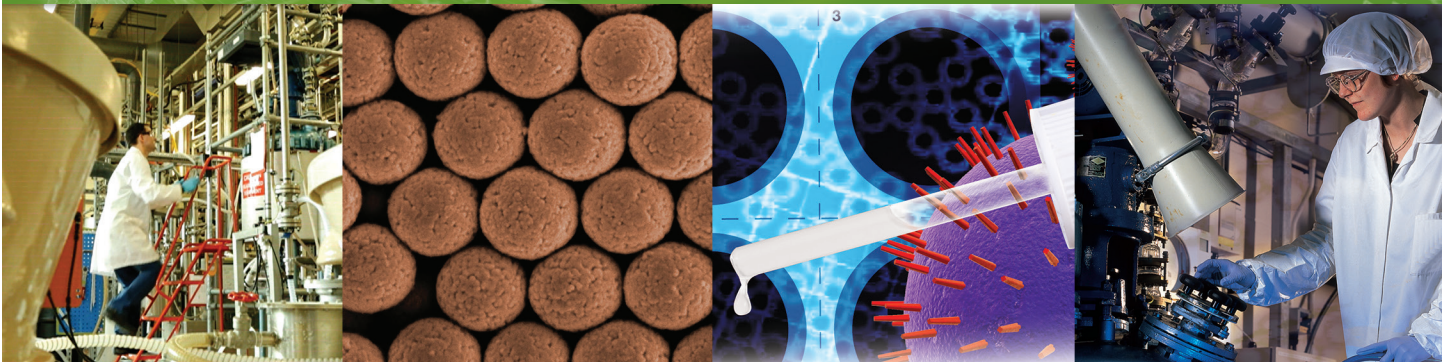


Agilent LodeStars

SUPERPARAMAGNETIC PARTICLES



BIOMAGNETIC SEPARATION TECHNOLOGY

Quality Particles for Confidence in your Results.

Biomagnetic separation is a mainstream technology in bioscience and life science research. With so many new and demanding applications, it is vital that research scientists, product developers, manufacturers and healthcare professionals have access on top quality paramagnetic particle products which they can rely on for performance and consistency.

Agilent LodeStars beads are high performance, superparamagnetic particles with excellent physical and chemical characteristics designed for biomagnetic separations. Based on patented technology and experience, the beads are a powerful magnetic platform for bioscience and life science applications.

The beads are polymer microparticles with a microcrystalline ferric oxide component uniformly dispersed throughout the bead. This provides the beads with their superparamagnetic properties, causing them to move rapidly in an applied magnetic field. Also, as no permanent magnetism is induced, the beads fully disperse once the field is removed.

The beads are coated in a polymer shell which provides two key properties. Firstly the iron is protected inside the bead ensuring that the iron cannot interfere with biological reagents. Secondly, the polymer coating provides chemical groups for covalent attachment of biological molecules, e.g. antibodies for immunocapture and minimizes non-specific interactions.

LodeStars beads can be used as a solid phase in manual and automated bioassay, and to isolate and manipulate targets in biological samples, e.g. cells, proteins, and other molecules.

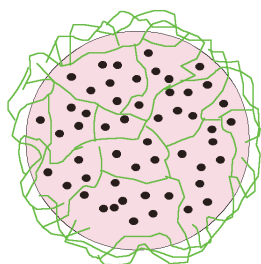
Principle of Operation

LodeStars beads, when coupled with the chosen biomolecule, can bind and form a complex with the target biomolecule. For example, LodeStars 2.7 Streptavidin beads will bind a biotinylated ligand. After a short reaction time, applying a magnetic field will recover LodeStars beads from the sample solution. The separation is fast, efficient and gentle. It requires no columns or centrifugation. Washing and handling using magnetic particles lends itself to use in automated processing that is quick and highly reproducible.

The beads' polymer surface is highly controlled to provide ultralow non-specific binding of unwanted sample components and to reduce non-covalent biomolecule attachment that might cause loss of biomolecules from the surface in storage or during a procedure. LodeStars beads are highly resistant to mechanical stress and reducing conditions, and are stable over a wide pH range.

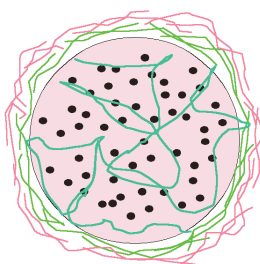
Based on Agilent's patented technology, LodeStars products can be used in applications across numerous areas of bioscience and life science research, diagnostics and therapeutics, as well as the development of new products in molecular medicine.

Microcrystalline Fe distributed within the body of a precursor particle.



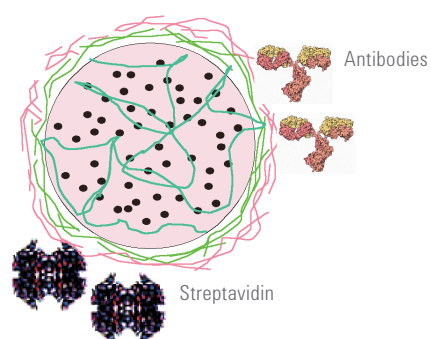
Polymer network provides a surface shell keeping the Fe hidden and acts as a base for surface chemistry addition.

Coating of polymer layers introduces specific properties for ligand binding, e.g. COOH.



Further processing controls other characteristics, e.g. reducing backgrounds or auto-fluorescence.

Ligand binding through standard chemistries.



FORMATS FOR APPLICATION-FOCUSED BIOMAGNETIC SEPARATIONS

Features

LodeStars 2.7 µm Carboxyl

- Superparamagnetic 2.7 µm polystyrene microparticles coated with carboxylic acid groups.
- Suitable for covalent coupling of affinity ligands to isolate targets in biological samples, including proteins, cells and other biomolecules.
- Microcrystalline ferric oxide is uniformly dispersed throughout the particle for optimal performance in a magnetic field.
- Highly controlled surface maximizes coupling efficiency and minimizes non-specific binding.

LodeStars 2.7 µm Streptavidin

- Superparamagnetic 2.7 µm polystyrene microparticles coated with Streptavidin.
- Suitable for binding Biotin labeled biomolecules with very high affinity.
- Microcrystalline ferric oxide is uniformly dispersed throughout the particle for optimal performance in a magnetic field.
- Highly controlled surface maximizes coupling efficiency and minimizes non-specific binding.

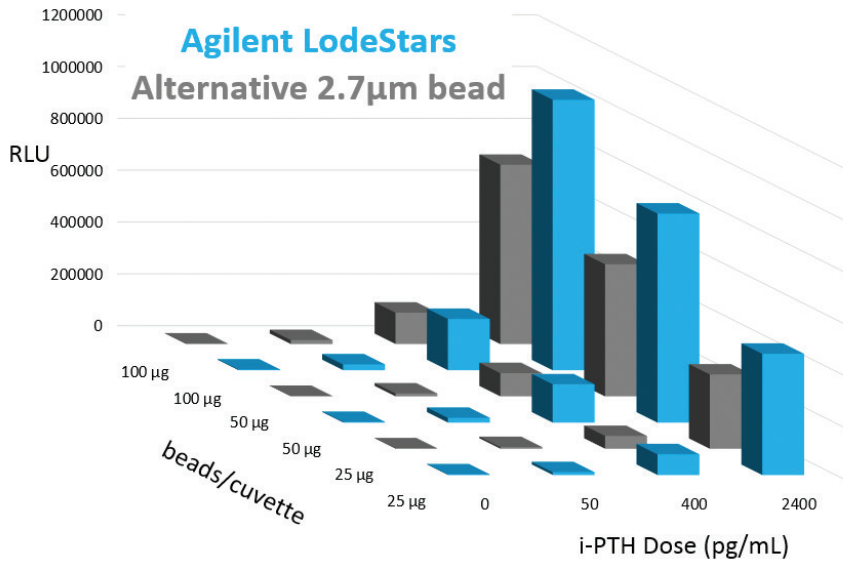
Specifications

Diameter	2.7 µm
Iron content	20%
Magnetic mass susceptibility	> 60 m ³ /Kg
Settling rate (under gravity)*	> 1.5 cm
Magnetic response	> 20 s
Streptavidin binding capacities	
Biotin	> 1,200 pmoles/mg bead
Biotinylated IgG	> 5.0 µg/mg bead
Carboxyl binding capacities	
Immno-capture of mouse IgG-OG**	> 4.0 µg/mg bead

* Technique: Visual inspection of clear supernatant height after settling under gravitational forces for a concentration of 10 mg/mL magnetic beads and 4 mL volume in: 0.1% Tween 20, 0.1% BSA, PBS pH 7.4, and 0.1% sodium azide.

** Assay: Goat anti-mouse IgG bound to Oregon Green-labeled mouse IgG at saturation level (40 µg each/mg bead). Experiment details available on request.

Research study demonstrating the performance of Agilent LodeStars against alternative magnetic particles



Agilent engaged a contract research organization to conduct a non-clinical performance study of particle performance using a commercially available i-PTH assay kit.

The kit is designed to measure the amount of i-PTH present in a sample; reference i-PTH was used in this study.

The study measured the fluorescence output of acridinium ester in a direct sandwich chemiluminescent assay, using an automated immunoanalyzer platform. The assay (performed in cuvette) comprised a biotinylated antihuman PTH antibody prebound to streptavidin coated beads. These were mixed with reference i-PTH sample in the presence of antihuman PTH antibody labeled with acridinium ester.

The assay used a constant amount of the antihuman PTH antibody labeled with acridinium ester and then varied different parameters as follows:

- amount of magnetic beads (25 - 100 µg beads/cuvette)
- amount of reference i-PTH (dose of 0-2400 pg/mL)
- magnetic beads: LodeStar Streptavidin or Alternative 2.7 µm bead.

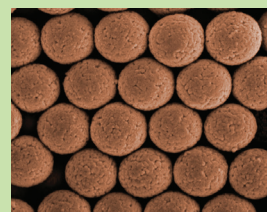
VOLUME SIZES TO MEET YOUR REQUIREMENTS

Ordering Information

Description	Volume	Part No.
LodeStars Streptavidin	2 mL	PL6727-1001
	10 mL	PL6727-1003
	100 mL	PL6727-1005
	800 mL	PL6727-1007
LodeStars Carboxyl	2 mL	PL6727-0001
	10 mL	PL6727-0003
	100 mL	PL6727-0005
	400 mL	PL6727-0006
	800 mL	PL6727-0007

Key Benefits

- **Highly selective ligand capture** due to controlled surface functionality.
- **Excellent performance** due to low backgrounds.
- **Improved speed of magnetic response** due to optimized ratio of size to iron content.
- **Reliability** due to controlled batch-to-batch reproducibility.



LodeStars are monodispersed and have good size distribution.

Manufacturing Capabilities

Agilent is one of the world's largest producers of particles for bioseparations. Agilent is ISO 9001:2000 accredited, with 40 years' experience in bead manufacture and applications development. Agilent's technologies are widely used in chromatography, life science and pharmaceutical chemistries. We manufacture superior quality, reliable particles for bead-based assays, chromatography media, supports for peptide and oligonucleotide synthesis, and resins for high throughput chemistry. All Agilent's beads are manufactured under stringent quality controls to ensure batch-to-batch reproducibility of physical and chemical properties.

Agilent manufactures polymer microparticles with engineered structure and highly controlled surfaces with consistency between production runs. In response to client partners' needs, Agilent applies its abilities and technologies to make bead products directed towards specific applications. As a result, Agilent is a key OEM development partner and supplier of beads to major bioscience companies worldwide.

- Microparticles for Life Science & Bioscience
- Synthesis & Purification of Oligonucleotides & Peptides
- Analytical and Preparative Chromatography



LodeStars are manufactured in Agilent's ISO 9001 certified, state of the art facility, where high technology products have been developed for 40 years.

Learn more

www.agilent.com/chem/beads

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