BIOTECH SUPPORT GROUP

NuGel™ Poly-Epoxy

Polymer Coated Silica Affinity Matrices

Special Features of NuGel™:

- Non-specific sites are virtually eliminated by a polymer coating
- Stable across a wide pH range 2 - 10
- 1000Å, 50µm Silica suitable for LC and batch processes

Special Features of Poly-Epoxy ligand:

- Covalently couples ligands containing free amino or thiol groups at pH 7.5 to 9.0.
- Covalently couples non-polar ligands in organic solvents.

Silica has been an industry standard as an advantageous matrix suitable for high performance liquid chromatography. With NuGel™, non-specific sites have been virtually eliminated making it an ideal support for affinity purification. Through a proprietary polymer coating, Silica is cross linked forming a reactive Poly-Epoxy functionality stable across a wide pH range (pH 2 to 10). From this foundational chemistry, all of the NuGel™ affinity products are derived.

For Immobilization of Proteins, Antibodies, Hormones, Peptides, Haptens, Drugs, Etc.						
Product Name	**Matrix Reactive Group**	**Ligand Reactive Group**	**Special Features**	**Size**	**Column Volume (Approx)**	**Item No.**
NuGel™ Poly-Epoxy	Terminal Epoxy	Amino	Direct Coupling of Amino Groups	25 Grams	50 ml	NPEY-25
NuGel™ Poly-Amine	Terminal Amine	Carboxylic Acid, or Carbohydrate	Carbodiiamide reaction, or $NaIO_4$ derived Aldehyde	25 Grams	50 ml	NPAM-25
NuGel™ Poly-Aldehyde	Terminal Aldehyde	Amino	Direct Coupling of Amino Groups	25 Grams	50 ml	NPAY-25
NuGel™ Poly-Hydroxy	Terminal Glycol	Amino	Carbodiimidazole mediated reaction	25 Grams	50 ml	NPHX-25
NuGel™ Poly-Carboxy	Terminal Carboxylic Acid	Amino	Carbodiiamide mediated reaction	25 Grams	50 ml	NPCY-25

* Kilogram quantities and other particle sizes and porosity of NuGel™ are also available upon request.

Gentaur Europe BVBA Voortstraat 49, 1910 Kampenhout BELGIUM
Tel 0032 16 58 90 45 info@gentaur.com

NuGel™ Poly-Epoxy Protocol

NuGel™ Poly-Epoxy has a proprietary polymer coating, silica is cross linked forming a reactive Poly-Epoxy functionality stable across a wide pH range (pH 2 to 10). This support contains epoxy groups at the end of hydrophilic spacer arms and is used to couple ligands containing amino groups, thiol groups, proteins and peptides. Compatible with organic solvents.

Technical Data	
Spacer Arm	Polymerized Hydrophilic Carbon Chain
Porosity	1000Å
Average Particle Size	50um
Substitution Level	100-200 uEq/gm of epoxy groups

Special Features:

- Couples ligands containing free amino or thiol groups at pH 7.5 to 9.0.
- Couples non-polar ligands in organic solvents.

Poly-Epoxy Protocol for Aqueous Coupling

(Organic solvents may be used for non-protein ligands, contact Technical Services)

1. Epoxy derivatives readily react with ligands containing hydroxyl, amine or thiol group to yield covalently coupled protein-ligand in aqueous solutions. At neutral pH, sulfhydryl groups couple more readily than amino groups. The unreacted groups are subsequently blocked with Ethanolamine. For protein-ligands, optimal coupling takes place under high protein concentrations, 10-20 mg/ml. Typically protein (i.e. IgG) coupling ranges from 5 to 10 mg/gram support. Suitable coupling buffers are:
    a. 0.1-0.5 M Phosphate, pH 7.5 – 8.5, preferably with 0.1 – 0.5 M NaCl
    b. Do not use Tris or Glycine buffers as they contain amines.
2. One gram of NuGel™Poly-Epoxy produces approximately 2 ml column (or bed) volume. Weigh out required amount and wash on a sintered glass filter funnel with DI water and then wash again with coupling buffer. Transfer to mixing vessel.
3. Transfer the protein-ligand solution to the washed NuGel™. Mix by orbital shaker or overhead stirrer. Do not use magnetic stirrer. Mix at room temperature (for proteins) or at 30degrees C(for small ligands) for 24-48 hours.
4. Using a filter or column, wash the coupled suspension with water/buffer. If necessary, block the excess active groups by suspending in 1 M Ethanolamine, pH 7.5-8.5 for 6 hours. Wash the gel extensively with PBS. Store at 4°C in a well-sealed container.

Operating Modes

Since the support matrix is based on a rigid 50 µm particle, NuGel™ can be operated in low pressure pump or gravity flow columns, or in batch mode.

Related NuGel™ References

Patents

Monoclonal antibodies directed to the cytotoxic lymphocyte maturation factor European Patent EP0790255

Purification of immunoglobulins using affinity chromatography and peptide US 2006/0153834 A1

Affinity

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Membrane-based receptor affinity chromatography. Journal of Chromatography A Volume 597, Issues 1-2, 24 April 1992, Pages 155-166 9th International Symposium on Affinity Chromatography and Biological Recognition

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CONTACT US

We welcome your questions and comments regarding our products.

Tel: 0032 16 58 90 45

Email: info@gentaur.com