COOH group. PEG acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

(4199)
- Molecular weight: 2K, 5K, 10K, 20K
- Package size: 1g, 5g, 10g

4-arm PEG-SA

4-Arm PEG-succinic acid (4-arm PEG-SA) is a multiarm PEG derivative with carboxylic acid groups at each terminal of the four arms connected to one pentaerythritol core. There is a C2 hydrocarbon ester linkage between PEG and the succinic acid COOH group. PEG acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

(4155)
- Molecular weight: 2K, 5K, 10K, 20K
- Package size: 1g, 5g, 10g

4-arm PEG-SAA

4-Arm PEG-amino succinic acid (4-arm PEG-SAA) is a multiarm PEG derivative with carboxylic acid groups at each terminal of the eight arms connected to one pentaerythritol core. There is a C2 amide linkage between PEG and the succinamide acid COOH group. PEG acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

(4193)
- Molecular weight: 2K, 5K, 10K, 20K
- Package size: 1g, 5g, 10g

8-arm PEG-COOH

8-Arm PEG-acid (8-arm PEG-COOH) is a multiarm PEG derivative with carboxylic acid groups at each terminal of the eight arms connected to one hexaglycerol core. PEG acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

(2449)
- Molecular weight: 10k, 20k, 40k
- Package size: 1g, 5g, 10g

8-arm PEG-GA

8-Arm PEG-glutamic acid (8-arm PEG-GA) is a multiarm PEG derivative with carboxylic acid groups at each terminal of the eight arms connected to one hexaglycerol core. There is a C3 amide linkage between PEG and the glutamic acid COOH group. PEG acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.
8-arm PEG-GAA
8-Arm PEG-amino glutamic acid (8-arm PEG-GAA) is a multiarm PEG derivative with carboxylic acid groups at each terminal of the eight arms connected to one hexaglycerol core. There is a C3 amide linkage between PEG and the glutaric acid COOH group. PEG acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

Molecular weight: 10,000, 20,000, 40,000
Package size: 1g, 5g, 10g

8-arm PEG-SA
8-Arm PEG-succinic acid (8-arm PEG-SA) is a multiarm PEG derivative with carboxylic acid groups at each terminal of the eight arms connected to one hexaglycerol core. There is a C2 amide linkage between PEG and the succinic acid COOH group. PEG acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

Molecular weight: 10k, 20k, 40k
Package size: 1g, 5g, 10g

8-arm PEG-SAA
8-Arm PEG-amino succinic acid (8-arm PEG-SAA) is a multiarm PEG derivative with carboxylic acid groups at each terminal of the eight arms connected to one hexaglycerol core. There is a C2 amide linkage between PEG and the succinamide acid COOH group. PEG acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

Molecular weight: 10k, 20k, 40k
Package size: 1g, 5g, 10g

AA-PEG-AA
Carboxyl methyl-PEG-carboxyl methyl (AA-PEG-AA) is one type of linear bifunctional PEG carboxylic acid reagents. There is a methylene (CH2) linkage between PEG and the COOH group. AA-PEG-AA is also called CM-PEG-CM, CM: carboxyl methyl. PEG acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

Molecular weight: 1000, 2000, 3400, 5000, 10K
Package size: 1g, 5g, 10g

ACRL-PEG-COOH
Acrylate-PEG-Carboxylic acid (ACRL-PEG-COOH) is a linear heterobifunctional PEG reagent with an acrylate and -COOH. It is a useful crosslinking reagent with a PEG spacer. Acrylate can polymerize with UV light or radical initiator, and COOH can react with amine. Acrylate-PEG-COOH may be used to introduce carboxylic acid group in PEG hydrogel.

Molecular weight: 1000, 2000, 3500, 5000, 10K
Package size: 500 mg, 1g

Amine alknye-PEG-COOH
Amine and Alkynye conjugated PEG-carboxylic acid. (Amine alknye-PEG-COOH, Alkynye amine-PEG-COOH) is a trifunctional PEG derivative, which has amine and alkynye group sharing one end and -COOH group on the other end.

Amine group can react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Alkynye were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

Molecular weight: 1000, 2000, 3400, 5000, 10K
Package size: 100mg, 1g
**Azide amine-PEG-COOH**

Amine and azide conjugated PEG-carboxylic acid (Amine azide-PEG-COOH, azide amine-PEG-COOH) is a trifunctional PEG derivative, which has amine and azide group sharing one end and -COOH group on the other end.

Amine group can react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Azide were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

COOH can react with amine or OH containing entities.

(10379)
- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g

**BIO-PEG-COOH**

Biotin conjugated PEG-COOH (BIO-PEG-COOH) is a linear heterobifunctional PEG reagent with a biotin and a carboxylic acid. It is a useful crosslinking or bioconjugation reagent with a PEG spacer. Biotin can bind to avidin and streptavidin with high specificity and affinity and achieve non-covalent PEGylation.

(2606)
- Molecular weight: 1000, 2000, 3500, 5000, 10k
- Package size: 200mg, 500mg, 1g

**Boc-amine alkyne-PEG-COOH**

Boc-protected amine and alkyne conjugated PEG-carboxylic acid (Boc-amine alkyne-PEG-COOH, Alkyne Boc-amine-PEG-COOH) is a trifunctional PEG derivative, which has Boc-protected amine and alkyne group sharing one end and -COOH group on the other end.

tBoc-amine can be deprotected by acid (TFA) to free amine, which react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Alkyne were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

COOH can react with amine or OH containing entities.

(10485)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 100mg, 1g

**Boc-NH-PEG-COOH**

Boc-NH-PEG-COOH is a linear heterobifunctional PEG reagent with one Boc protected amine and one carboxyl. It is a useful crosslinking reagent with a PEG spacer. The protected amine can be regenerated by mild acidic conditions such as TFA or dilute HCl.

(2488)
- Molecular weight: 1000, 2000, 3500, 5000
- Package size: 500mg, 1g

**Cholesterol-PEG-COOH**

Cholesterol functionalized polyethylene glycol with terminal carboxylic group (Cholesterol-PEG-COOH) is a lipophilic lipid PEG conjugate with good water solubility. PEG cholesterol derivatives can be used to make targeted liposome to improve circulation time for encapsulated drugs. They may also be used for non-viral transfection reagents. The COOH functionalized nanoparticles can be used to surface modification.

(3042)
- Molecular weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 500mg, 1g
**DBCO-PEG-COOH**

DBCO (dibenzocyclooctyne) PEG acid or DBCO-PEG-carboxylic acid (DBCO-PEG-COOH) is a heterobifunctional reactive PEG derivative that can go Click Chemistry reaction without a need of any metal catalysts. The strain-promoted 1,3-dipolar cycloaddition of cyclooctynes and azides, also termed as the Cu-free click reaction, is a bioorthogonal reaction that enables the conjugation of two molecules in aqueous solution. DBCO PEG derivatives possess fast kinetics and stability in aqueous buffer. DBCO reagents can be used to label azide-modified biomolecules spontaneously without the need for toxic Cu catalysts. Carboxylic acid group, on the other hand, can be activated to react with amines, hydroxy and other functional groups.

(11062)
- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 50mg, 100mg

**DSPE-glutaric acid**

1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine-N-(glutaryl) (DSPE-glutaric acid, DSPE-GA) is a phospholipid capped with glutaric acid group. The glutaric acid capped head can be used to react with OH or amine for bioconjugation.

Phospholipids belong to the lipid family of biological polymers. A phospholipid is composed of two fatty acids, a glycerol unit, a phosphate group and a polar molecule. The phosphate group and polar head region of the molecule is hydrophilic (attracted to water), while the fatty acid tail is hydrophobic (repelled by water). When placed in water, phospholipids will orient themselves into a bilayer in which the non-polar tail region faces the inner area of the bilayer. The polar head region faces outward and interacts with the water.

Phospholipids are excellent natural biomaterials for drug delivery.

(10714)
- Package size: 100mg, 200mg, 500mg, 1g

**DSPE-PEG-COOH**

1,2-distearoyl-sn-glycero-3-phosphoethanolamine-PEG-succinic acid (DSPE-PEG-COOH), (or N-succinyl-L-α-phosphatidylethanolamine, Distearoyl) is a DSPE-PEG conjugate with carboxylic acid group at the end of PEG. DSPE-PEG-COOH is used to prepare long-circulating liposomes with free -COOH on the liposome surface for further modification. It is extensively used for targeted drug/gene delivery.

(2142)
- Molecular size of PEG: 1000, 2000, 3400, 5000
- Package size: 100mg, 500mg, 1g

**DSPE-succinic acid**

1,2-Distearoyl-sn-glycero-3-phosphoethanolamine-N(succinyl) (DSPE-succinic acid, DSPE-SA) is a phospholipid capped with succinic acid group. The succinic acid capped head can be used to react with OH or amine for bioconjugation.

Phospholipids belong to the lipid family of biological polymers. A phospholipid is composed of two fatty acids, a glycerol unit, a phosphate group and a polar molecule. The phosphate group and polar head region of the molecule is hydrophilic (attracted to water), while the fatty acid tail is hydrophobic (repelled by water). When placed in water, phospholipids will orient themselves into a bilayer in which the non-polar tail region faces the inner area of the bilayer. The polar head region faces outward and interacts with the water.

Phospholipids are excellent natural biomaterials for drug delivery.

(10706)
- Package size: 100mg, 200mg, 500mg, 1g

**Fmoc amine azide-PEG-COOH**

Fmoc protected amine and azide conjugated PEG-carboxylic acid (Fmoc amine azide-PEG-COOH, azide Fmoc amine-PEG-COOH) is a trifunctional PEG derivative, which has Fmoc-protected amine and azide group sharing one end and -COOH group on the other end.

Fmoc protected amine can be deprotected by piperidine to free amine which can react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.
Azide were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

COOH can react with amine or OH containing entities.

(10578)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 100mg, 1g

Fmoc-NH-PEG-COOH
Fmoc-NH-PEG-carboxyl (Fmoc-NH-PEG-COOH) is a linear heterobifunctional PEG reagent with one Fmoc protected amine and one carboxylic acid. It is a useful crosslinking reagent with a PEG spacer. The protected amine can be regenerated by mild basic conditions.

(2484)
- Molecular weight: 1000, 2000, 3500, 5000, 10k
- Package size: 200mg, 500mg, 1g

GA-PEG-GA
Glutaric acid-PEG-Glutaric acid (GA-PEG-GA) is one type of linear bifunctional PEG carboxylic acid reagents. There is a C3 ester linkage between PEG and the carboxy COOH group. PEG carboxyl acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

(4441)
- Molecular size: 1000, 2000, 3500, 5000, 10K
- Package size: 1g, 5g, 10g

GA-PEG-GAA
GAA-PEG-GAA is one type of linear bifunctional PEG carboxylic acid reagents. There is a C3 amide linkage between PEG and the carboxy COOH group. PEG carboxyl acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

(2387)
- Molecular size: 1000, 2000, 3500, 5000, 10K, 20K
- Package size: 1g, 5g, 10g

HO-PEG-COOH
α-hydroxyl-ω-carboxyl poly(ethylene glycol) (HO-PEG-COOH) is a linear heterofunctional PEG with hydroxyl on one end and carboxy group on the other. It is a useful cross-linking reagent with a PEG spacer. There is a methylene (CH2) linkage between PEG and COOH, often called AA (acetic acid) or CM (carboxyl methyl). Heterobifunctional PEG products with other carboxylic acid such as GA (glutaric acid), SA (succinic acid), GAA (glutaramide acid), and SAA (succinamide acid) may be offered through our custom synthesis service.

(2395)
- Molecular size: 1000, 2000, 3500, 5000, 10k
- Package size: 200mg, 500mg, 1 g

HS-PEG-COOH
Thiol-PEG-carboxyl (HS-PEG-COOH) is a linear heterobifunctional PEG reagent with a thiol and a carboxyl group. It is a useful crosslinking reagent with a PEG spacer.

(2468)
- Molecular weight: 1000, 2000, 3500, 5000
- Package size: 500mg, 1g

LA-PEG-COOH
Lipoic acid-PEG-COOH (LA-PEG-COOH) is a heterofunctional linkers for surface modification. Lipoic acid, also known as thiotic acid, is an important bioactive molecule participating in various biological processes. PEG functionalized lipoic acid can be used to bind to metallic particle or film surface with its -S-S-bond. Lipoic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipoic acid is water soluble and can be used directly in aqueous buffer.

(3182)
MAL-PEG-COOH
MAL-PEG-COOH is a linear heterobifunctional PEG reagent with a maleimide and a carboxylic acid. It is a useful crosslinking reagent with a PEG spacer. Maleimide reacts with thiol, SH, sulfhydryl or mercapto, and carboxyl group can react with amine or hydroxyl under standard amine/carboxylic acid or alcohol coupling conditions. Maleimide contains a reactive C=C double bond and is light or oxygen sensitive.

MPEG-AA
Methoxy poly(ethylene glycol)-carboxyl aid (MPEG-AA) is one type of linear monofunctional PEG acid reagents. There is a methylene (CH2) linkage between PEG and the COOH group. MPEG-AA is also called MPEG-CM, carboxyl methyl. PEG acid can be used to react with amine groups with the peptide coupling reagents such as NHS and DCC, EDC.

MPEG-GA
MPEG-GA is one type of linear monofunctional PEG carboxylic acid reagents. There is a C3 aliphatic ester linkage between PEG and the COOH group. MPEG carboxylic acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

MPEG-GAA
MPEG-GAA is one type of linear monofunctional PEG carboxylic acid reagents. There is a C3 amide linkage between PEG and the carboxy COOH group. MPEG carboxyl acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC.

MPEG-pGlu
Methoxy(poly(ethylene glycol)-block-poly(L-glutamic acid) (MPEG-pGlu) is a linear PEG-poly(L-Amino Acid) block copolymer which can be self assembled into micelles. Poly(L-glutamic acid) is core-forming block, which has pendant free -COOH groups for drug conjugation and core modification. MPEG-pGlu is one of the most commonly used biodegradable copolymers for drug delivery.

MPEG-PLA-COOH
Methoxy poly(ethylene glycol)-poly(L-lactide) carboxylic acid (MPEG-PLA-COOH) is a functional biodegradable amphiphilic block copolymers (ABCs) which has -COOH group at the end of PLA block, is used to prepare nanoparticles and micelles for drug delivery. Micelle core can be further modified by -COOH group to increase drug loading efficiency or micelle stability.

MPEG-PLGA-COOH
Methoxy poly(ethylene glycol)-b-Poly(lactide-co-glycolide) carboxylic acid (mPEG-PLGA-COOH) is a biodegradable
a biodegradable amphiphilic block copolymers (ABCs) with terminated -COOH with PLGA block for drug conjugation. 

PEG is the hydrophilic part and PLGA is the hydrophobic part.

- Amphiphilic block copolymers (ABC) consist of chemically different homopolymer blocks. One of the block is hydrophilic and the other one is hydrophobic. These macromolecules have the properties to self-assemble into micelles when dissolved in an aqueous media.

(9780)

PLGA Molecular Weight: 2K, 5K, 10K
PEG Molecular Weight: 1K, 2K, 5K
Package Size: 100mg, 1g

MPEG-SA

MPEG-SA is one type of linear monofunctional PEG carboxylic acid reagents. There is a C2 aliphatic ester linkage between PEG and the COOH group. PEG carboxylic acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

(4513)

- Molecular size: 1000, 2000, 5000, 10K, 20K
- Package size: 1g, 5g, 10g

MPEG-SAA

MPEG-SAA is one type of linear monofunctional PEG carboxylic acid reagents. There is a C2 amide linkage between PEG and the carboxy COOH group. PEG carboxyl acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

(4492)

- Package size: 1g, 5g, 10g
- Molecular size: 1000, 2000, 5000, 10K, 20K

N3-PEG-COOH

Azide-PEG-carboxyl (N3-PEG-COOH) is a linear heterobifunctional PEG reagent with an azide and a carboxyl group on the PEG ends. It is a useful crosslinking reagent with a PEG spacer. Azide can be used for molecule conjugation by click chemistry, and carboxyl can react with amine groups. Azide-PEG-carboxyl may be used to for bioconjugation, drug delivery, PEG hydrogel, crosslinker, and surface functionalization.

High quality azide-PEG-carboxyl (N3-PEG-COOH) with a standard quality specification of >90% Substitution.

Heterobifunctional PEG reagents from NSP are generally employed as crosslinking agents or as spacers between two different chemical entities. The PEG moiety in the heterofunctional PEG derivatives provides water solubility, biocompatibility, and flexibility. Applications are especially geared toward the development of antibody drug conjugates.

(9359)

- Molecular Weight: 1000, 2000, 3400, 5000, 10K
- Package Size: 1g, 5g

N3-Poly-L-Glutamic acid/N3-pGlu

N3-Poly-L-glutamic acid (pGlu) is a negatively charged synthetic polyamino acid.

- It is a crystalline solid soluble in water.
- Applications for poly-L-glutamic acid include the conjugation to active molecules for improved activities and the layer-by-layer deposition techniques for surface coating.
- Azide group can be used for bioconjugation by click chemistry

(11237)

- Molecular weight: 2500 (x=20), 5000 (x=58), 10K (x=76), 20K (x=154)
- Package size: 100mg, 500mg, 1g
NH2-PEG-COOH

Amine-PEG-Carboxyl

NH2-PEG-COOH is a linear heterobifunctional PEG reagent with one amine and one carboxyl. It is a useful crosslinking reagent with a PEG spacer. Typically, it is offered as its HCl or TFA salt. (2481)

- Molecular weight: 1000, 2000, 3500, 5000, 10k
- Package size: 200mg, 500mg, 1g

NH2-PEG-COObBu

Amine-PEG-tert Butyl protected carboxylic acid (NH2-PEG-COObBu) is a linear heterobifunctional PEG reagent with one amine and one tert butyl ester protected carboxylic acid. It is a useful crosslinking reagent with a PEG spacer. The protected acid can be regenerated by mild acidic or basic conditions. Typically, the product is offered as its HCl or TFA salt. (10535)

- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g

OPSS-PEG-COOH

OPSS-PEG-COOH is a linear heterobifunctional PEG reagent with an OPSS and a carboxyl group. It is a useful crosslinking reagent with a PEG spacer. OPSS stands for orthopyridyl disulfide or ortho pyridyldithio and reacts with thiol, SH, sulfhydryl or mercapto to form a S-S bond. OPSS is sometimes called PDP, pyridyl dithio propionate. The COOH can react with amine or hydroxyl under standard acid/amine or acid/alcohol coupling conditions. (2634)

- Molecular weight: 1000, 2000, 3500, 5000, 10k
- Package size: 200mg, 500mg, 1g

OPSS-poly-L-Glutamic acid

Orthopyridyl disulfide capped poly-L-Glutamic acid (OPSS-poly-L-Glutamic acid, OPSS-PGLu, Pyridylthio-PGLu) is a negatively charged synthetic polypeptide acid. It is a crystalline solid soluble in water. Applications for poly-L-glutamic acid include the conjugation to active molecules for improved activities and the layer-by-layer deposition techniques for surface coating. Orthopyridyl disulfide or pyridyldithio (OPSS) functionalized polymers can selectively react with free thiol, SH, sulfhydryl or mercapto to form a oxidation, reduction reversible disulfide bond. (11299)

- Molecular weight: 2500 (x=20), 5000 (x=38), 10K (x=76), 20K (x=154)
- Package size: 100mg, 500mg, 1g

PDLLA-COOH

Acid capped poly(D,L-Lactide) (PDLLA-acid, PDLLA-COOH, PLA-COOH, PLA-acid) can be used to prepare nanoparticles, which can be further modified through -COOH.

Polyacticides are a family of biodegradable and bioactive thermoplastic aliphatic polyester. It is used to fabricate resorbable medical devices that degrade over months in physiological conditions. Due to their history, polyacticides are one of the easiest and most affordable biodegradable polymers for medical devices. PDLLA polymer is amorphous because the polymer composed randomly by the repeating units from L-lactic acid and D-lactic acid. Therefore, the polymer did not show melting point and has inferior mechanical properties than PLLA, so that the polymer is mainly applied for the coating of suture. (10755)

- Molecular weight: 2000, 5000, 10K, 20K
- Package size: 100mg, 1g

pGlu-PEG-N3

Poly(L-Glutamic acid)-PEG-Azide (pGlu-PEG-N3) is a linear amphiphilic block copolymer (ABC) which has poly(L-Glutamic acid) as the hydrophobic section and azide-functionalized PEG as the hydrophilic section. ABC can self assemble into micelles. PLLA polymer is amorphous because the polymer composed randomly by the repeating units from L-lactic acid and D-lactic acid. Therefore, the polymer did not show melting point and has inferior mechanical properties than PLLA, so that the polymer is mainly applied for the coating of suture. (2529)

- Poly(L-glutamic acid) MW: 3000, 7500
- PEG MW: 2000, 5000
- Package size: 100mg, 500mg
pGlu-PEG-pGlu
Poly(L-Glutamic acid)-PEG-block-poly(L-Glutamic acid) (pGlu-PEG-pGlu) is a linear amphiphilic triblock copolymer. The hydrophobic section pGlu has pendant free -COOH groups. It can self assemble into micelles or form hydrogels for drug delivery.

Poly(L-glutamic acid) MW: 3000, 7500, 15k
PEG MW: 1000, 2000, 5000
Package size: 200mg, 500mg, 1g

PLGA acid/PLGA-COOH (50:50)
Acid capped poly(D,L-lactide-co-glycolide) (PLGA-acid, PLGA-COOH, PLGA acid terminated, D,L-LA/GA=50:50) can be used to prepare nanoparticles, which can be further modified by amine-reactive entities. PLGA-COOH can be used to prepare polymer-drug conjugates.

Poly (lactic-co-glycolic acid) (PLGA) is one of the most effective biodegradable polymeric nanoparticles (NPs). It has been approved by the US FDA to use in drug delivery systems due to controlled and sustained-release properties, low toxicity, and biocompatibility with tissue and cells.

PLGA-PEG-COOH
Poly(lactide-co-glycolide)-block-poly(ethylene glycol)-carboxylic acid (PLGA-PEG-COOH) has a carboxylic acid group at the PEG ends, which is used in the preparation of targeted nanoparticles (micelles) for differential delivery and controlled release of drugs.

SA-PEG-SA
Succinic acid-PEG-succinic acid (SA-PEG-SA) is one type of linear bifunctional PEG carboxylic acid reagents. There is a C2 ester linkage between the PEG and the carboxylic acid group. PEG carboxyl acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

SA-PEG-SAA
SAA-PEG-SAA is one type of linear bifunctional PEG carboxylic acid reagents. There is a C2 amide linkage between the PEG and the carboxylic acid group. PEG carboxylic acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.

Stearic acid-PEG-COOH
Stearic acid-PEG-carboxylic acid (Stearic acid-PEG-COOH) is an amphiphilic surfactant with terminated -COOH for targeted drug delivery. COOH group can be used to react with amine-containing moieties.

PEGylated stearyl is an amphiphilic, PEG surfactant and can be used to form micelles, drug delivery systems to enhance drug solubility and improve drug formulation and bioavailability. PEG is attached to the C18 alkyl (octadecanoic acid) through an amide bond.

SA-PEG-SA
SAA-PEG-SAA is one type of linear bifunctional PEG carboxylic acid reagents. There is a C2 ester linkage between the PEG and the carboxylic acid group. PEG carboxyl acid can be used to react with amine groups with peptide coupling reagents such as NHS and DCC, EDC.
Tritylthiol-poly-L-Glutamic acid/Trt-pGlu

Tritylthiol terminated poly-L-Glutamic acid (pGlu-tritylthiol, Tritylthiol-pGlu, Tri-SH-PGlu, pGlu-Trt-SH) is a negatively charged synthetic polyamino acid terminated with trityl protected SH. It is a crystalline solid soluble in water. Applications for Tritylthiol-poly-L-glutamic acid include the conjugation to active molecules for improved activities and the layer-by-layer deposition techniques for surface coating.

Tritylthiol Poly-L-glutamic acid can be offered in form of sodium salts. Trityl group can be easily removed by TFA to obtain free SH. SH-terminated polymers were used to selectively react with maleimide and transition metal surface including gold, silver, etc.

11283

- Molecular weight: 2500 (x=20), 5000 (x=38), 10K (x=76), 20K (x=154)
- Package size: 100mg, 500mg, 1g
Epoxides (EPOX)

4-Arm PEG-EPO
4-Arm PEG-Epoxide (4-Arm PEG-EPO) is a multiarm PEG derivative with epoxide or epoxy groups at each terminal of the four arms connected to one pentaerythritol core.

Molecular weight: 2K, 5K, 10K, 20K
Package size: 1g, 5g, 10g

8-arm PEG-Epoxide
8-Arm PEG-Epoxide is a multiarm PEG derivative with epoxide groups at each terminal of the eight arms connected to one hexaglycerol core.

Molecular weight: 10k, 20k, 40k
Package size: 1g, 5g, 10g

EPO-PEG-EPO
Epoxide-PEG-Epoxide (EPO-PEG-EPO) is a linear bifunctional crosslinking PEG reagent with one epoxide at both ends of PEG. Epoxide-PEG-Epoxide is often used to crosslink or PEGylate amine or hydroxyl containing molecules and surfaces.

Molecular weight: 1000, 2000, 5000, 10K, 20K
Package size: 1g, 5g, 10g
Hydrazides (HZ)

4-arm PEG-HZ

4-Arm PEG-Hydrazide (4-arm PEG-HZ) is a multiarm PEG derivative with hydrazide (CONHNH2) groups at each terminal of the four arms connected to one pentaerythritol core. 4-arm PEG-hydrazide can react with ketone or aldehyde to form acyl hydrazone linkers, which are pH sensitive and can be used for reversible PEGylation. Hydrazine PEG is also used to PEGylate carboxyl, carboxylic acid groups.

(2433)
- Molecular weight: 2K, 5K, 10K, 20K
- Package size: 1g, 5g, 10g

MPEG-HZ

Methoxypoly(ethylene glycol) Hydrazide (MPEG-HZ) can react with carbonyl compounds including ketone or aldehyde to form an acyl hydrazone linkage, which is pH sensitive and can be used for reversible PEGylation. Hydrazine PEG is also used to PEGylate carboxyl, carboxylic acid groups.

(2517)
- Molecular weight: 2000, 5000, 10K, 20K
- Package size: 1g, 5g, 10g
Hydroxyl (OH)

4-Arm PEG-OH

4-Arm PEG-OH is a multi-arm polyethylene glycol with hydroxyl groups at each terminal of the four arms. Pentaerythritol core is used in 4arm PEG raw materials and derivatives. The indicated molecular weight of the multi-arm PEG is the sum of the molecular weights of all the arms.

- Molecular weight: 2K, 5K, 10K, 20K
- Package size: 1g, 5g, 10g

4-arm PLGA

4-arm poly(lactide-co-glycolide) (4-arm PLGA) is a multiarm PLGA connected to one pentaerythritol core. 4-arm PLGA is terminated with hydroxyl group for further modification. Otherwise noted, multiarm PLGA is composed of d,l-lactide and glycolide (50:50 ratio).

- Molecular weight: 5K, 10K, 20K, 30K, 40K
- Package size: 1g, 5g

Acetal-PEG-OH/Diethoxy-PEG-OH

Diethyl acetal-PEG-OH (Acetal-PEG-OH) is a linear heterobifunctional PEG reagent with an acetal and OH group. It is a useful reagent for bioconjugation with a PEG spacer. Acetal can be easily reduced to aldehyde under acidic condition (pH 4.0). Acetal-PEG-OH may be used to introduce aldehyde in PEG copolymers. The aldehyde group can react with amine and thiol group for bioconjugation.

- Molecular weight: 1000, 2000, 3500, 5000, 10K
- Package size: 100 mg, 500 mg, 1g

Amine Alkyne-PEG-OH

Amine and Alkyne conjugated PEG-OH (Amine Alkyne-PEG-OH) is a trifunctional PEG derivative, which has amine and alkyne group sharing one PEG end and hydroxyl group on the other end. Multiple entities may be linked together by NSP's trifunctional PEGs.

- Amine group can react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

- Alkyne were used to react azide group "click" chemistry in mild condition, which is very useful for bioconjugation.

- OH can be further derivatized for bioconjugation.

- Molecular weight: 2000, 3400, 5000, 10K
- Package size: 100mg, 1g

Azide Amine-PEG-OH

Azide and amine conjugated PEG-OH (Azide amine-PEG-OH) is a trifunctional PEG derivative, which has azide and amine group sharing one PEG end and hydroxyl group on the other end. Multiple entities may be linked together by NSP's trifunctional PEGs.

- Azide group can react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

- Azide were used to react azide group "click" chemistry in mild condition, which is very useful for bioconjugation.

- OH can be further derivatized for bioconjugation.

- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g

BIO-PEG-OH

Biotin-PEG-OH (BIO-PEG-OH) is a linear heterobifunctional PEGylation reagent with a biotin and an hydroxyl. It is a useful crosslinking or bioconjugation reagent with a PEG spacer. Biotin can bind to avidin and streptavidin with high specificity and affinity.
**Boc-amine alkyn-e-PEG-OH**

Boc-protected amine and alkyn conjugated PEG-OH (Boc-amine alkyn-e-PEG-OH) is a trifunctional PEG derivative, which has amine and alkyn group sharing one PEG end and hydroxyl group on the other end. Multiple entities may be linked together by NSP's trifunctional PEGs.

Boc-amine can be deprotected by acid (TFA) to free amine, which react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Alkyn were used to react azide group "click" chemistry in mild condition, which is very useful for bioconjugation.

OH can be further derivatized for bioconjugation.

**Fmoc-NH-PEG-OH**

Fmoc-protected amine-PEG-hydroxyl (Fmoc-NH-PEG-OH) is a linear heterobifunctional PEG derivative with one Fmoc protected amine and hydroxyl group. It is a useful cross-linking reagent with a PEG spacer. The protected amine can be regenerated under mild basic conditions.

**Folate-PEG-OH**

NSP offers heterobifunctional Folate PEG Hydroxyl products (Folate-PEG-OH, Folic acid-PEG-OH) with high quality. Folic acid, or vitamin B9, can selectively bind to folate receptor, while the OH group can be further modified for bioconjugation. The PEG moiety in the heterofunctional PEG derivatives provides water solubility, biocompatibility, and flexibility.

**HO-PEG-COOH**

α-hydroxyl-ω-carboxyl poly(ethylene glycol) (HO-PEG-COOH) is a linear heterobifunctional PEG with hydroxyl on one end and carboxyl group on the other. It is a useful cross-linking reagent with a PEG spacer. There is a methylene (CH2) linkage between PEG and COOH, often called AA (acetic acid) or CM (carboxyl methyl). Heterobifunctional PEG products with other carboxilic acid such as GA (glutamic acid), SA (succinic acid), GAA (glutaramide acid), and SAA (succinamide acid) may be offered through our custom synthesis service.

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Molecular weight: 1000, 2000, 3400, 5000, 10k
Package size: 100mg, 1g
HO-PEG-NHS

Hydroxyl PEG Succinimidyl NHS ester (HO-PEG-NHS) is a linear heterobifunctional PEG derivative with one hydroxyl group and one NHS ester. It is a useful crosslinking reagent with a PEG spacer. There is a methylene (CH2) linkage between PEG and the succinimidyl carboxylate. Heterobifunctional PEG products with other NHS esters such as succinimidyl glutarate, succinate, glutaramide, and succinamide may be offered through our custom synthesis service.

- Molecular weight: 1000, 2000, 3500, 5000, 10k
- Package size: 200mg, 500mg, 1g

HO-PLGA-SH

HO-PLGA-SH, or α-hydroxyl-ω-thiol poly(D,L-lactide-co-glycolide), is a linear heterofunctional polyester with hydroxyl on one end and thiol group on the other.

Thiol capped poly(L-lactide-co-glycolide) (PLGA-thiol, PLGA-SH, thiol terminated PLGA) can be used to prepare nanoparticles. Thiol, or SH, sulfhydryl, or mercapto group selectively reacts with maleimide, OPSS, vinylsulfone and transition metal surface including gold, silver, etc.

Poly (lactic-co-glycolic acid) (PLGA) is one of the most effective biodegradable polymeric nanoparticles (NPs). It has been approved by the US FDA to use in drug delivery systems due to controlled and sustained-release properties, low toxicity, and biocompatibility with tissue and cells.

- Molecular weight: 5000, 10K, 20K
- Package size: 100mg, 1g

HS-PEG-OH

Thiol-PEG-hydroxyl (HS-PEG-OH) is a linear heterobifunctional PEGylation reagent with a thiol and a hydroxyl. It is a useful crosslinking or bioconjugation reagent with a PEG spacer. Thiol, or SH, sulfhydryl, or mercapto group selectively reacts with maleimide, OPSS, vinylsulfone and transition metal surface including gold, silver, etc.

- Molecular weight: 1000, 2000, 3500, 5000, 10k
- Package size: 1g, 5g

LA-PEG-OH

Lipoic acid-PEG-hydroxyl (LA-PEG-OH) is a heterofunctional linkes for surface modification. Lipoic acid, also known as thiotic acid, is an important bioactive molecule participating in various biological processes. PEG functionalized lipoic acid can be used to bind to metallic particle or film surface with its -S-S-bond. Lipoic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipoic acid is water soluble and can be used directly in aqueous buffer.

- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 200mg, 500mg, 1g

Mal-PDLLA-OH

α-maleimide, ω-hydroxyl poly(D,L-lactide) (Mal-PDLLA-OH) can be used to prepare nanoparticles, which can be further modified by thiol-reactive entities.

Polylactides are a family of biodegradable and bioactive thermoplastic aliphatic polyester. It is used to fabricate resorbable medical devices that degrade over months in physiological conditions. Due to their history, polylactides are one of the easiest and most affordable biodegradable polymers for medical devices. PDLLA polymer is amorphous because the polymer composed randomly by the repeating units from L-lactic acid and D-lactic acid. Therefore, the polymer did not show melting point and has inferior mechanical properties than PLLA, so that the polymer is mainly applied for the coating of suture.
MAL-PEG-OH
Maleimide-PEG-Hydroxyl (MAL-PEG-OH) is a linear heterobifunctional PEG reagent with a maleimide and a hydroxyl group. It is a useful crosslinking reagent with a PEG spacer. Maleimide reacts with thiol, SH, sulfhydryl or mercapto, and hydroxyl can react with carboxylic acid. MAL-PEG-OH can also be used to synthesize PEGylated block copolymer such as PLA-PEG (poly-L-lactic acid-co-polyethylene glycol) and PCL-PEG (polycaprolactone-co-polyethylene glycol) through hydroxyl initiated polymerization with lactide or caprolactone. Maleimide contains a reactive C=C double bond and is light or oxygen sensitive.

NH2-PEG-OH
Amine-PEG-Hydroxyl (NH2-PEG-OH) is a linear heterobifunctional PEG derivative with one hydroxyl group and one amine group. It is a useful crosslinking reagent with a PEG spacer. Typically, it is offered as its HCl or TFA salt.

tBoc-NH-PEG-OH
tBoc-NH-PEG-OH is a linear heterobifunctional PEG derivative with one hydroxyl group and one Boc protected amine. It is a useful crosslinking reagent with a PEG spacer. The protected amine can be regenerated under mild acidic conditions.
Maleimide (MAL)

4-arm PEG-MAL

4-arm PEG-maleimide (4-Arm PEG-MAL) is a multiarm PEG derivative with maleimide groups at each terminal of the four arms connected to one pentaerythritol core. The maleimide group selectively reacts with free thiol, SH, sulfhydryl, or mercapto group via Michael addition to form a stable carbon sulfur bond. 4-Arm PEG-MAL can be used for site specific protein and peptide modification.

(Molecular weight: 2K, 5K, 10K, 20K)

8-arm PEG-MAL

8-arm PEG-maleimide (8-arm PEG-MAL) is a multiarm PEG derivative with maleimide groups at each terminal of the eight arms connected to one hexaglycerol core. The maleimide group selectively reacts with free thiol, SH, sulfhydryl, or mercapto group via Michael addition to form a stable carbon sulfur bond. 8-Arm PEG-MAL can be used for site specific protein and peptide modification.

(Molecular weight: 10k, 20k, 40k)

ACRL-PEG-MAL

Acrylate-PEG-Maleimide (ACRL-PEG-MAL) is a linear heterobifunctional PEG reagent with an acrylate and maleimide. It is a useful crosslinking reagent with a PEG spacer. Acrylate can polymerize with UV light or radical initiator, and maleimide can react with thiol-containing groups. Acrylate-PEG-Mal may be used to introduce maleimide in PEG hydrogel.

(Molecular weight: 1000, 2000, 3500, 5000, 10K)

ALK-PEG-MAL

Alkyne-polyethylene glycol-maleimide (ALK-PEG-MAL) is a bifunctional PEG derivative that can be used to modify proteins, peptides and other materials via Click Chemistry. Alkyne group can react with azide in aqueous solution catalyzed by copper, and maleimide group can react with thiol group from a peptide. PEGylation can increase solubility and stability and reduce immunogenicity of peptides and proteins. It can also suppress the non-specific binding of charged molecules to the modified surfaces.

(Molecular weight: 1000, 2000, 3500, 5000)

BIO-PEG-MAL

Biotin-PEG-Maleimide (BIO-PEG-MAL) is a linear heterobifunctional PEGylation reagent with a biotin and a maleimide. It is a useful crosslinking, bioconjugation reagent with a PEG spacer. Biotin can bind to avidin and streptavidin with high specificity and affinity. Maleimide can conjugate with thiol, SH, sulfhydryl or mercapto group to form a disulfide bond.

(Molecular weight: 1000, 2000, 3500, 5000, 7500, 10k)

Biotin-PEG2-Maleimide

Biotin-PEG2-Maleimide (BIO-PEG2-MAL) is a linear heterobifunctional PEGylation reagent with a biotin and a maleimide. It is a useful crosslinking, bioconjugation reagent with a PEG spacer. Biotin can bind to avidin and streptavidin with high specificity and affinity. Maleimide can conjugate with thiol, SH, sulfhydryl or mercapto group to form a disulfide bond.
Cholesterol-PEG-MAL

Cholesterol-poly(ethylene glycol) with conjugated maleimide (Cholesterol-PEG-MAL) is a lipophilic lipid PEG conjugate with good water solubility. Cholesterol-PEG-MAL can be used to make targeted liposomes to improve circulation time for encapsulated drugs. They may also be used for non-viral transfection reagents. The maleimide group on the nanoparticle surface can react with thiol-containing moieties.

Molecular weight: 1000, 2000, 3000, 5000
Package size: 100mg, 500mg, 1g

DSPE-Maleimide/DSPE-MAL

1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine-maleimide (DSPE-maleimide, DSPE-Mal) is a phospholipid capped with maleimide group. The maleimide capped head can be used to react with thiol or cysteine group.

Phospholipids belong to the lipid family of biological polymers. A phospholipid is composed of two fatty acids, a glycerol unit, a phosphate group and a polar molecule. The phosphate group and polar head region of the molecule is hydrophillic (attracted to water), while the fatty acid tail is hydrophobic (repelled by water). When placed in water, phospholipids will orient themselves into a bilayer in which the non-polar tail region faces the inner area of the bilayer. The polar head region faces outward and interacts with the water.

Phospholipids are excellent natural biomaterials for drug delivery.

Molecular size of PEG: 1000, 2000, 3400, 5000
Package size: 100 mg, 500 mg

Folate-PEG-Maleimide

NSP offers heterobifunctional Folate-PEG-Maleimide (Folate-PEG-Mal, Folic acid-PEG-maleimide) with high quality. Folic acid, or vitamin B9, can selectively bind to folate receptor, while maleimide can react with sulfhydryl (-SH) in pH 6.5-7.5 quickly and efficiently. The PEG moiety in the heterofunctional PEG derivatives provides water solubility, biocompatibility, and flexibility. This reaction allows attachment of folic acid ligand to proteins, antibodies, peptides or particle surfaces. Folic acid functionalized substrates have been used for targeted drug delivery, imaging, and bioassay development.

Molecular weight: 1000, 2000, 3500, 5000, 10K
Package size: 50mg, 100 mg, 500 mg

LA-PEG-MAL

Lipoic acid-PEG-Maleimide (LA-PEG-Mal) is a heterofunctional linker, which has lipoic group on one end for surface modification, and maleimide group on the other end for bioconjugation. Lipoic acid, also known as thioctic acid, is an important bioactive molecule participating in various biological processes. PEG functionalized lipoic acid can be used to bind to metallic particle or film surface with its -S-S-bond. Lipoic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipoic acid is water soluble and can be used directly in aqueous buffer.

Molecular weight: 1000, 2000, 3400, 5000
Package size: 200mg, 500mg, 1g
α-maleimide, ω-hydroxyl poly(D,L-lactide) (Mal-PDLLA-OH) can be used to prepare nanoparticles, which can be further modified by thiol-reactive entities. Polylactides are a family of biodegradable and bioactive thermoplastic aliphatic polyester. It is used to fabricate resorbable medical devices that degrade over months in physiological conditions. Due to their history, polylactides are one of the easiest and most affordable biodegradable polymers for medical devices. PDLLA polymer is amorphous because the polymer composed randomly by the repeating units from L-lactic acid and D-lactic acid. Therefore, the polymer did not show melting point and has inferior mechanical properties than PLLA, so that the polymer is mainly applied for the coating of suture.

MAL-PDLLA-OH

MAL-PEG-COOH
MAL-PEG-COOH is a linear heterobifunctional PEG reagent with a maleimide and a carboxylic acid. It is a useful crosslinking reagent with a PEG spacer. Maleimide reacts with thiol, SH, sulfhydryl or mercapto, and carboxyl group can react with amine or hydroxyl under standard acid/amine or acid/alcohol coupling conditions. Maleimide contains a reactive C=C double bond and is light or oxygen sensitive.

MAL-PEG-FITC
Maleimide-PEG-FITC (MAL-PEG-FITC) is a heterofunctional linker, which has maleimide group on one end for conjugation of thiol-containing ligands, and fluorescent probe (green) on the other end for labeling.

MAL-PEG-MAL
Maleimide-PEG-maleimide (MAL-PEG-MAL) is a linear bifunctional PEGylation cross linker with two maleimide groups. MAL selectively reacts with free thiol, sulfhydryl, or mercapto group via Michael addition to form a stable carbon sulfur bond. MAL-PEG-MAL can be used for site specific protein and peptide crosslinking.

MAL-PEG-OH
Maleimide-PEG-Hydroxyl (MAL-PEG-OH) is a linear heterobifunctional PEG reagent with a maleimide and a hydroxyl group. It is a useful crosslinking reagent with a PEG spacer. Maleimide reacts with thiol, SH, sulfhydryl or mercapto, and hydroxyl can react with carboxylic acid. MAL-PEG-OH can also be used to synthesize PEGylated block copolymer such as PLA-PEG (poly-L-lactic acid-co-polyethylene glycol) and PCL-PEG (polycaprolactone-co-polyethylene glycol) through hydroxyl initiated polymerization with lactide or caprolactone. Maleimide contains a reactive C=C double bond and is light or oxygen sensitive.

MAL-PEG-RhB
Maleimide-PEG-Rhodamine (MAL-PEG-RhB) is a heterofunctional linker, which has maleimide group on one end for conjugation of thiol-containing ligands, and fluorescent probe (red) on the other end for labeling.
MAL-PEG-SCM
MAL-PEG-SCM (MAL-PEG-NHS) is a linear heterobifunctional PEG reagent with a maleimide and a succinimidyl NHS ester group. It is a useful crosslinking reagent with a PEG spacer. Maleimide reacts with thiol, SH, sulfhydryl or mercapto, and SCM stands for succinimidyl carboxyl methyl ester and can react with primary amine. Maleimide contains a reactive C=C double bond and is light or oxygen sensitive.

Molecular weight: 1000, 2000, 3400, 5000
Package size: 50 mg

Maleimide-PEG-Amine/Mal-PEG-NH2
Maleimide-PEG-Amine (Male-PEG-NH2) is a linear heterobifunctional PEG reagent with a maleimide and an amine. It is a useful crosslinking reagent with a PEG spacer. Maleimide reacts with thiol, SH, sulfhydryl or mercapto, and amine can react with carboxylic acid or activated NHS ester. Male-PEG-NH2 can also be used to synthesize PEGylated block copolymers such as PEG-PLL (poly-L-lysine) and PEG-PLGA (poly-L-glutamic acid). It is typically provided as a TFA or HCl salt. Maleimide contains a reactive C=C double bond and is light or oxygen sensitive.

Molecular weight: 1000, 2000, 3500, 5000, 10k
Package size: 200mg, 500mg, 1g

MPEG-MAL
Methoxypoly(ethylene glycol) Maleimide
MPEG-MAL is a linear monofunctional methyl ether PEG with a reactive maleimide group. MAL selectively reacts with free thiol, sulfhydryl, or mercapto group via Michael addition to form a stable carbon sulfur bond. mPEG-MAL can be used for site specific protein and peptide modification.

Molecular weight: 1000, 2000, 5000, 10k, 20k, 30k
Package size: 1g, 5g, 10g

N3-PEG-Mal
Azide-PEG-maleimide (N3-PEG-Mal) is a linear heterobifunctional PEG reagent with an azide and a maleimide group on the PEG ends. It is a useful crosslinking reagent with a PEG spacer. Azide can be used for molecule conjugation by click chemistry, and maleimide can react with thiol groups. Azide-PEG-maleimide may be used to for bioconjugation, drug delivery, PEG hydrogel, crosslinker, and surface functionalization.

High quality azide-PEG-maleimide (N3-PEG-Mal) with a standard quality specification of >90% Substitution.

Heterobifunctional PEG reagents from NSP are generally employed as crosslinking agents or as spacers between two different chemical entities. The PEG moiety in the heterofunctional PEG derivatives provides water solubility, biocompatibility, and flexibility. Applications are especially geared towards the development of antibody drug conjugates.

PCL-PEG-MAL
Poly(ε-caprolactone)-PEG-Maleimide (PCL-PEG-MAL) is a functional amphiphilic block copolymer to prepare targeted micelles or nanoparticles. Maleimide can conjugate with thiol, SH, sulfhydryl or mercapto group to form a disulfide bond.
PLA-PEG-MAL

Poly(L-lactide)-PEG-Maleimide (PLA-PEG-Mal) is a functional amphiphilic block copolymer to prepare targeted micelles or nanoparticles. Maleimide can conjugate with thiol, SH, sulfhydryl or mercapto group to form a disulfide bond.

Block copolymer micelles are widely used in drug delivery applications. PEG-PLA is a biodegradable polymeric micelle which is used as carriers for hydrophobic drugs like paclitaxel. PEG is the hydrophilic part and PLA is the hydrophobic part which forms the micelle core wherein the hydrophobic drug is loaded.

- PLA Molecular Weight: 1000, 2000, 3000, 5000, 10000
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

PLGA-Maleimide/PLGA-Mal

Maleimide functionalized poly(L-lactide-co-glycolide) (PLGA-Maleimide, PLGA-Mal, Mal-PLGA) can be used to prepare nanoparticles, which can be further modified by thiol-reactive entities.

Poly (lactic-co-glycolic acid) (PLGA) is one of the most effective biodegradable polymeric nanoparticles (NPs). It has been approved by the US FDA to use in drug delivery systems due to controlled and sustained-release properties, low toxicity, and biocompatibility with tissue and cells.

- PLGA Molecular Weight: 2000, 5000, 10K, 20K
- Package size: 100mg, 1g

PLGA-PEG-MAL

Poly(lactide-co-glycolide)-PEG-Maleimide (PLGA-PEG-MAL, PLGA-PEG-Maleimide) is a functional amphiphilic block copolymer with maleimide group at the end of PEG. PLGA-PEG-MAL can self assemble into micelles/nanoparticles. Maleimide on the micelle surface can conjugate with thiol, SH, sulfhydryl or mercapto group to form a disulfide bond. Hydrophobic drugs is encapsulated in the PLGA core for targeted drug delivery.

- PLGA Molecular Weight: 2000, 5000, 10K, 20K
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

Silane-PEG-Mal

Silane-PEG-Maleimide (Silane-PEG-Mal) is a linear heterobifunctional PEG reagent with a maleimide and a silane.

- It is a useful crosslinking reagent with a PEG spacer. Maleimide reacts with thiol, SH, sulfhydryl or mercapto, and silane group can react with glass or other hydroxylated surface or particle.
- It may be used to introduce thiol or cysteine reactive functional group on hydroxylated nanoparticle, microsphere, self-assembled monolayer or metal chips.
- Pegylation can greatly suppress the non-specific binding of charged molecules to the modified surfaces. And they have wide applications for medical device, biosensors or biocompatible material development.

- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g, 5g

Stearic acid-PEG-Maleimide

Stearic acid-PEG-maleimide (SA-PEG-Mal) can be used to prepare micelles or nanoparticles which have maleimide on the surface for bioconjugation.
PEGylated stearyl (stearic acid-MPEG) is an amphiphilic, PEG surfactant and can be used to form micelles, drug delivery systems to enhance drug solubility and improve drug formulation and bioavailability. PEG is attached to the C18 alkyl (octadecanoic acid) through an amide bond.

(10647)
- PEG molecular weight: 1000, 2000, 3400, 5000
- Package size: 100mg, 1g
Nitrophenyl carbonate (NPC)

4-Arm PEG-NPC

Nanosoft Polymers offer 4 arm-para-nitrophenyl carbonate (4-arm PEG-NPC) derivatives which can be cross-linked into PEG hydrogels. PEG hydrogels have a variety of applications in medical devices and regenerative medicine, and are especially of interest for controlled drug release. 4-Arm PEG-NPC is a multiarm PEG derivative with para-nitrophenyl carbonate groups at each terminal of the four arms connected to one pentaerythritol core.

- Molecular weight: 2K, 5K, 10K, 20K
- Package size: 1g, 5g, 10g

8-arm PEG-NPC

8-arm PEG-nitrophenyl carbonate (8-arm PEG-NPC) is a multiarm PEG derivative with para-nitrophenyl carbonate groups at each terminal of the eight arms connected to one hexaglycerol core. NPC is a good leaving group which can be easily substituted by amine-containing groups.

- Molecular weight: 10k, 20k, 40k
- Package size: 1g, 5g, 10g

MPEG-NPC

Methoxypoly(ethylene glycol) nitrophenyl carbonate (mPEG-NPC) is a linear methoxy PEG reagent with a reactive nitrophenyl carbonate or NPC group that can rapidly react with amine group.

- Molecular weight: 1000, 2000, 5000, 10,000, 20,000
- Package size: 1g, 5g, 10g

NPC-PEG-NPC

Poly(ethylene glycol) bis(nitrophenyl carbonate) (NPC-PEG-NPC) is a linear PEG reagent with reactive nitrophenyl carbonate or NPC group on both ends that can rapidly react with amine group.

- Molecular weight: 1000, 2000, 3500, 5000, 10K, 20K
- Package size: 1g, 5g, 10g
Orthopyridyl disulfide (OPSS)

**DSPE-OPSS**
1,2-Distearoyl-sn-glycero-3-phosphoethanolamine-Orthopyridyl disulfide (DSPE-OPSS) is a phospholipid capped with OPSS group. Orthopyridyl disulfide or pyridyldithio functional (OPSS) functionalized lipid can selectively reacts with free thiol, SH, sulfhydryl or mercapto to form a oxidation, reduction reversible disulfide bond.

Phospholipids belong to the lipid family of biological polymers. A phospholipid is composed of two fatty acids, a glycerol unit, a phosphate group and a polar molecule. The phosphate group and polar head region of the molecule is hydrophillic (attracted to water), while the fatty acid tail is hydrophobic (repelled by water). When placed in water, phospholipids will orient themselves into a bilayer in which the non-polar tail region faces the inner area of the bilayer. The polar head region faces outward and interacts with the water.

Phospholipids are excellent natural biomaterials for drug delivery.

- **Package size:** 100mg, 500mg

**DSPE-PEG-OPSS**
1,2-Distearoyl-sn-glycero-3-phosphoethanolamine (DSPE)-poly(ethylene glycol) with conjugated orthopyridyl disulfide (OPSS or PDP) (DSPE-PEG-OPSS) is a linear heterobifunctional PEGylation reagent with a DSPE phospholipid and a orthopyridyl disulfide. DSPE-PEG-OPSS, is an 18 carbon phospholipid PEG conjugate which has both hydrophilicity and hydrophobicity. It is a useful self-assembling reagent to prepare PEGylated liposome or micelle while also providing a thiol or cysteine reactive maleimide group. It is often used in targeted drug delivery with the lipid bilayer to improve drug solubility, the PEG to provide stealth property, extend circulation half-life and reduce non-specific protein binding or cell adhesion, and the reactive maleimide to bioconjugate targeting molecules including antibody, aptamer, protein, and peptide. Orthopyridyl disulfide or pyridyldithio functional group can selectively reacts with free thiol, SH, sulfhydryl or mercapto to form a oxidation, reduction reversible disulfide bond. PEGylation of phospholipids significantly improves the blood circulation time and stability for encapsulated drugs.

- **Molecular weight:** 1000, 2000, 3400, 5000
- **Package size:** 100 mg, 500 mg, 1 g

**MPEG-OPSS**
MPEG-Orthopyridyl Disulfide (mPEG-OPSS) has an orthopyridyl disulfide or pyridyldithio functional group which can selectively reacts with free thiol, SH, sulfhydryl or mercapto to form a oxidation, reduction reversible disulfide bond.

- **Molecular weight:** 2000, 5000, 10k, 20k
- **Package size:** 1g, 5g

**OPSS-PEG-COOH**
OPSS-PEG-COOH is a linear heterobifunctional PEG reagent with an OPSS and a carboxyl group. It is a useful crosslinking reagent with a PEG spacer. OPSS stands for orthopyridyl disulfide or ortho pyridyldithio and reacts with thiol, SH, sulfhydryl or mercapto to form a S-S bond. OPSS is sometimes called PDP, pyridyl dithio propionate. The COOH can react with amine or hydroxyl under standard acid/amine or acid/alcohol coupling conditions.

- **Molecular weight:** 1000, 2000, 3500, 5000
- **Package size:** 200mg, 500mg, 1g

**OPSS-PEG-NH2**
Ortho-pyridyl disulfide (OPSS) functionalized polyethylene glycol-amine (OPSS-PEG-NH2) is a thiol (-SH) group reactive PEG derivative that can be used to modify biomolecules or other materials via their available thiol groups. Ortho-pyridyl disulfide reacts with thiol group to form a stable disulfide bond while a thiol pyridyl group is released.

- **Molecular weight:** 1000, 2000, 3500
- **Package size:** 100mg, 500mg, 1g
OPSS-PEG-NHS
OPSS-PEG-NHS is a linear heterobifunctional PEG reagent with an OPSS and a NHS ester. It is a useful crosslinking reagent with a PEG spacer. OPSS stands for ortho-pyridyl disulfide or ortho pyridyl disulfide and reacts with thiols, SH, sulfhydryl or mercapto to form a S-S bond. OPSS is sometimes called PDP; pyridyl dithio propionate. NHS ester is an activated carboxylic acid and can react with amine.

\[(2640)\]
- Package size: 100mg, 500mg, 1g
- Molecular weight: 1000, 2000, 3500, 5000, 10000

OPSS-PEG-OPSS
OPSS-PEG-OPSS is a bifunctional PEGylation reagent, also called PDP-PEG-PDP. PDP: 3(2-pyridyldithio) propionic acid. The orthopyridyl disulfide or pyridyldithio functional group selectively reacts with free thiol, SH, sulfhydryl or mercapto to form a oxidation, reduction reversible PEG disulfide bond.

\[(2631)\]
- Molecular weight: 1000, 2000, 3500, 5000, 10K, 20K
- Package size: 1g, 5 g, 10g

OPSS-poly-L-Glutamic acid
Orthopyridyl disulfide capped poly-L-Glutamic acid (OPSS-poly-L-Glutamic acid, OPSS-PGLu, Pyridylthio-PGLu) is a negatively charged synthetic polypeptide. It is a crystalline solid soluble in water. Applications for poly-L-glutamic acid include the conjugation to active molecules for improved activities and the layer-by-layer deposition techniques for surface coating.

Orthopyridyl disulfide or pyridylthio (OPSS) functionalized polymers can selectively reacts with free thiol, SH, sulfhydryl or mercapto to form a oxidation, reduction reversible disulfide bond.

\[(11299)\]
- Molecular weight: 2500 (x=20), 5000 (x=50), 10K (x=100), 20K (x=154)
- Package size: 100mg, 500mg, 1g

OPSS-poly-L-Lysine/OPSS-PLL
Orthopyridyl disulfide capped poly-L-lysine hydrochloride (OPSS-poly-L-Lysine, OPSS-PLL, Pyridylthio-PLL) is a positively charged synthetic polypeptide. It is a crystalline solid soluble in water. Applications for poly-L-lysine include the promotion of cell adhesion to solid substrates for culture dishes or slides, the conjugation to active molecules for improved activities, the layer-by-layer deposition techniques, and the complexation with nucleic acids for gene expression.

Orthopyridyl disulfide or pyridylthio (OPSS) functionalized polymers can selectively reacts with free thiol, SH, sulfhydryl or mercapto to form a oxidation, reduction reversible disulfide bond.

\[(11043)\]
- Molecular weight: 3300(X=20), 8,200 (X=60), 16,000 (X=100), 32,000 (X=200)
- Package size: 100mg, 500mg, 1g

PCL-PEG-OPSS
Poly(ε-caprolactone)-block-poly(ethylene glycol)-orthopyridyl disulfide (PCL-PEG-OPSS) is a functional amphiphilic block copolymer with has orthopyridyl disulfide group at PEG end. Orthopyridyl disulfide or pyridylthio functional group can selectively reacts with free thiol, SH, sulfhydryl or mercapto to form a oxidation, reduction reversible disulfide bond. Micelles or nanoparticles from PCL-PEG-OPSS can be modified via OPSS for targeted drug delivery.

\[(3461)\]
- PCL Molecular Weight: 1000, 2000, 3000, 4000, 5000
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg

PLA-PEG-OPSS
Poly(L-lactide)-PEG-OPSS (PLA-PEG-OPSS) is a functional amphiphilic block copolymer with has orthopyridyl disulfide group at PEG end. Orthopyridyl disulfide or pyridylthio functional group can selectively reacts with free thiol, SH, sulfhydryl or mercapto to form a oxidation, reduction reversible disulfide bond. Micelles or nanoparticles from PLA-PEG-OPSS can be modified via OPSS for targeted drug delivery.

\[(PLA-PEG-OPSS)\]
PLGA-PEG-OPSS

Poly(L-lactide-co-glycolide)-block-PEG-OPSS (PLGA-PEG-OPSS) is a functional amphiphilic block copolymer which has orthopyridyl disulfide group at PEG end. Orthopyridyl disulfide or pyridyldithio functional group can selectively reacts with free thiol, SH, sulfhydryl or mercapto to form a oxidation, reduction reversible disulfide bond. Micelles or nanoparticles from PLGA-PEG-OPSS can be modified via OPSS for targeted drug delivery.

- PLA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

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PLA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
PEG Molecular Weight: 1000, 2000, 3000, 5000
Package size: 100mg, 1g
Boc-amine alknye-PEG-COOH

Boc-protected amine and alknye conjugated PEG-carboxylic acid. (Boc-amine alknye-PEG-COOH, Alknye Boc-amine-PEG-COOH) is a trifunctional PEG derivative, which has Boc-protected amine and alknye group sharing one end and -COOH group on the other end.

Boc-amine can be deprotected by acid (TFA) to free amine, which react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Alknye were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

COOH can react with amine or OH containing entities.

(10485)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 100mg, 1g

Boc-amine alknye-PEG-OH

Boc-protected amine and alknye conjugated PEG-OH (Boc-amine alknye-PEG-OH) is a trifunctional PEG derivative, which has amine and alknye group sharing one PEG end and hydroxyl group on the other end. Multiple entities may be linked together by NSP’s trifunctional PEGs.

Boc-amine can be deprotected by acid (TFA) to free amine, which react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Alknye were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

OH can be further derivatized for bioconjugation.

(10496)
- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g

Boc-amine Azide-PEG-COOH

Boc protected-amine and azide conjugated PEG-carboxylic acid (Boc-amine Azide-PEG-COOH, Azide Boc-amine-PEG-COOH) is a trifunctional PEG derivative, which has amine and alknye group sharing one end and -COOH group on the other end.

Boc-amine can be deprotected by acid (TFA) to free amine, which react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Azide were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

COOH can react with amine or OH containing entities.

(10393)
- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g

Boc-amine azide-PEG-OH

Azide and Boc-protected amine conjugated PEG-OH (Boc-amine azide-PEG-OH) is a trifunctional PEG derivative, which has azide and amine group sharing one PEG end and hydroxyl group on the other end. Multiple entities may be linked together by NSP’s trifunctional PEGs.

Boc-amine can be deprotected by acid (TFA) to free amine, which react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Azide were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

OH can be further derivatized for bioconjugation.

(10509)
- Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g
**Boc-NH-PEG-COOH**

Boc-NH-PEG-COOH is a linear heterobifunctional PEG reagent with one Boc protected amine and one carboxyl. It is a useful crosslinking reagent with a PEG spacer. The protected amine can be regenerated by mild acidic conditions such as TFA or dilute HCl.

(2488)
- Molecular weight: 1000, 2000, 3500, 5000, 10k
- Package size: 500mg, 1g

**Fmoc amine azide-PEG-COOH**

Fmoc protected amine and azide conjugated PEG-carboxylic acid (Fmoc amine azide-PEG-COOH, azide Fmoc amine-PEG-COOH) is a trifunctional PEG derivative, which has Fmoc-protected amine and azide group sharing one end and -COOH group on the other end.

Fmoc protected amine can be deprotected by piperidine to free amine which can react with carboxylic acid and its active esters, and isocyanates. It can also react with carbonyl such as ketone and aldehyde.

Azide were used to react azide group “click” chemistry in mild condition, which is very useful for bioconjugation.

COOH can react with amine or OH containing entities.

(10578)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 100mg, 1g

**Fmoc-NH-PEG-COOH**

Fmoc-NH-PEG-carboxyl (Fmoc-NH-PEG-COOH) is a linear heterobifunctional PEG reagent with one Fmoc protected amine and one carboxylic acid. It is a useful crosslinking reagent with a PEG spacer. The protected amine can be regenerated by mild basic conditions.

(2484)
- Molecular weight: 1000, 2000, 3500, 5000, 10k
- Package size: 200mg, 500mg, 1g

**Fmoc-NH-PEG-OH**

Fmoc-protected amine-PEG-hydroxyl (Fmoc-NH-PEG-OH) is a linear heterobifunctional PEG derivative with one Fmoc protected amine and hydroxyl group. It is a useful crosslinking reagent with a PEG spacer. The protected amine can be regenerated under mild basic conditions.

(2478)
- Molecular weight: 1000, 2000, 3500, 5000, 10k
- Package size: 500mg, 1g

**tBoc-NH-PEG-NH2**

t-Butoxycarbonyl-Amine-PEG-Amine (tBoc-NH-PEG-NH2) is a linear heterobifunctional PEG reagent with Boc protected amine and a free amine. It is a useful crosslinking reagent with a PEG spacer. The free amine typically in the form of TFA or HCl salt can be used to react with carboxyl or NHS ester. The protected amine can be regenerated by mild acidic conditions.

(2538)
- Molecular weight: 1000, 2000, 3500, 5000, 10k
- Package size: 1g, 5g

**tBoc-NH-PEG-OH**

tBoc-NH-PEG-OH is a linear heterobifunctional PEG derivative with one hydroxyl group and one Boc protected amine. It is a useful crosslinking reagent with a PEG spacer. The protected amine can be regenerated under mild acidic conditions.
Molecular weight: 1000, 2000, 3500, 5000, 10k
Package size: 500mg, 1g, 5g
Silanes

**MPEG-Silane**

- MPEG-silane is a linear monofunctional methyl ether PEG with a reactive tri-ethoxy silane group.
- Silane PEG is often used to PEGylate glass and hydroxylated surfaces and particles.

Molecular weight: 1000, 2000, 5000, 10K, 20K
- Package size: 100mg, 1g, 5g

**Silane-PEG-Acrylate**

Silane-PEG-Acrylate (Acrylate-PEG-Silane, Silane-PEG-Acryl, or Acryl-PEG-Silane) is a linear heterobifunctional PEG reagent with an acrylate and a silane group. It is a useful crosslinking reagent with a PEG spacer. Acrylate can polymerize with UV light or radical initiator to form PEG hydrogel, and silane can react with glass or other hydroxylated surfaces.

Molecular weight: 1000, 2000, 3500, 5000, 10K
- Package size: 200 mg, 500 mg, 1g

**Silane-PEG-Biotin**

Silane-PEG-Biotin is a linear heterobifunctional PEG reagent with a biotin and a silane. Biotin can bind to avidin and streptavidin with high specificity and affinity. Silane can be used to react with glass, silica, or other hydroxylated particle surface.

Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g, 5g

**Silane-PEG-COOH**

Ethoxy silane functionalized polyethylene glycol, silane PEG (PEG-Si) is a surface reactive PEG derivative that can be used to modify glass, silica and other surfaces via the reaction between hydroxyl group and ethoxyl/methoxyl silane. Pegylation can greatly suppress the non-specific binding of charged molecules to the modified surfaces. And they have wide applications for medical device, biomems or biocompatible material development.

Typically, the functionalization of silica, known as silanization, begins with APTES and involves multiple steps to produce the desired functionality. However, with methoxy, azide, alkyne, and biotin functionalities, NSP’s silane PEGs greatly reduces the steps required to create the desired functionality.

Molecular weight: 1000, 2000, 3400, 5000, 10K
- Package size: 100mg, 1g, 5g

**Silane-PEG-Mal**

Silane-PEG-Maleimide (Silane-PEG-Mal) is a linear heterobifunctional PEG reagent with a maleimide and a silane. Maleimide reacts with thiol, SH, sulfhydryl or mercapto, and silane group can react with glass or other hydroxylated surface or particle.

It may be used to introduce thiol or cysteine reactive functional group on hydroxylated nanoparticle, microsphere, self-assembled monolayer or metal chips.

Pegylation can greatly suppress the non-specific binding of charged molecules to the modified surfaces. And they have wide applications for medical device, biomems or biocompatible material development.
Silane-PEG-Silane

- Silane-PEG-silane is a linear bifunctional PEG with two reactive triethoxy silane groups.
- Silane PEG is often used to PEGylate glass and hydroxylated surfaces and particles.
4-arm PEG-SH

4-Arm PEG-Thiol (4-arm PEG-SH) is a multiarm PEG derivative with thiol groups at each terminal of the four arms connected to one pentaerythritol core. The reactive free thiol, SH, sulfhydryl, or mercapto groups selectively react with maleimide and transition metal surface including gold, silver, etc. PEG-SH can be easily air oxidized to form S-S disulfide (disulphide) bonds, which can be reversed with reducing agents. It is a useful reagent for reversible PEGylation and PEG hydrogel.

- Molecular weight: 2K, 5K, 10K, 20K
- Package size: 1g, 5g, 10g

8-arm PEG-SH

8-Arm PEG-Thiol (8-Arm PEG-SH) is a multiarm PEG derivative with thiol groups at each terminal of the eight arms connected to one hexaglycerol core. The reactive free thiol, SH, sulfhydryl, or mercapto groups selectively react with maleimide and transition metal surface including gold, silver, etc. PEG-SH can be easily air oxidized to form S-S disulfide bonds, which can be reversed with reducing agents. It is a useful reagent for reversible PEGylation and PEG hydrogel.

- Molecular weight: 10k, 20k, 40k
- Package size: 1g, 5g, 10g

Cholesterol-PEG-SH

Cholesterol poly(ethylene glycol)-thiol (Cholesterol-PEG-SH) is a lipophilic lipid PEG conjugate with good water solubility. Cholesterol-PEG-SH can be used to make targeted liposome to improve circulation time for encapsulated drugs. Thiol (SH) can be used to react with maleimide or thiol group.

- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 100mg, 500mg, 1g

DSPE-Thiol

1,2-Distearoyl-sn-glycero-3-phosphoethanolamine-N-N-(mercaptopropyl) (DSPE-thiol, DSPE-SH) is a phospholipid capped with thiol group. The thiol capped head can selectively react with maleimide and transition metal surface including gold, silver, etc.

- Package size: 100mg, 200mg, 500mg, 1g

HO-PLGA-SH

HO-PLGA-SH, or ω-hydroxy-ω-thiol poly(D,L-lactide-co-glycolide), is a linear heterofunctional polyester with hydroxyl on one end and thiol group on the other.

- Molecular weight: 5000, 10K, 20K
- Package size: 100mg, 1g

Phospholipids belong to the lipid family of biological polymers. A phospholipid is composed of two fatty acids, a glycerol unit, a phosphate group and a polar molecule. The phosphate group and polar head region of the molecule is hydrophilic (attracted to water), while the fatty acid tail is hydrophobic (repelled by water). When placed in water, phospholipids will orient themselves into a bilayer in which the non-polar tail region faces the inner area of the bilayer. The polar head region faces outward and interacts with the water.

Phospholipids are excellent natural biomaterials for drug delivery.

Poly (lactic-co-glycolic acid) (PLGA) is one of the most effective biodegradable polymeric nanoparticles (NPs). It has been approved by the US FDA to use in drug delivery systems due to controlled and sustained-release properties, low toxicity, and biocompatibility with tissue and cells.
**HS-PEG-COOH**

Thiol-PEG-carboxyl (HS-PEG-COOH) is a linear heterobifunctional PEG reagent with an thiol and a carboxyl group. It is a useful crosslinking reagent with a PEG spacer.

(2468)
- Molecular weight: 1000, 2000, 3500, 5000
- Package size: 500mg, 1g

**HS-PEG-OH**

Thiol-PEG-hydroxyl (HS-PEG-OH) is a linear heterobifunctional PEGylation reagent with a thiol and a hydroxyl. It is a useful crosslinking or bioconjugation reagent with a PEG spacer. Thiol, or SH, sulfhydryl, or mercapto group selectively reacts with maleimide, OPSS, vinylsulfone and transition metal surface including gold, silver, etc.

(2591)
- Molecular weight: 1000, 2000, 3500, 5000, 10k
- Package size: 1g, 5g

**HS-PEG-SH**

Thiol-PEG-Thiol (HS-PEG-SH) is a linear homobifunctional PEG with two reactive free thiol, SH, sulfhydryl, or mercapto groups that selectively react with maleimide and transition metal surface including gold, silver, etc. HS-PEG-SH can be easily air oxidized and polymerized via S-S disulfide bonds, which can be reversed with reducing agents. It is a useful reagent for reversible crosslinking PEGylation.

(2577)
- Molecular weight: 1000, 2000, 3500, 5000, 10k
- Package size: 1g, 5g

**LA-PEG-BIO**

Lipoic acid-PEG-Biotin (LA-PEG-BIO) is a heterofunctional linker, which has lipolic group on one end for surface modification, and biotin group on the other end for avidin. Lipoic acid, also known as thioctic acid, is an important bioactive molecule participating in various biological processes. PEG functionalized lipolic acid can be used to bind to metallic particle or film surface with its -S-S-bond. Lipolic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipolic acid is water soluble and can be used directly in aqueous buffer.

(3201)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 200mg, 500mg, 1g

**LA-PEG-COOH**

Lipoic acid-PEG-COOH (LA-PEG-COOH) is a heterofunctional linkes for surface modification. Lipoic acid, also known as thiotic acid, is an important bioactive molecule participating in various biological processes. PEG functionalized lipolic acid can be used to bind to metallic particle or film surface with its -S-S-bond. Lipolic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipolic acid is water soluble and can be used directly in aqueous buffer.

(3182)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 200mg, 500mg, 1g

**LA-PEG-FITC**

Lipoic acid-PEG-FITC (LA-PEG-FITC) is a heterofunctional linker, which has lipolic group on one end for surface modification, and fluorescent probe (green) on the other end for labeling. Lipoic acid, also known as thiotic acid, is an important bioactive molecule participating in various biological processes. PEG functionalized lipolic acid can be used to bind to metallic particle or film surface with its -S-S-bond. Lipolic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipolic acid is water soluble and can be used directly in aqueous buffer.

(3220)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 200mg, 500mg, 1g

**LA-PEG-MAL**

Lipoic acid-PEG-Maleimide (LA-PEG-Mal) is a heterofunctional linker, which has lipolic group on one end for surface modification, and maleimide group on the other end for bioconjugation. Lipoic acid, also known as thiotic acid, is an important bioactive molecule participating in various biological processes. PEG functionalized lipolic acid can be used to bind to metallic particle or film
surface with its -S-S-bond. Lipoic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipoic acid is water soluble and can be used directly in aqueous buffer.

LA-PEG-NH2
Lipoic acid-PEG-Amine (LA-PEG-NH2) is a heterofunctional linker, which has lipoic group on one end for surface modification, and amine group on the other end. Lipoic acid (LA), also known as thioctic acid, is an important bioactive molecule participating in various biological processes. PEG functionalized lipoic acid can be used to bind to metallic particle or film surface with its -S-S-bond. Lipoic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipoic acid is water soluble and can be used directly in aqueous buffer.

LA-PEG-NHS
Lipoic acid-PEG-NHS (LA-PEG-NHS) is a heterofunctional linker, which has lipoic group on one end for surface modification, and amine-reactive N-hydroxysuccinimide esters (NHS) group on the other end for bioconjugation. Lipoic acid, also known as thioctic acid, is an important bioactive molecule participating in various biological processes. PEG functionalized lipoic acid can be used to bind to metallic particle or film surface with its -S-S-bond. Lipoic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipoic acid is water soluble and can be used directly in aqueous buffer.

LA-PEG-OH
Lipoic acid-PEG-hydroxyl (LA-PEG-OH) is a heterofunctional linker for surface modification. Lipoic acid, also known as thioctic acid, is an important bioactive molecule participating in various biological processes. PEG functionalized lipoic acid can be used to bind to metallic particle or film surface with its -S-S-bond. Lipoic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipoic acid is water soluble and can be used directly in aqueous buffer.

MAL-PEG-COOH
MAL-PEG-COOH is a linear heterobifunctional PEG reagent with a maleimide and a carboxylic acid. It is a useful crosslinking reagent with a PEG spacer. Maleimide reacts with thiol, SH, sulfhydryl or mercapto, and carboxyl group can react with amine or hydroxyl under standard acid/amine or acid/alcohol coupling conditions. Maleimide contains a reactive C=C double bond and is light or oxygen sensitive.

MAL-PEG-SCM
MAL-PEG-SCM (MAL-PEG-NHS) is a linear heterobifunctional PEG reagent with a maleimide and a succinimidyl NHS ester group. It is a useful crosslinking reagent with a PEG spacer. Maleimide reacts with thiol, SH, sulfhydryl or mercapto, and carboxyl group can react with amine or hydroxyl under standard acid/amine or acid/alcohol coupling conditions. Maleimide contains a reactive C=C double bond and is light or oxygen sensitive.

MPEG-OPSS
MPEG-Orthopyridyl Disulfide (mPEG-OPSS) has an orthopyridyl disulfide or pyridylthio functional group which can selectively reacts with free thiol, SH, sulfhydryl or mercapto to form a oxidation, reduction reversible disulfide bond.
**MPEG-SH**

Methoxy poly(ethylene glycol) Thiol (MPEG-SH) is linear monofunctional PEG with a reactive free thiol, SH, cysteine, sulfhydryl, or mercapto group that selectively reacts with maleimide and transition metal surface including gold, silver, etc. MPEG-SH can be easily air oxidized to form a dimer via a S-S disulfide bond, which can be reversed with reducing agents. It is a useful reagent for reversible PEGylation.

**N3-PEG-LA**

Azide-PEG-Lipoic acid (N3-PEG-LA) is a linear heterobifunctional PEG reagent with an azide and a lipoic acid group on the PEG ends. It is a useful crosslinking reagent with a PEG spacer. Azide can be used for molecule conjugation by click chemistry, and lipoic acid can be used to bind to metallic particle or film surface with its -S-S-bond. Azide-PEG-Lipoic acid may be used for bioconjugation, drug delivery, PEG hydrogel, crosslinker, and surface functionalization.

Lipoic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipoic acid is water soluble and can be used directly in aqueous buffer. High quality azide-PEG-lipoic acid (N3-PEG-LA) with a standard quality specification of >90% Substitution.

**N3-PEG-SH**

Azide-PEG-thiol (Azide-PEG-SH, N3-PEG-SH) is a linear heterobifunctional PEG reagent with an azide and a thiol group on the PEG ends. It is a useful crosslinking reagent with a PEG spacer. Azide can be used for molecule conjugation by click chemistry, and thiol can react with -SH or maleimide groups. Azide-PEG-thiol may be used for bioconjugation, drug delivery, PEG hydrogel, crosslinker, and surface functionalization.

High quality azide-PEG-thiol (N3-PEG-SH) with a standard quality specification of >90% Substitution.

**OPSS-PEG-NH2**

Ortho-pyridyl disulfide (OPSS) functionalized polyethylene glycol-amine (OPSS-PEG-NH2) is a thiol (-SH) group reactive PEG derivative that can be used to modify biomolecules or other materials via their available thiol groups. Ortho-pyridyl disulfide reacts with thiol group to form a stable disulfide bond while a thiol pyridyl group is released.

**PCL-PEG-SH**

Poly(ε-caprolactone)-block-PEG-Thiol (PCL-PEG-SH) is a functional amphiphilic block copolymer to prepare targeted micelles or nanoparticles. Thiol, or SH, sulfhydryl, or mercapto group selectively reacts with maleimide, OPSS, vinylsulfone and transition metal surface including gold, silver, etc.
Thiol capped poly(DL-Lactide) (PDLLA-thiol, PDLLA-SH, PLA-SH) can be used to prepare nanoparticles, which can be further modified through -SH groups on the nanoparticle surface. Thiol can selectively react with maleimide and transition metal surface including gold, silver, etc.

Polylactides are a family of biodegradable and bioactive thermoplastic aliphatic polyester. It is used to fabricate resorbable medical devices that degrade over months in physiological conditions. Due to their history, polylactides are one of the easiest and most affordable biodegradable polymers for medical devices. PDLA polymer is amorphous because the polymer composed randomly by the repeating units from L-lactic acid and D-lactic acid. Therefore, the polymer did not show melting point and has inferior mechanical properties than PLLA, so that the polymer is mainly applied for the coating of suture.

PLA-PEG-SH

Poly(L-lactide)-PEG-Thiol (PLA-PEG-SH) is a functional amphiphilic block copolymer to prepare targeted micelles or nanoparticles. Thiol, or SH, sulfhydryl, or mercapto group selectively reacts with maleimide, OPSS, vinylsulfone and transition metal surface including gold, silver, etc.

PLGA-PEG-IA

Poly(L-lactide-co-glycolide)-b-(poly(ethylene glycol))-iodolacetyl (PLGA-PEG-IA) is a functional amphiphilic block copolymer with iodolacetyl group at the end of PEG. Iodolacetyl (-IA) is a thiol (-SH) reactive group that can be used to modify biomolecules or other materials via their available thiol groups. Iodoacetyl group can be easily replaced by thiol group to form a stable carbon thiol bond. PLGA-PEG-IA is used to prepare micelles or nanoparticles with iodolacetyl group on the micelle surface for bioconjugation via thiol substitution. Hydrophobic drugs is encapsulated in the PLGA core for targeted drug delivery.

PLGA-PEG-SH

Poly(L-lactide-co-glycolide)-PEG-Thiol (PLGA-PEG-SH) is a functional amphiphilic block copolymer to prepare targeted micelles or nanoparticles. Thiol, or SH, sulfhydryl, or mercapto group selectively reacts with maleimide, OPSS, vinylsulfone and transition metal surface including gold, silver, etc.

RhB-PEG-SH

Thiol-PEG-Rhodamine (RhB-PEG-SH) is a heterofunctional linker, which has thiol group on one end for conjugation of thiol-containing ligands, and fluorescent probe (red) on the other end for labeling.

Thiol-PEG-Amine/HS-PEG-NH2

Thiol-PEG-Amine (NH2-PEG-SH, HS-PEG-NH2) is a linear heterobifunctional PEGylation reagent with a thiol and an amine. It is a useful crosslinking or bioconjugation reagent with a PEG spacer. Thiol, or SH, sulfhydryl, or mercapto group selectively reacts with
maleimide, OPSS, vinylsulfone and transition metal surface including gold, silver, etc.

Molecular Weight: 1000, 2000, 3500, 5000
Package size: 100mg, 1g

Tritylthiol terminated poly-L-lysine

Tritylthiol terminated poly-L-lysine (PLL-tritylthiol, Tritylthiol-PLL, Trt-SH-PLL, PLL-Trt-SH) is a positively charged synthetic polyamino acid terminated with trityl protected SH. It is a crystalline solid soluble in water. Applications for poly-L-lysine include the promotion of cell adhesion to solid substrates for culture dishes or slides, the conjugation to active molecules for improved activities, the layer-by-layer deposition techniques, and the complexation with nucleic acids for gene expression.

Tritylthiol Poly-L-lysine can be offered in form of hydrochloride. Trityl group can be easily removed by TFA to obtain free SH.

SH-terminated polymers were used to selectively react with maleimide and transition metal surface including gold, silver, etc.

Molecular weight: 3300 (X=20), 8,200 (X=50), 16,000 (X=100), 32,000 (X=200)
Package size: 100mg, 500mg, 1g
Vinylsulfone (VS)

**Cholesterol-PEG-VS**
Cholesterol functionalized polyethylene glycol with conjugated vinylsulfone (Cholesterol-PEG-VS), is a lipophilic lipid PEG conjugate with good water solubility. PEG cholesterol derivatives can be used to make targeted liposome to improve circulation time for encapsulated drugs. They may also be used for non-viral transfection reagents. The vinylsulfone-functionalized nanoparticles can be modified by thiol-containing moieties.

(8529)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 100mg, 500mg, 1g

**DSPE-PEG-VS**
DSPE-PEG-Vinylsulfone (DSPE-PEG-VS) is a linear heterobifunctional PEGylation reagent with a DSPE phospholipid and a biotin. It is a useful self-assembling reagent to prepare grafted or PEGylated liposome or micelle which has functional vinylsulfone on the surface that can react with thiol-containing peptides or antibodies. It is often used in targeted drug delivery with the lipid bilayer to improve drug solubility, the PEG to provide stealth property, extend circulation half-life and reduce non-specific protein binding or cell adhesion, and the VS group to bind to targeting molecules including antibody, aptamer, protein, and peptide.

(8545)
- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 100 mg, 1g

**MPEG-VS**
Methoxyl-PEG-vinylsulfone (MPEG-VS) from Nanosoft Polymers is a thiol reactive monofunctional PEG for sulhydryl pegylation at high pH. MPEG derivatives have numerous applications as crosslinkers for PEGylation of proteins and peptides, nanoparticle and surface modifications. Conjugation with homobifunctional PEGs ensures an increased drug load compared to pegylation with linear PEGs.

(3515)
- Molecular weight: 2000, 5000, 20K
- Package size: 1g, 5g

**PCL-PEG-VS**
Poly(ε-caprolactone)-block-poly(ethylene glycol)-vinylsulfone (PCL-PEG-VS) is a functional amphiphilic block copolymer with vinylsulfone group at the end of PEG. Vinlysulfone groups are useful for coupling via Michael addition reactions with thiol. PCL-PEG-VS is used to prepare micelles or nanoparticles with alkyne on the micelle surface for bioconjugation. Hydrophobic drugs is encapsulated in the PCL core for targeted drug delivery.

(8639)
- PCL Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

**PLA-PEG-VS**
Poly(L-lactide)-b-poly(ethylene glycol)-vinylsulfone (PLA-PEG-VS) is a functional amphiphilic block copolymer with vinylsulfone (VS) group at the end of PEG. Vinylsulfone groups are useful for coupling thiol-containing targeting ligands via Michael addition. PLA-PEG-VS is used to prepare micelles or nanoparticles with vinylsulfone on the micelle surface for bioconjugation. Hydrophobic drugs is encapsulated in the PLA core for targeted drug delivery.

(8562)
- PLA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10000
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg
PLGA-PEG-VS

Poly(L-lactide-co-glycolide)-b-poly(ethylene glycol)-vinylsulfone (PLGA-PEG-VS) is a functional amphiphilic block copolymer with vinylsulfone group at the end of PEG. Vinylsulfone groups are useful for coupling via Michael addition reactions with thiol. PLGA-PEG-VS is used to prepare micelles or nanoparticles with vinylsulfone on the micelle surface for bioconjugation. Hydrophobic drugs is encapsulated in the PLGA core for targeted drug delivery.

- PLGA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 100mg, 1g

VS-PEG-VS

Vinylsulfone-PEG-vinylsulfone (VS-PEG-VS) from Nanosoft Polymers is a thiol reactive homobifunctional PEG for sulfhydryl pegylation at high pH. Homobifunctional PEG derivatives have numerous applications as crosslinkers for PEGylation of proteins and peptides, nanoparticle and surface modifications. Conjugation with homobifunctional PEGs ensures an increased drug load compared to pegylation with linear PEGs.

- Molecular weight: 1000, 2000, 3500, 5000, 20k
- Package size: 1g, 5g
Fluorescent polymers

**BIO-PEG-FITC**
Bio-PEG-FITC (BIO-PEG-FITC) is a heterofunctional linker, which has biotin group on one end, and fluorescent probe (green) on the other end for labeling. Biotin can bind to avidin and streptavidin with high specificity and affinity.

- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 50 mg

**BIO-PEG-RhB**
Bio-PEG-Rhodamine (BIO-PEG-RhB) is a heterofunctional linker, which has Biotin group on one end, and fluorescent probe (red) on the other end for labeling. Biotin group can react with amine-containing groups.

- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 50 mg

**DSPE-Fluorescein/DSPE-FITC**
Fluorescein labeled 1,2-Distearoyl-sn-glycero-3-phosphoethanolamine (DSPE-FITC, DSPE-fluorescein) is used for labeling liposomes.

Phospholipids belong to the lipid family of biological polymers. A phospholipid is composed of two fatty acids, a glycerol unit, a phosphate group and a polar molecule. The phosphate group and polar head region of the molecule is hydrophillic (attracted to water), while the fatty acid tail is hydrophobic (repelled by water). When placed in water, phospholipids will orient themselves into a bilayer in which the non-polar tail region faces the inner area of the bilayer. The polar head region faces outward and interacts with the water.

- Package size: 20 mg, 50 mg, 100 mg

**DSPE-PEG-Cy3**
1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine (DSPE)-polyethylene glycol with conjugated cyanine 3 (DSPE-PEG-Cy3) is an amphiphilic polymer. Pegylated phospholipids are excellent liposome formation materials that can be used for drug delivery, gene transfection and vaccine delivery as well. Pegylation of phospholipids significantly improves the blood circulation time and stability for encapsulated drugs. These materials can also be used for targeted drug delivery by modifying their surfaces with targeting ligands such as antibodies and peptides.

- Molecular size: 2000, 3400, 5000
- Package size: 10 mg, 50 mg

**DSPE-PEG-FITC**
1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine (DSPE)-polyethylene glycol with conjugated fluorescein (DSPE-PEG-FITC) is an amphiphilic polymer. Pegylated phospholipids are excellent liposome formation materials that can be used for drug delivery, gene transfection and vaccine delivery as well. Pegylation of phospholipids significantly improves the blood circulation time and stability for encapsulated drugs. These materials can also be used for targeted drug delivery by modifying their surfaces with targeting ligands such as antibodies, peptides. Fluorescein labeled DSPE PEG products emitted green fluorescence and can be easily detected with a fluorescent microscopy or spectroscopy.

- Molecular size: 1000, 2000, 3400, 5000
- Package size: 50 mg

**DSPE-PEG-RhB**
1,2-Distearoyl-sn-Glycero-3-Phosphoethanolamine (DSPE)-polyethylene glycol with conjugated rhodamine (DSPE-PEG-RhB) is an amphiphilic polymer. Pegylated phospholipids are excellent liposome formation materials that can be used for drug delivery, gene transfection and vaccine delivery as well. Pegylation of phospholipids significantly improves the blood circulation time and stability for encapsulated drugs. These materials can also be used for targeted drug delivery by modifying their surfaces with targeting ligands such as antibodies, peptides. Fluorescein labeled DSPE PEG products emitted red fluorescence and can be easily detected with fluorescent microscopy or spectroscopy.

- Molecular size: 1000, 2000, 3400, 5000

NSP-Functional Polymers & Copolymers catalog
www.nanosoftpolymers.com; Tel: 336-749-8700; Email: info@nanosoftpolymers.com
**DSPE-Pyrene**

1,2-Distearoyl-sn-glycero-3-phosphoethanolamine-Pyrene (DSPE-Pyrene) is a phospholipid capped with fluorescent pyrene.

Phospholipids belong to the lipid family of biological polymers. A phospholipid is composed of two fatty acids, a glycerol unit, a phosphate group and a polar molecule. The phosphate group and polar head region of the molecule is hydrophilic (attracted to water), while the fatty acid tail is hydrophobic (repelled by water). When placed in water, phospholipids will orient themselves into a bilayer in which the non-polar tail region faces the inner area of the bilayer. The polar head region faces outward and interacts with the water.

Phospholipids are excellent natural biomaterials for drug delivery.

(10810)  
- Package size: 20mg, 50mg, 100mg

**DSPE-Rhodamine B/DSPE-RhB**

Rhodamine B labeled 1,2-Distearoyl-sn-glycero-3-phosphoethanolamine (DSPE-RhB, DSPE-Rhodamine B) is used for labeling liposomes.

Phospholipids belong to the lipid family of biological polymers. A phospholipid is composed of two fatty acids, a glycerol unit, a phosphate group and a polar molecule. The phosphate group and polar head region of the molecule is hydrophilic (attracted to water), while the fatty acid tail is hydrophobic (repelled by water). When placed in water, phospholipids will orient themselves into a bilayer in which the non-polar tail region faces the inner area of the bilayer. The polar head region faces outward and interacts with the water.

(10798)  
- Package size: 10mg, 50mg, 100mg

**FITC-PEG-NHS**

FITC-PEG-succinimidyl ester (FITC-PEG-NHS) is a heterofunctional linker, which has active succinimidyl ester group on one end, and fluorescent probe (green) on the other end for labeling. NHS group can react with amine-containing groups.

(4530)  
- Molecular weight: 1000, 2000, 3400, 5000  
- Package size: 50mg

**LA-PEG-FITC**

Lipoic acid-PEG-FITC (LA-PEG-FITC) is a heterofunctional linker, which has lipoic group on one end for surface modification, and fluorescent probe (green) on the other end for labeling. Lipoic acid, also known as thioctic acid, is an important bioactive molecule participating in various biological processes. PEG functionalized lipoic acid can be used to bind to metallic particle or film surface with its -S-S-bond. Lipoic acid group has high affinity to metallic surfaces and have been widely used for gold nanoparticles and quantum dots surfaces. PEGylated lipoic acid is water soluble and can be used directly in aqueous buffer.

(3220)  
- Molecular weight: 1000, 2000, 3400, 5000  
- Package size: 50mg

**MAL-PEG-FITC**

Maleimide-PEG-FITC (MAL-PEG-FITC) is a heterofunctional linker, which has maleimide group on one end for conjugation of thiol-containing ligands, and fluorescent probe (green) on the other end for labeling.

(4521)  
- Molecular weight: 1000, 2000, 3400, 5000  
- Package size: 50mg

**MAL-PEG-RhB**

Maleimide-PEG-Rhodamine (MAL-PEG-RhB) is a heterofunctional linker, which has maleimide group on one end for conjugation of thiol-containing ligands, and fluorescent probe (red) on the other end for labeling.

(4571)  
- Molecular weight: 1000, 2000, 3400, 5000  
- Package size: 50mg
PCL-PEG-FITC
Poly(ε-caprolactone)-block-poly(ethylene glycol)-fluorescein (PCL-PEG-FITC) is a fluorescein-labeled amphiphilic block copolymer. PCL-PEG is one of the most commonly used biodegradable ABC polymers for micelle-based drug encapsulation, drug solubilization and drug delivery.

- PCL Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 50mg

PCL-PEG-RhB
Poly(ε-caprolactone)-PEG-Rhodamine (PCL-PEG-RhB) is a rhodamine-labeled amphiphilic block copolymer. PLA-PEG is one of the most commonly used biodegradable ABC polymers for micelle-based drug encapsulation, drug solubilization and drug delivery.

- PCL Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10000
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 50mg

PDLLA-Fuorescein/PLLDA-FITC
Fluorescein labeled poly(D,L-Lactide) (PDLLA-Fuorescein, PDLLA-FITC) can be used to prepare fluorescent nanoparticles. Poly lactides are a family of biodegradable and bioactive thermoplastic aliphatic polyester. It is used to fabricate resorbable medical devices that degrade over months in physiological conditions. Due to their history, polyacticides are one of the easiest and most affordable biodegradable polymers for medical devices. PDLLA polymer is amorphous because the polymer composed randomly by the repeating units from L-lactic acid and D-lactic acid. Therefore, the polymer did not show melting point and has inferior mechanical properties than PLLA, so that the polymer is mainly applied for the coating of suture.

- Molecular weight: 5000, 10K, 20K
- Package size: 50mg, 100mg

PDLLA-Rhodamine/ PDLLA-RhB
Rhodamine B labeled poly(D,L-Lactide) (PDLLA-Rhodamine B, PDLLA-RhB) can be used to prepare fluorescent nanoparticles. Poly lactides are a family of biodegradable and bioactive thermoplastic aliphatic polyester. It is used to fabricate resorbable medical devices that degrade over months in physiological conditions. Due to their history, polyacticides are one of the easiest and most affordable biodegradable polymers for medical devices. PDLLA polymer is amorphous because the polymer composed randomly by the repeating units from L-lactic acid and D-lactic acid. Therefore, the polymer did not show melting point and has inferior mechanical properties than PLLA, so that the polymer is mainly applied for the coating of suture.

- Molecular weight: 2000, 5000, 10K, 20K
- Package size: 50mg, 100mg

PLA-PEG-FITC
Poly(L-Lactide)-PEG-FITC (PLA-PEG-FITC) is a fluorescein-labeled amphiphilic block copolymer. PLA-PEG is one of the most commonly used biodegradable ABC polymers for micelle-based drug encapsulation, drug solubilization and drug delivery.

- PLA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10k
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 50mg

PLA-PEG-RhB
Poly(L-Lactide)-PEG-Rhodamine (PLA-PEG-RhB) is a rhodamine-labeled amphiphilic block copolymer. PLA-PEG is one of the most commonly used biodegradable ABC polymers for micelle-based drug encapsulation, drug solubilization and drug delivery.

- PLA Molecular Weight: 1000, 2000, 3000, 4000, 5000, 10000
- PEG Molecular Weight: 1000, 2000, 3000, 5000
- Package size: 50mg
PLGA-Fluorescein/PLGA-FITC

Fluorescein labeled poly(L-lactide-co-glycolide) (PLGA-FITC, PLGA-Fluorescein) can be used to prepare fluorescent nanoparticles.

Poly (lactic-co-glycolic acid) (PLGA) is one of the most effective biodegradable polymeric nanoparticles (NPs). It has been approved by the US FDA to use in drug delivery systems due to controlled and sustained-release properties, low toxicity, and biocompatibility with tissue and cells.

- Molecular weight: 5000, 10K, 20K
- Package size: 100mg

PLGA-PEG-FITC

Poly(L-lactide-co-glycolic acid)-PEG-FITC (PLGA-PEG-FITC) is a fluorescein-labeled amphiphilic block copolymer. PLGA-PEG is one of the most commonly used biodegradable and biocompatible ABC polymers for micelle-based drug encapsulation, drug solubilization and drug delivery.

- Molecular weight: 5000, 10K, 20K
- Package size: 100mg

PLGA-PEG-RhB

Poly(lactide-co-glycolide)-PEG-Rhodamine (PLGA-PEG-RhB) is a rhodamine-labeled amphiphilic block copolymer. PLA-PEG is one of the most commonly used biodegradable ABC polymers for micelle-based drug encapsulation, drug solubilization and drug delivery.

Poly (lactic-co-glycolic acid) (PLGA) is one of the most effective biodegradable polymeric nanoparticles (NPs). It has been approved by the US FDA to use in drug delivery systems due to controlled and sustained-release properties, low toxicity, and biocompatibility with tissue and cells.

- Molecular weight: 1000, 2000, 5000, 10K
- Package size: 50mg

PLGA-Rhodamine/PLGA-RhB

Rhodamine B labeled poly(L-lactide-co-glycolide) (PLGA-Rhodamine B, PLGA-RhB) can be used to prepare fluorescent nanoparticles.

Poly (lactic-co-glycolic acid) (PLGA) is one of the most effective biodegradable polymeric nanoparticles (NPs). It has been approved by the US FDA to use in drug delivery systems due to controlled and sustained-release properties, low toxicity, and biocompatibility with tissue and cells.

- Molecular weight: 5000, 10K, 20K
- Package size: 100mg

RhB-PEG-NHS

Rhodamine-PEG-succinimidyl ester (RhB-PEG-NHS) is a heterofunctional linker, which has active succinimidyl ester group on one end, and fluorescent probe (red) on the other end for labeling. NHS group can react with amine-containing groups.

- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 50mg

RhB-PEG-SH

Thiol-PEG-Rhodamine (RhB-PEG-SH) is a heterofunctional linker, which has thiol group on one end for conjugation of thiol-containing ligands, and fluorescent probe (red) on the other end for labeling.

- Molecular weight: 1000, 2000, 3400, 5000
- Package size: 50mg
Stearic acid-PEG-FITC

Stearic acid-PEG-Fluorescein (Stearic acid-PEG-FITC) is an amphiphilic surfactant with terminated fluorescent FITC.

Stearic acid is an 18 carbon saturated fatty acid lipid with excellent hydrophobicity. PEG modified stearic acid is an excellent amphiphilic polymer with both hydrophilicity and hydrophobicity. PEGylated stearyl is an amphiphilic, PEG surfactant and can be used to form micelles, drug delivery systems to enhance drug solubility and improve drug formulation and bioavailability. Pegylated lipids are also excellent liposome formation materials that can be used for drug delivery, gene transfection and vaccine delivery as well. These materials can also be used for targeted drug delivery by modifying their surfaces with targeting ligands such as antibodies, peptides.

(10688)
- PEG molecular weight: 1000, 2000, 3400, 5000
- Package size: 50mg

Stearic acid-PEG-Rhodamine

Stearic acid-PEG-Rhodamine B (Stearic acid-PEG-RhB) is an amphiphilic surfactant with terminated fluorescent RhB.

Stearic acid is an 18 carbon saturated fatty acid lipid with excellent hydrophobicity. PEG modified stearic acid is an excellent amphiphilic polymer with both hydrophilicity and hydrophobicity. PEGylated stearyl is an amphiphilic, PEG surfactant and can be used to form micelles, drug delivery systems to enhance drug solubility and improve drug formulation and bioavailability. Pegylated lipids are also excellent liposome formation materials that can be used for drug delivery, gene transfection and vaccine delivery as well. These materials can also be used for targeted drug delivery by modifying their surfaces with targeting ligands such as antibodies, peptides.

(10681)
- PEG molecular weight: 1000, 2000, 3400, 5000
- Package size: 50mg