



PRODUCT DATA SHEET

Zepto™ Mag Express Microspheres

Description

Cytodiagnosics Zepto™ Mag Express Microspheres are synthesized using our proprietary process that internally encapsulates paramagnetic particles. With our process, the superparamagnetic microspheres exhibit very high magnetism that ensures fast magnetic concentration in their applications. The labeling/conjugation methods for traditional magnetic microspheres typically rely on carbodiimide coupling reaction, which are challenged with low and inconsistent conjugation efficiencies complicated by crosslinking problem in some cases. The optimal condition of carbodiimide coupling reaction varies with each different molecule. Thus it costs time and efforts of users before they can use these microspheres properly in their applications. Our Zepto™ Mag Express Microspheres have a significantly simplified, fast and improved conjugation process afforded by their unique metal nanoshell on the surface. The metal nanoshells are specifically designed with high uniformity and affinity to any molecule with accessible primary amines, thiol, dithiol and disulfide groups. You simply mix Zepto™ Mag Express Microspheres with the molecule(s) of interest, and use, without having to go through the optimization process required with conventional microspheres.

Magnetic microspheres are extremely easy to separate by a magnetic field, and are suitable for automation in device and assay design. They are used extensively in diagnostics and other applications including biomolecule purification and concentration, cell capture and collection, and many others. With a simple magnetic concentration, the purification or washing is highly efficient, convenient, and rapid. These microspheres are hydrophilic, so they are easily re-dispersed in buffers upon removal of the magnetic field.

Characteristics

Diameters: $2.5 \pm 0.3 \mu\text{m}$
Concentration: 2E8/mL in 2 mM citrate
Surface Composition: Meta-coat

Content

Zepto™ Mag Express Microspheres: supplied in 5 mL (Cat. #ZBME-0-5ML) format.

Storage/Stability

This product should be stored at 2-8°C. Avoid freezing, and drying. For the best consistency and stability, the microspheres are best used at a pH from 4 to 10, and temperature up to 80 degrees. Product is stable for at least 12 months when stored under the recommended conditions.

Usage Guidelines

Surface Functionalization of Zepto™ Mag Express Microspheres

Zepto™ Mag Express Microspheres are designed for fast surface functionalization with molecules containing primary amines, thiol, dithiol and disulfide groups. The procedure is simply a mix-and-use process. The following protocol provides general guidelines for conjugation of Protein A to Zepto™ Mag Express Microspheres, and for their use in downstream assays.

A typical conjugation reaction utilizes 10 million Zepto™ Express Mag Microspheres. The following reagents are required and not provided with the product:

- Washing buffer: 0.1X PBS containing 0.05% TWEEN20 (PBST)
 - Storage buffer: 1% bovine serum albumin (BSA) in PBST (Sigma, A3059)
 - Protein A: 10 $\mu\text{g/mL}$ in 0.5X PBS
1. Vortex the product bottle before using to ensure homogeneous suspension of the microspheres
 2. Immediately aliquot 10 million microspheres (100 μL of stock solution as provided)
 3. Place the microsphere tube against a magnet or on a magnetic rack for 1 min
 4. Gently remove solution away from the microspheres
 5. Add 10 μL of Protein A *
 6. Mix well and incubate for 2 hours at room temperature with constant rotation
 7. Place the microsphere tube against a magnet or on a magnetic rack for 1 min
 8. Gently remove solution away from the microspheres and add 100 μL of washing buffer
 9. Place the microsphere tube against a magnet or on a magnetic rack for 1 min



10. Gently remove solution away from the microspheres and add 100 μ L of storage buffer
11. Incubate for 1 hour at room temperature with rotation
12. Conjugated microspheres are now ready for your use in assays. Alternatively, store at 4°C until use

** The optimal amount of other molecules may vary with applications. A titration experiment may be needed.*

IgG binding assay by Protein A-conjugated magnetic microspheres

Protein A binds strongly to IgG's of different species. These microspheres are an effective adsorbent to remove Fc fragments during Fab fragment preparation, and in immunoassay systems. In a biological sample, IgG molecules bind to the microspheres, which can then be concentrated and purified.

The following reagents are required and not provided with the product:

- Elution buffer: (0.1 M glycine, 0.15M NaCl, pH 2.5)
- Neutralization buffer: 1M Tris, pH 8

1. Aliquot 10 μ L of conjugated spheres as prepared above
2. Add 100 μ L of analyte standard or sample solution and mix well
3. Incubate for 1 hour at room temperature with constant rotation
4. Place the microsphere tube against a magnet or on a magnetic rack for 1 min
5. Remove the solution away from the magnet and keep the solution separately if needed
6. To the microspheres, add 500 μ L of elution buffer and incubate for 5 min
7. Place the microsphere tube against a magnet or on a magnetic rack for 1 min
8. Save the clear elute solution away from the microsphere pellet
9. Neutralize the elute solution to pH 7-8 using approximately 25 μ L of neutralization buffer

Precautions and Disclaimer

These products are for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet available online at www.cytodiagnosics.com for information regarding hazards and safe handling procedures.

Ordering Information

For ordering call 866-344-3954 or visit us online at www.cytodiagnosics.com