

Sera-Mag SpeedBeads

Carboxylate-Modified Magnetic Particles

SAMPLE ENRICHMENT

Sera-Mag™ SpeedBeads Carboxylate-Modified Magnetic Particles are nominal 1 µm magnetic particles of uniform size and feature a second layer of magnetite (Fig 1). As a result, Sera-Mag SpeedBeads respond much faster to a magnetic field to separate quickly and completely from suspensions. It also ensures shorter assay times in clinical diagnostic tests as well as faster particle movement through viscous solutions.

- Fast reaction kinetics increases throughput and precision
- Low nonspecific binding improves assay accuracy
- Cauliflower-like surface increases overall surface area and binding capacity
- Carboxylic groups on the surface permit easy covalent coupling using simple carbodiimide chemistry (Fig 2)
- Salt-tolerance and slow settling rate provides excellent colloidal stability in the absence of a magnetic field
- Uniform diameter provides excellent lot-to-lot reproducibility
- Surfactant-free particles require no washing
- Stability in buffer systems and detergents allows versatility in reagent and sample preparation

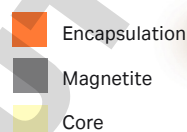


Fig 1. SEM image showing the cauliflower-like surface of the Sera-Mag Speedbeads that dramatically increases the overall surface area available for binding. Sera-Mag SpeedBeads also have a second layer of magnetite within the particle, resulting in a 2×-faster increase in speed in response to magnetic field.

Sera-Mag SpeedBeads Carboxylate-Modified Magnetic Particles are useful as a solid phase support for many applications including sample preparation and nucleic acid isolation. Prior to downstream applications, samples can be mixed with our particles, whereupon biomolecules of interest are covalently attached to carboxyl groups on the particles' surfaces. Isolation or purification of the biomolecules occurs through magnetic separation. The carboxyl groups on these particles are activated by the water soluble carbodiimide 1-ethyl-3-(3 dimethylaminopropyl)-carbodiimide (EDAC). Once activated, the groups react with the free amino groups of the adsorbed protein to form amide bonds. If exposure to EDAC is found to be potentially harmful to the protein, then we recommend using our two-step covalent coupling procedure which prevents this.

Available in Sera-Mag SpeedBeads and original Sera-Mag versions, these particles provide exquisite sensitivity and low non-specific binding for greater accuracy.

These carboxylate-modified magnetic particles also have a distinct cauliflower-like surface that adds to the overall surface area available for binding and without any reduction in particle size.

Sera-Mag SpeedBeads Carboxylate-Modified Magnetic Particles provide the speed, precision, and increased binding capacity required for sample preparation, proteomics, nucleic acid isolation and immunoassay applications.

Particles with code numbers beginning with 6515 and 4415 have surfaces that are more hydrophobic while the 4515 and 2415 particles have surfaces that are more hydrophilic. Please ask about our sample evaluation packs. Some performance feedback has indicated that the 6515 and 4415 particles, which are manufactured with a lower level of EDAC than the 4515 and 2415 particles, work better with nucleic acid isolation.

Modified Core Shell Process

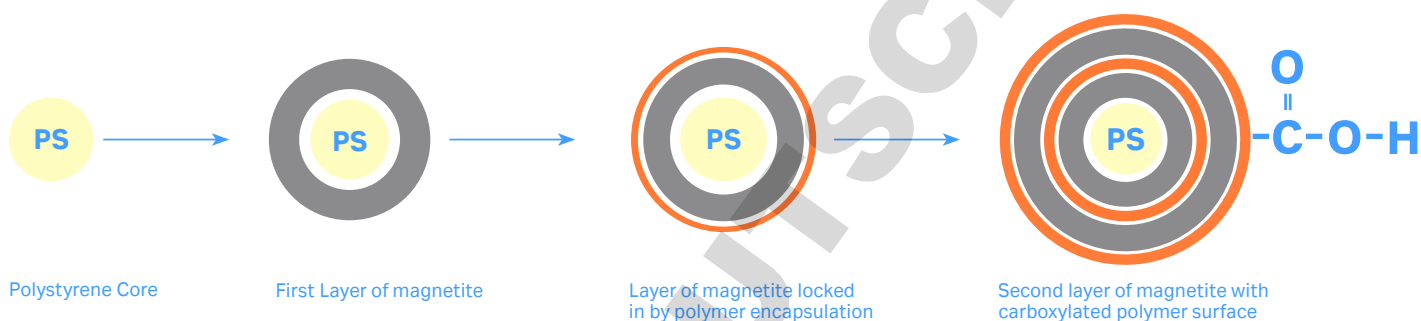


Fig 2. Sera-Mag SpeedBead Carboxylate-Modified Magnetic Particles feature carboxylic groups on the surface that permit easy covalent coupling using simple carbodiimide chemistry.

Specifications

	Sera-Mag SpeedBeads	Sera-Mag
Particle composition	Double layer of magnetite	Single layer of magnetite
Particle density	~2.0 g/cm ³	~1.7 g/cm ³
Content		
Magnetite	~60%	~40%
Acid	High acid content with parking areas ranging from ~2 to 5 Å ² per carboxyl group	
Product attributes		
Nominal diameter	1 µm	1 µm
Concentration	Supplied at approximately 5% solids (50 mg/ml)	
Fill volume	15 ml, 100 ml, and 1000 ml bottles	
pH stability	Stable in detergents, biological buffer systems and lysis or elution buffer systems (pH 1 to 13), including high salt solutions and DMF or DMSO	
Additives	0.05% sodium azide	0.05% sodium azide
Package includes	Certificate of analysis and packaging insert	
Storage and handling	Unless otherwise stated, refrigerate (2°C to 8°C) product when not in use, but do not freeze. Store upright and keep bottle tightly sealed. Mix product with gentle inversion by hand, roller or vortex mixer.	

Ordering Information

Product	Quantity	Code number
Sera-Mag SpeedBeads Carboxylate-Modified Magnetic Particles	15 ml	4515-2105-050250
Sera-Mag SpeedBeads Carboxylate-Modified Magnetic Particles	100 ml	4515-2105-050350
Sera-Mag SpeedBeads Carboxylate-Modified Magnetic Particles	15 ml	6515-2105-050250
Sera-Mag SpeedBeads Carboxylate-Modified Magnetic Particles	100 ml	6515-2105-050350
Sera-Mag Carboxylate- Modified Magnetic Particles	15 ml	2415-2105-050250
Sera-Mag Carboxylate- Modified Magnetic Particles	100 ml	2415-2105-050350
Sera-Mag Carboxylate- Modified Magnetic Particles	1000 ml	2415-2105-050450
Sera-Mag Carboxylate- Modified Magnetic Particles	15 ml	4415-2105-050250
Sera-Mag Carboxylate- Modified Magnetic Particles	100 ml	4415-2105-050350
Sera-Mag Carboxylate- Modified Magnetic Particles	1000 ml	4415-2105-050450

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