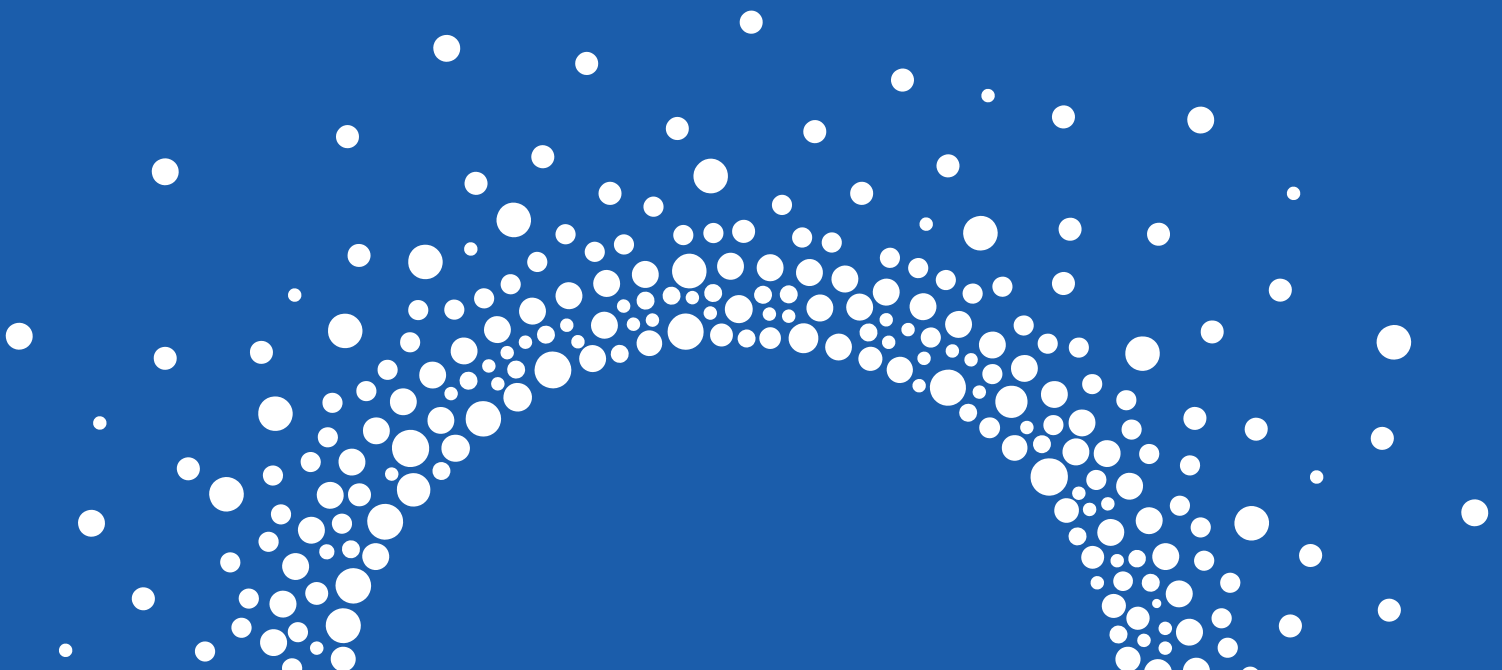


Inspiring & Enabling Life Science Innovation



COMPANY PROFILE |



VDO Biotech Co., Ltd. is a high-tech enterprise dedicated to innovative microsphere technologies and the production of a variety of high-quality microsphere products for global customers. VDO was founded in 2014, and is headquartered in the BioBAY of Suzhou Industrial Park, China, with a total facility area of over 10,000 square meters. Committed to R&D and innovation, We hold 6 authorized patents and 17 pending patents, and have successfully acquired high-tech enterprise certification.

Led by senior scientists from world-renowned universities, VDO's microsphere scientific team has established an advanced technology platform and a continuously innovative R&D system. We have always adhered to high standards of production management, and our manufacturing facilities have acquired ISO 9001:2015 certification. Our portfolio covers magnetic microspheres, latex microspheres, color-dyed microspheres, fluorescent microspheres, flow cytometry microspheres, standard microspheres, and microsphere-related services, which can be widely used in molecular diagnosis and immunodiagnosis. VDO has been endorsed by users all over the world for our high-quality products and services, and we are constantly creating new legends of core suppliers in the IVD field with higher-quality microsphere products.

VDO Biotech is deeply engaged in the large-scale microsphere production and application for *in vitro* diagnostic. We not only provide microspheres of uniform and controllable particle size, nano-sized & micro-sized microspheres with high quality and a variety of surface functional groups, but also provide customized services of various types of microspheres, large-scale microsphere conjugation services with antibodies or nucleic acid probes, OEM services for microspheres and intermediates, and complete solutions for microsphere applications.

With the mission of making biological diagnosis more accurate, VDO will continue to move forward, innovate constantly, and strive to become the world's leading supplier of biological diagnostic microspheres. Our dedicated staff is your reliable partner for the solution of microsphere-related applications!



Enterprise Cultures

Vision

Inspiring & Enabling Life Science Innovation

Values

Preciseness Innovation Collaboration Openness



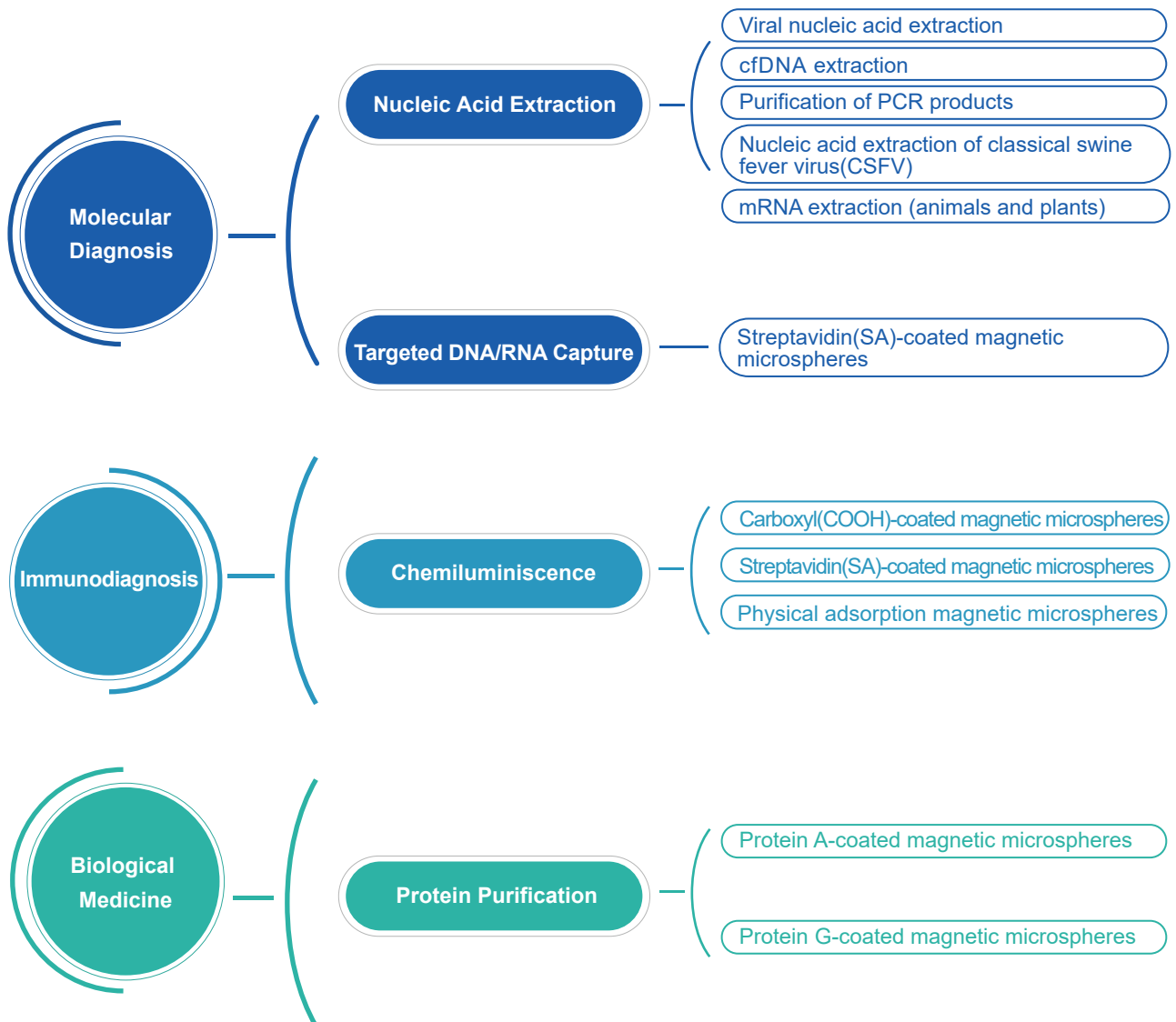
Microsphere Overall Solutions

- Microsphere OEM services for global customers
- Large scale protein-microsphere conjugation services
- OEM services of microsphere intermediates
- High quality microspheres of nanometer and micrometer level
- Customized microsphere services
- Overall solution for microsphere applications
- Biomacromolecule separation and purification services
- Development of separation and purification process for biological macromolecules
- Optimization of separation and purification process for biological macromolecules
- Overall solution for separation and purification of biological macromolecules

Microspheres Selection Guide

Due to the superparamagnetism, magnetic microspheres have been widely used in the field of *in vitro* diagnostics (IVD) and biological medicine, such as nucleic extraction, chemiluminescent and protein purification.

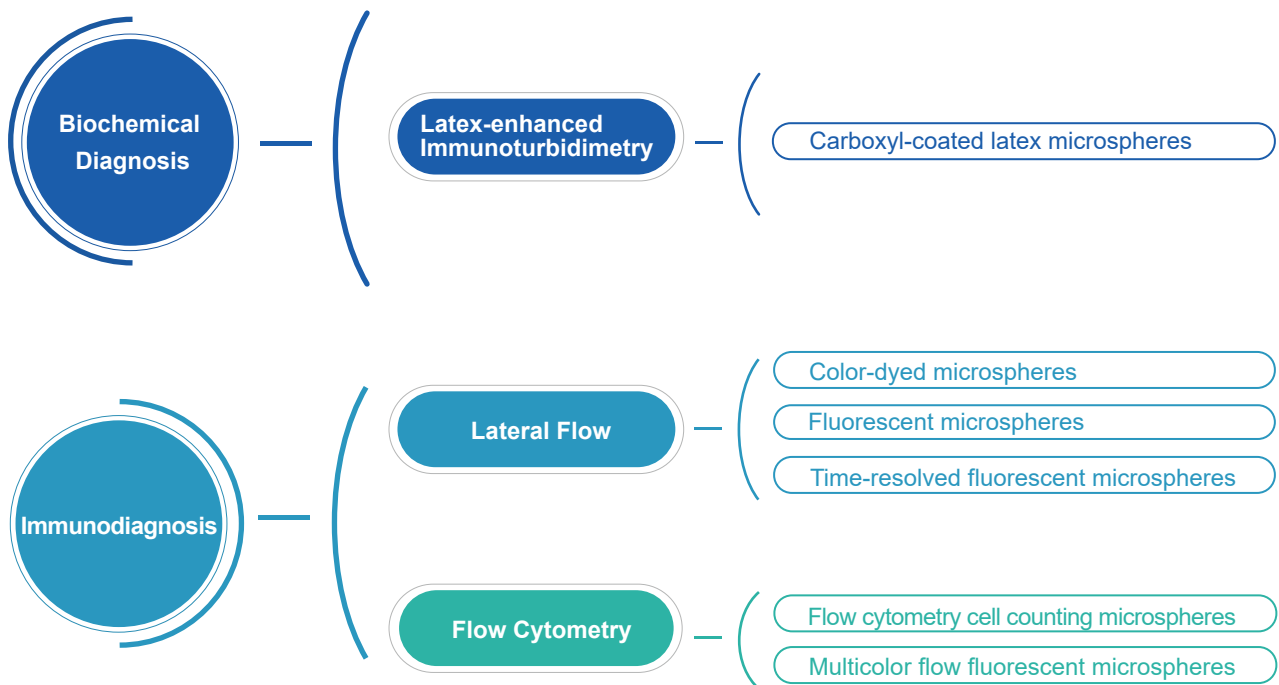
For Magnetic Microspheres



Microspheres Selection Guide

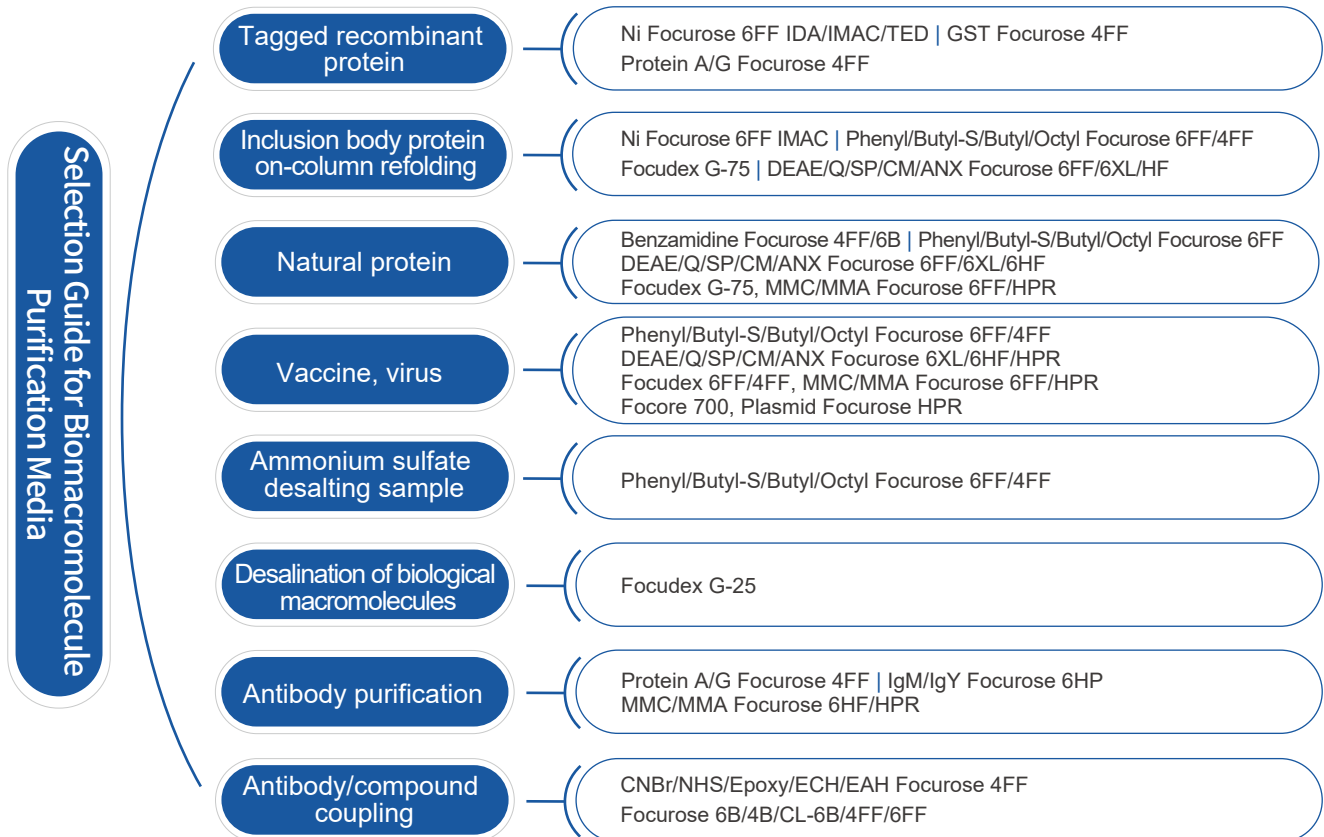
In addition to magnetic microspheres, our polymer microspheres have been widely used in the field of *in vitro* diagnostics (IVD), e.g., latex-enhanced immunoturbidimetry, lateral flow, flow cytometry, homogeneous chemiluminescent immunoassay.

For Polymer Microspheres

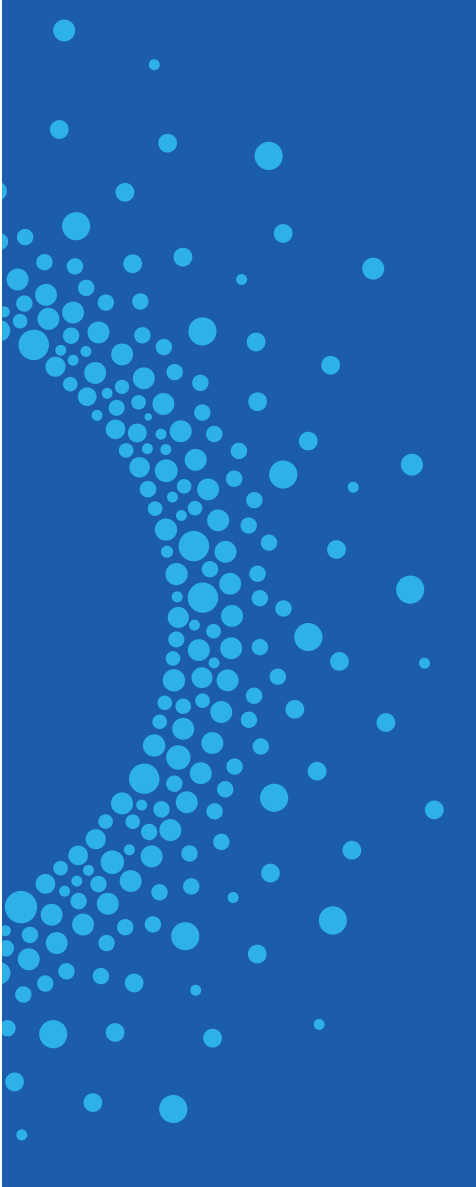


Microspheres Selection Guide

For Chromatography Media



★ ★ ★ Linear flow rate (cm/h)=flow rate (ml/min) × 60/square of column radius (cm) × π



Magnetic Microspheres

Nucleic Acid Extraction Magnetic Microspheres

This series of magnetic microspheres have excellent capture ability and elution efficiency for nucleic acids, and are specially designed for nucleic acid extraction and purification. VDO Biotech's magnetic microsphere series integrates the advantages of excellent dispersion, low non-specific binding and fast magnetic response. It is suitable for nucleic acid extraction of various sample types and could meet the requirements of automatic equipment extraction. It is an ideal choice for nucleic acid extraction and purification of biological samples.

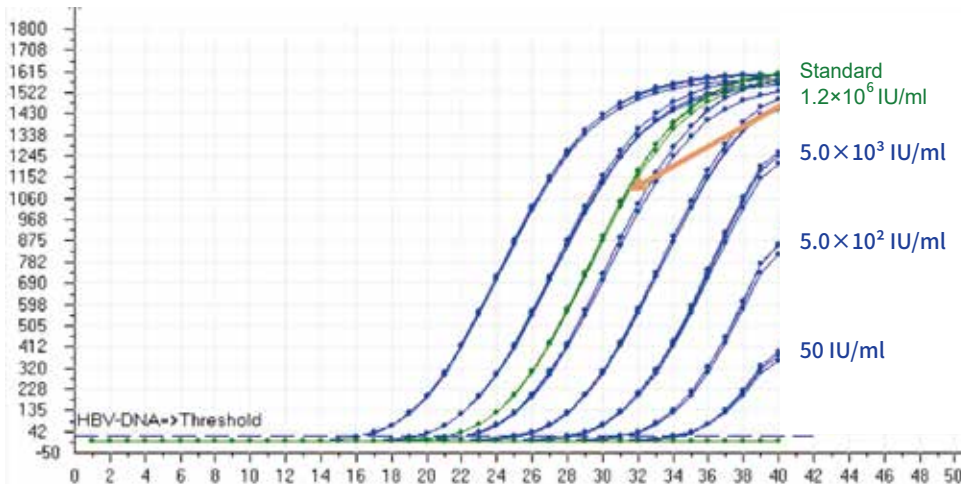


- Large specific surface area: enhanced binding capacity
- Superparamagnetic: excellent resuspension
- Special surface modifications: improved adsorption capacity and easier elution
- Rapid magnetic response: fast magnetic adsorption speed, no magnetic residue
- Production capacity is up to >100L/batch, batch-to-batch consistency: high reproducibility
- Variety selections of diameters and surface groups: applicable to various types of samples



- Composition: Iron oxide (Fe_3O_4)
- Particle size: 50nm-2 μm
- Dispersion medium: DI water
- Additive: Contains trace amount of surfactant
- Particle refractive index: NA
- Storage condition: Store at 2-25°C, do not freeze

Case Study: Nucleic acid extraction using VDO Biotech's magnetic microspheres



- ▲ HBV samples were diluted to different concentrations with serum. The sample can still be detected stably when the concentration is as low as 50 IU/ml.

Ordering Information:

Magnetic Microspheres for Nucleic Acid Extraction

| Cat. No. | Color | Surface Groups | Solids | Selected Applications |
|----------|-----------------|----------------|--------|---|
| MS02H | Brownish black | OH | 2.5% | Viral nucleic acid extraction |
| MA200H | Brownish black | OH | 2.5% | cfDNA extraction PCR products purification |
| MA0308C | Brownish yellow | COOH | 2.5% | Viral nucleic acid extraction |
| MA0309C | Brownish yellow | COOH | 2.5% | Nucleic acid extraction of swine fever virus |
| MS05HC | Brownish yellow | OH | 2.5% | Viral nucleic acid extraction cfDNA extraction Purification of PCR products |
| MS05HE | Brownish yellow | OH | 3.0% | Viral nucleic acid extraction |
| MS04T | Brownish yellow | Oligo(dT) | 1.0% | mRNA extraction from animal and plant samples |
| MS02HA | Brownish black | OH | 2.5% | Virus, pseudovirus particles, small fragment nucleic acid extraction |

The magnetic microsphere products above are all available in 10ml, 100ml, and 1L.

Supporting Raw Material

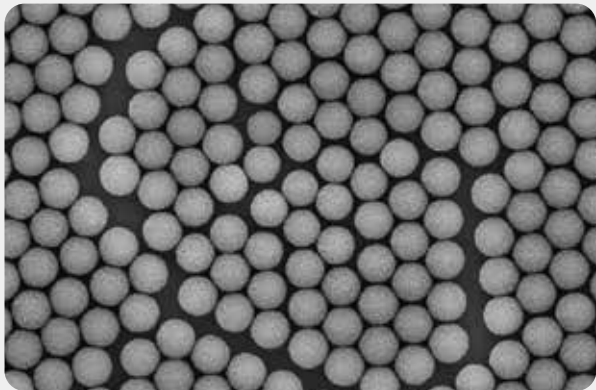
| Cat.No. | Product Name | Form | CAS | Use | Size |
|---------------|--------------------------|--------------------------|------------|---------------------------------|--------|
| VYJ13009-1Kg | Guanidine Hydrochloride | White crystal | 50-01-1 | Strong protein allosteric agent | 1Kg |
| VYJ13009-25Kg | | | | | 25Kg |
| VYJ13012-1Kg | Guanidine Isothiocyanate | White crystal | 593-84-0 | Strong protein allosteric agent | 1Kg |
| VYJ13012-25Kg | | | | | 25Kg |
| PK0030 | Proteinase K | White lyophilized powder | 39450-01-6 | Cell lysis | 30mg |
| PK0100 | | | | | 100mg |
| PK1000 | | | | | 1000mg |
| PK1050 | | | | | 50g |

Supporting Consumables

| Product Name | Size |
|----------------------------|--|
| 96-Well Deep Well Plates | A variety of packaging specifications are available. |
| 96-Well Plates | |
| 96-Well Magnetic Rod Cover | |
| 8-Well Magnetic Rod Cover | |
| 96 Sealing Film | |

Streptavidin-coated Magnetic Microspheres

This series of magnetic microspheres coated with streptavidin(SA), which can effectively binds biotinylated derivatives.



Features

- Superparamagnetic: excellent resuspension
- Hydrophilic surface: low non-specific binding
- Uniform diameter: CV<5%, high reproducibility
- Coated with streptavidin(SA): effectively binds biotinylated derivatives
- Large scale production, batch-to-batch consistency: superior quality with consistent test results



Technical Parameters

- **Composition:** Iron oxide (Fe_3O_4)
- **Uniformity:** CV<5%
- **Particle Size:** 0.6 μ m, 1 μ m, 3 μ m
- **Additive:** Contains trace amount of surfactant
- **Surface Groups:** Streptavidin (SA)
- **Storage condition:** Store at 2-8 $^{\circ}$ C, do not freeze
- **Dispersion Medium:** Magnetic microspheres preservation solution

Magnetic Microspheres for Targeted DNA/RNA Capture

Streptavidin-coated Magnetic Microspheres

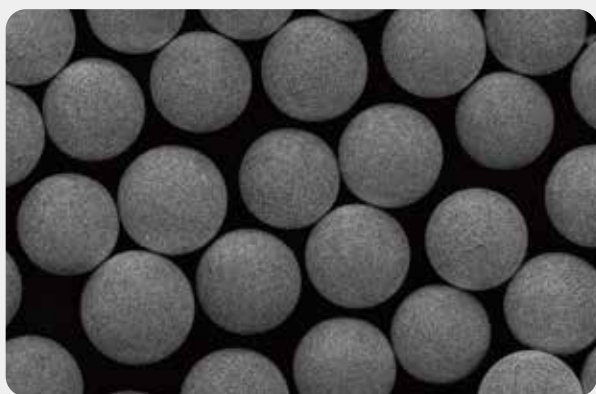
| Cat. No. | Particle Size | Color | Surface Groups | Solids | Size |
|-----------|---------------|-----------------|----------------|--------|-----------------|
| NMP0600SA | 0.6 μ m | Brownish yellow | SA | 1.0% | 10ml, 100ml, 1L |
| NMP1001SA | 1 μ m | Brownish yellow | SA | 1.0% | 10ml, 100ml, 1L |
| NMP1003SA | 3 μ m | Brownish yellow | SA | 1.0% | 10ml, 100ml, 1L |

Carboxyl(COOH)-coated Magnetic Microspheres

| Cat. No. | Particle Size | Color | Surface Groups | Solids | Size |
|-----------|---------------|-----------------|----------------|--------|-----------------|
| NMP0600CA | 0.6 μ m | Brownish yellow | COOH | 2.5% | 10ml, 100ml, 1L |
| NMP1001CA | 1 μ m | Brownish yellow | COOH | 2.5% | 10ml, 100ml, 1L |
| NMP1003CA | 3 μ m | Brownish yellow | COOH | 2.5% | 10ml, 100ml, 1L |
| NMP1005CA | 5 μ m | Brownish yellow | COOH | 2.5% | 10ml, 100ml, 1L |

Magnetic Microspheres for Chemiluminescent

VDO Biotech's magnetic microspheres for chemiluminescent have superparamagnetism and moderate magnetic content, excellent resuspendability and fast magnetic response. With our advanced microsphere synthesis technology, proprietary surface coating process, and variety selections of functional groups, our magnetic microspheres provide comprehensive solutions to meet customers' specific needs of different technology route development. The high-load functional groups guarantee the binding capacity, and this series of products show outstanding performance in the field of immunoassay.



- High magnetic content: fast magnetic response
- Large scale production capacity, up to 50L/batch: scalable and stable production
- Uniform diameter, stable and controllable surface functional groups: high reproducibility
- Superparamagnetism and proper density: ensures good resuspension and suspension time
- Sufficient surface functional groups: efficiently couple with sufficient amount of target protein

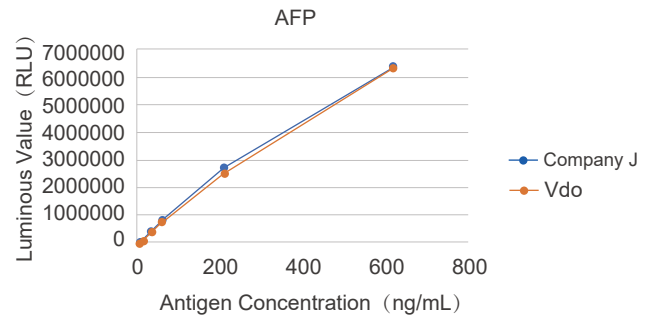


- **Composition:** Iron oxide (Fe_3O_4)
- **Particle Size:** 0.6 μm , 1 μm , 3 μm
- **Additive:** Contains trace amount of surfactant
- **Uniformity:** CV<5%
- **Density:** 1.05-3.38g/cm³
- **Surface Functional Groups:** Carboxyl (COOH) / Streptavidin (SA)

Case Studies

Detection of alpha-fetoprotein (AFP) by magnetic microsphere chemiluminescence method

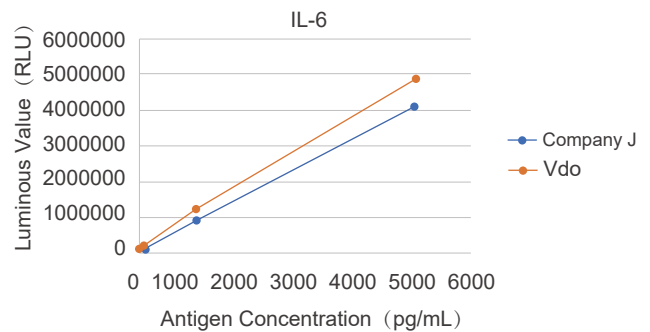
| Antigen Concentration | Company J's Magnetic Microspheres | VDO's Magnetic Microspheres |
|-----------------------|-----------------------------------|-----------------------------|
| 0ng/ml | 8787 | 8061 |
| 5ng/ml | 99936 | 95505 |
| 25ng/ml | 406235 | 380296 |
| 50ng/ml | 809104 | 760986 |
| 200ng/ml | 2853867 | 2601184 |
| 600ng/ml | 6519703 | 6430896 |



- ▲ Under the same conditions, when the antigen concentration is 0ng/ml, VDO's magnetic microspheres shows less interference; with other antigen concentrations, the signal strength of VDO's and Company J's magnetic microspheres are comparable.

Detection of interleukin-6 (IL-6) by magnetic microsphere chemiluminescence method

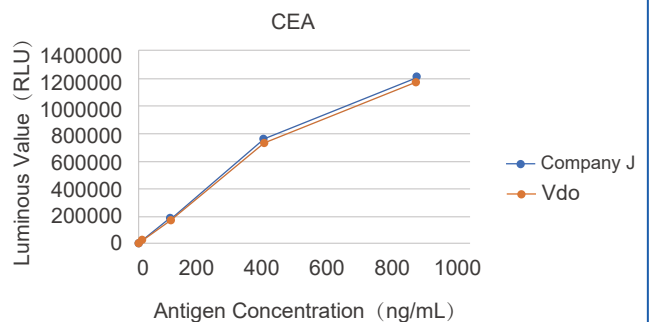
| Antigen Concentration | Company J's Magnetic Microspheres | VDO's Magnetic Microspheres |
|-----------------------|-----------------------------------|-----------------------------|
| 0pg/ml | 1393 | 1487 |
| 5pg/ml | 8413 | 11150 |
| 10pg/ml | 20040 | 22390 |
| 100pg/ml | 98271 | 140919 |
| 1000pg/ml | 830407 | 1186483 |
| 5000pg/ml | 4137743 | 4873955 |



- ▲ Under the same conditions, the signal of VDO's magnetic microspheres is stronger than Company J's; moreover, the signal of VDO's magnetic microspheres is 1.4 times that of Company J's when the antigen concentration is 100pg/ml.

Detection of carcinoembryonic antigen (CEA) by magnetic microsphere chemiluminescence method

| Antigen Concentration | Company J's Magnetic Microspheres | VDO's Magnetic Microspheres |
|-----------------------|-----------------------------------|-----------------------------|
| 0ng/ml | 595 | 557 |
| 2.29ng/ml | 5129 | 4884 |
| 11.43ng/ml | 21118 | 18987 |
| 102.68ng/ml | 180875 | 171731 |
| 414.13ng/ml | 759088 | 723924 |
| 918.34ng/ml | 1216901 | 1180381 |



- ▲ Under the same conditions, the signal strength of VDO's and Company J's magnetic microspheres are comparable.

Ordering Information

| Cat. No. | Particle Size | Color | Surface Groups | Solids | Size |
|-----------|---------------|-----------------|----------------|--------|-----------------|
| CMP0600CA | 0.6µm | Brownish yellow | COOH | 2.5% | 10ml, 100ml, 1L |
| CMP1001CA | 1µm | Brownish yellow | COOH | 2.5% | 10ml, 100ml, 1L |
| CMP1003CA | 3µm | Brownish yellow | COOH | 2.5% | 10ml, 100ml, 1L |
| CMP0600SA | 0.6µm | Brownish yellow | SA | 1.0% | 10ml, 100ml, 1L |
| CMP1001SA | 1µm | Brownish yellow | SA | 1.0% | 10ml, 100ml, 1L |
| CMP1003SA | 3µm | Brownish yellow | SA | 1.0% | 10ml, 100ml, 1L |

Magnetic Microspheres for Protein Purification

VDO Biotech has developed a series of protein purification microspheres with uniform particle size, stable and controllable surface functional groups, and high experimental repeatability. It is suitable for high-throughput purification and can directly prepare high-purity target protein from crude samples. Moreover, we can customize microspheres with different particle sizes and surface functional groups to meet customers' specific purification needs for various sample types and applications.



Technical Parameters

- **Composition:** Iron oxide (Fe_3O_4)
- **Particle Size:** 0.6 μm , 3 μm , 5 μm , 50 μm
- **Surface Modification:** Protein A / Protein G
- **Dispersion Medium:** DI water or neutral buffer
- **Storage Condition:** Store at 2-8°C, do not freeze

Ordering Information

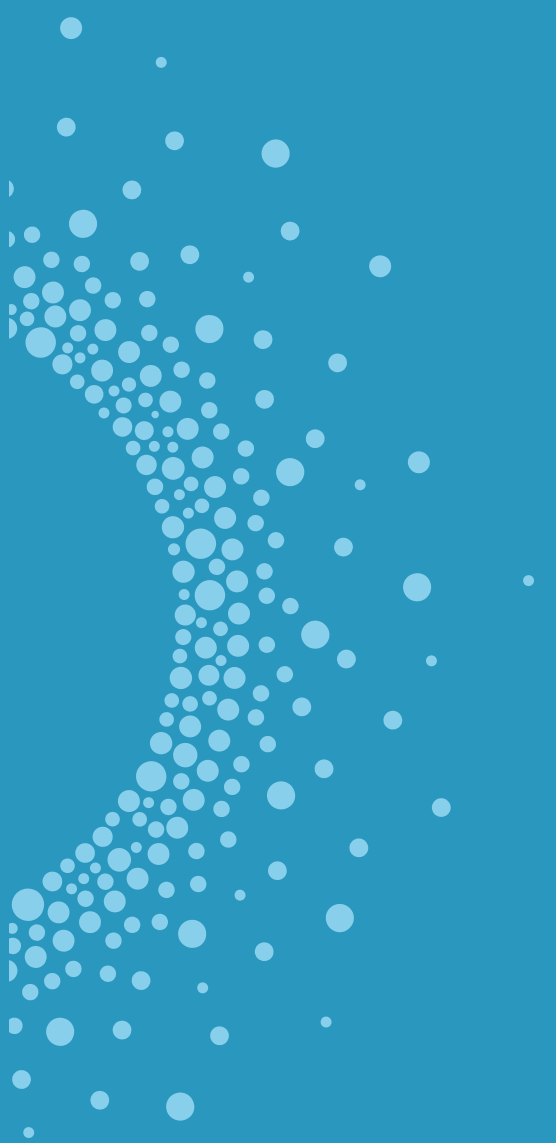
Protein A-coated Magnetic Microspheres

| Cat. No. | Particle Size | Color | Surface Groups | Solids | Size |
|-----------|-------------------|-----------------|----------------|--------|-----------------|
| PMP0600AA | 0.6 μm | Brownish yellow | Protein A | 1.0% | 10ml, 100ml, 1L |
| PMP1003AA | 3 μm | Brownish yellow | Protein A | 1.0% | 10ml, 100ml, 1L |
| PMP1005AA | 5 μm | Brownish yellow | Protein A | 1.0% | 10ml, 100ml, 1L |
| PMP1050AA | 50 μm | Brownish yellow | Protein A | 1.0% | 10ml, 100ml, 1L |

Protein G-coated Magnetic Microspheres

| Cat. No. | Particle Size | Color | Surface Groups | Solids | Size |
|-----------|-------------------|-----------------|----------------|--------|-----------------|
| PMP0600GA | 0.6 μm | Brownish yellow | Protein G | 1.0% | 10ml, 100ml, 1L |
| PMP1003GA | 3 μm | Brownish yellow | Protein G | 1.0% | 10ml, 100ml, 1L |
| PMP1005GA | 5 μm | Brownish yellow | Protein G | 1.0% | 10ml, 100ml, 1L |
| PMP1050GA | 50 μm | Brownish yellow | Protein G | 1.0% | 10ml, 100ml, 1L |

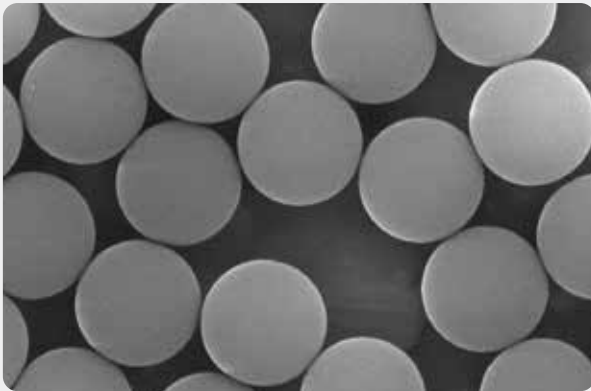
Other specifications can be customized upon request.



Polymeric Microspheres

Latex Microspheres

VDO Biotech's latex microspheres are made of polystyrene. Through our proprietary surface coating process, different functional groups are added to the microspheres in controlled amounts. We provide microspheres with customized particle sizes to meet customers' specific needs for sensitivity and linear range. This series of latex microspheres are widely used for different applications, such as particle enhanced immunoturbidimetry (PET), latex agglutination test, and microsphere capture enzyme-linked immunosorbent assay, etc.



- Sufficient surface functional groups: efficiently couple with sufficient amount of target protein
- Uniform diameter, stable and controllable surface functional groups: high reproducibility
- Large scale production capacity: up to 100L/batch, batch-to-batch consistency, scalable and stable production
- Customized particle sizes and surface functional groups: satisfy customers' specific product development needs



- **Material:** Polystyrene polymer
- **Density:** 1.05g/cm³
- **Additive:** Contains trace amount of surfactant
- **Particle Refractive Index:** 1.59 (589nm wavelength, 25°C)
- **Uniformity:** CV<5%
- **Particle Size:** 80nm ~ 400nm
- **Dispersion Medium:** DI water
- **Storage Condition:** Store at 2-25°C; do not freeze

Ordering Information

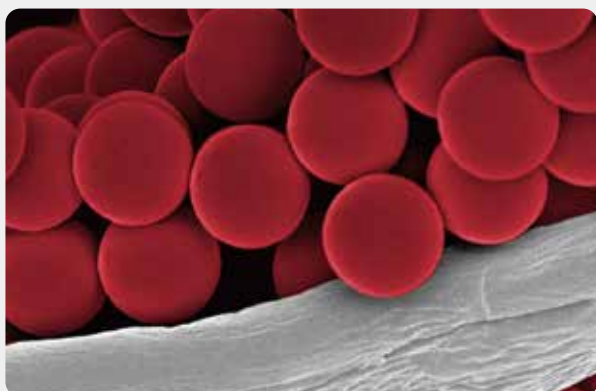
Carboxyl-coated Latex Microspheres

| Cat. No. | Particle Size | Color | Surface Groups | Solids | Size |
|-----------|---------------|-------|----------------|--------|-----------------|
| PS0080CHA | 80nm | White | COOH | 10.0% | 10ml, 100ml, 1L |
| PS0080CLA | 80nm | White | COOH | 10.0% | 10ml, 100ml, 1L |
| PS0100CHA | 100nm | White | COOH | 10.0% | 10ml, 100ml, 1L |
| PS0100CLA | 100nm | White | COOH | 10.0% | 10ml, 100ml, 1L |
| PS0120CHA | 120nm | White | COOH | 10.0% | 10ml, 100ml, 1L |
| PS0120CLA | 120nm | White | COOH | 10.0% | 10ml, 100ml, 1L |
| PS0150CHA | 150nm | White | COOH | 10.0% | 10ml, 100ml, 1L |
| PS0150CLA | 150nm | White | COOH | 10.0% | 10ml, 100ml, 1L |
| PS0180CHA | 180nm | White | COOH | 10.0% | 10ml, 100ml, 1L |
| PS0180CLA | 180nm | White | COOH | 10.0% | 10ml, 100ml, 1L |
| PS0200CHA | 200nm | White | COOH | 10.0% | 10ml, 100ml, 1L |
| PS0200CLA | 200nm | White | COOH | 10.0% | 10ml, 100ml, 1L |
| PS0300CHA | 300nm | White | COOH | 10.0% | 10ml, 100ml, 1L |
| PS0300CLA | 300nm | White | COOH | 10.0% | 10ml, 100ml, 1L |
| PS0400CHA | 400nm | White | COOH | 10.0% | 10ml, 100ml, 1L |
| PS0400CLA | 400nm | White | COOH | 10.0% | 10ml, 100ml, 1L |

Microspheres with other functional groups and particle sizes can be customized upon request.

Color-dyed Microspheres

Utilizing our proprietary internal saturation dyeing process, VDO Biotech has developed a series of color-dyed microspheres. This series of products are bright and diverse in color, suitable for qualitative and semi-quantitative detection. The product covers the colors of the rainbow series, which can help avoid the background interference of sample, and also provide an effective tool for multiple chromatography detection. Color-dyed microspheres are ideal for technology platforms such as agglutination testing and lateral flow.



- Sufficient surface groups: higher protein binding capacity
- Higher sensitivity: ideal alternative to colloidal gold
- Large scale production: production capacity is up to 500 million tests/batch
- Internal dyeing method: rich colors, no dye on the particle surface, easy to couple
- Customized production: various options of particle size, surface group content, and color/fluorescence dyeing



- **Material:** Polystyrene polymer
- **Uniformity:** CV<5%
- **Particle Size:** 100nm - 400nm
- **Surface Functional Groups:** Carboxyl (COOH), Streptavidin (SA)
- **Additive:** Contains trace amount of surfactant
- **Storage Condition:** Carboxyl-coated microspheres: 2-25°C; do not freeze
Streptavidin-coated microspheres: 2-8°C; do not freeze

Ordering Information

Carboxyl Color-dyed Microspheres

| Cat. No. | Particle Size | Color | Surface Groups | Solids | Size |
|----------|---------------|-------|----------------|--------|-------------------------|
| DR0200CA | 200nm | Red | COOH | 4.0% | 1ml, 25ml, 100ml, 500ml |
| DR0300CA | 300nm | Red | COOH | 4.0% | 1ml, 25ml, 100ml, 500ml |
| DR0400CA | 400nm | Red | COOH | 4.0% | 1ml, 25ml, 100ml, 500ml |

| Cat. No. | Particle Size | Color | Surface Groups | Solids | Size |
|----------|---------------|-------|----------------|--------|-------------------------|
| DB0200CA | 200nm | Blue | COOH | 4.0% | 1ml, 25ml, 100ml, 500ml |
| DB0300CA | 300nm | Blue | COOH | 4.0% | 1ml, 25ml, 100ml, 500ml |
| DB0400CA | 400nm | Blue | COOH | 4.0% | 1ml, 25ml, 100ml, 500ml |

| Cat. No. | Particle Size | Color | Surface Groups | Solids | Size |
|----------|---------------|-------|----------------|--------|-------------------------|
| DK0200CA | 200nm | Black | COOH | 4.0% | 1ml, 25ml, 100ml, 500ml |
| DK0300CA | 300nm | Black | COOH | 4.0% | 1ml, 25ml, 100ml, 500ml |
| DK0400CA | 400nm | Black | COOH | 4.0% | 1ml, 25ml, 100ml, 500ml |

Streptavidin(SA)-coated Color-dyed Microspheres

| Cat. No. | Particle Size | Color | Surface Groups | Solids | Size |
|----------|---------------|-------|----------------|--------|-------------------------|
| DR0200SA | 200nm | Red | SA | 0.1% | 1ml, 25ml, 100ml, 500ml |
| DR0300SA | 300nm | Red | SA | 0.1% | 1ml, 25ml, 100ml, 500ml |
| DR0400SA | 400nm | Red | SA | 0.1% | 1ml, 25ml, 100ml, 500ml |

Other specifications can be customized according to customers' requirements.

Supporting Raw Materials

| Cat. No. | Product Name | Use | Type | Size |
|----------|-------------------------|-----------------------------|----------------------------|-------------------|
| MIDM01 | SARS-CoV-2 NP Antibody | Labelling | Monoclonal antibody (McAb) | 1mg, 10mg, 1000mg |
| MIDM02 | SARS-CoV-2 NP Antibody | Coating | Monoclonal antibody (McAb) | 1mg, 10mg, 1000mg |
| CM20211 | Chicken IgY | Labelling (Quality Control) | Polyclonal antibody (PcAb) | 1mg, 10mg, 1000mg |
| RP20212 | Rabbit anti chicken IgY | Coating (Quality Control) | Polyclonal antibody (PcAb) | 1mg, 10mg, 1000mg |
| M20211 | Mouse IgG | Repressor | Polyclonal antibody (PcAb) | 1mg, 10mg, 1000mg |

Other specifications can be customized according to customers' requirements.

Supporting Materials (Microspheres Release Pad)

| Cat. No. | Product Name | Use | Dimension (Length×Width) | Weight | Size |
|----------|-----------------------------|--------------------------|-----------------------------|-----------------------|------------|
| VHC06001 | Glass fiber membrane filter | Microspheres release pad | 200×300mm | 70-80g/m ² | 100pcs/bag |
| VHC06002 | Glass fiber membrane filter | Microspheres release pad | 200×300mm | 50-60g/m ² | 100pcs/bag |

Other specifications can be customized according to customers' requirements.

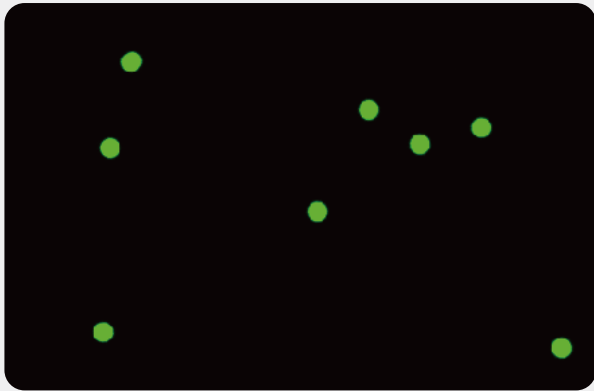
Supporting Raw Materials

| Cat. No. | Product Name | Use | Type | Size |
|----------|---|--------------------|------------------------|--------------------------|
| IA0108A | SARS-CoV-2 NP conjugate pad (300nm microspheres) | SARS-CoV-2 NP test | Semi-finished Products | 7mm×300mm |
| IA0109A | SARS-CoV-2 NP conjugate pad (400nm microspheres) | SARS-CoV-2 NP test | Semi-finished Products | 7mm×300mm |
| IA0102A | SARS-CoV-2 NP Test Strips (300nm microspheres) | SARS-CoV-2 NP test | Semi-finished Products | 1 test /5 tests/25 tests |
| IA0103A | SARS-CoV-2 NP Test Strips (400nm microspheres) | SARS-CoV-2 NP test | Semi-finished Products | 1 test /5 tests/25 tests |
| IA0111A | Sample cracking fluid | SARS-CoV-2 NP test | Matching products | / |

Other specifications can be customized according to customers' requirements.

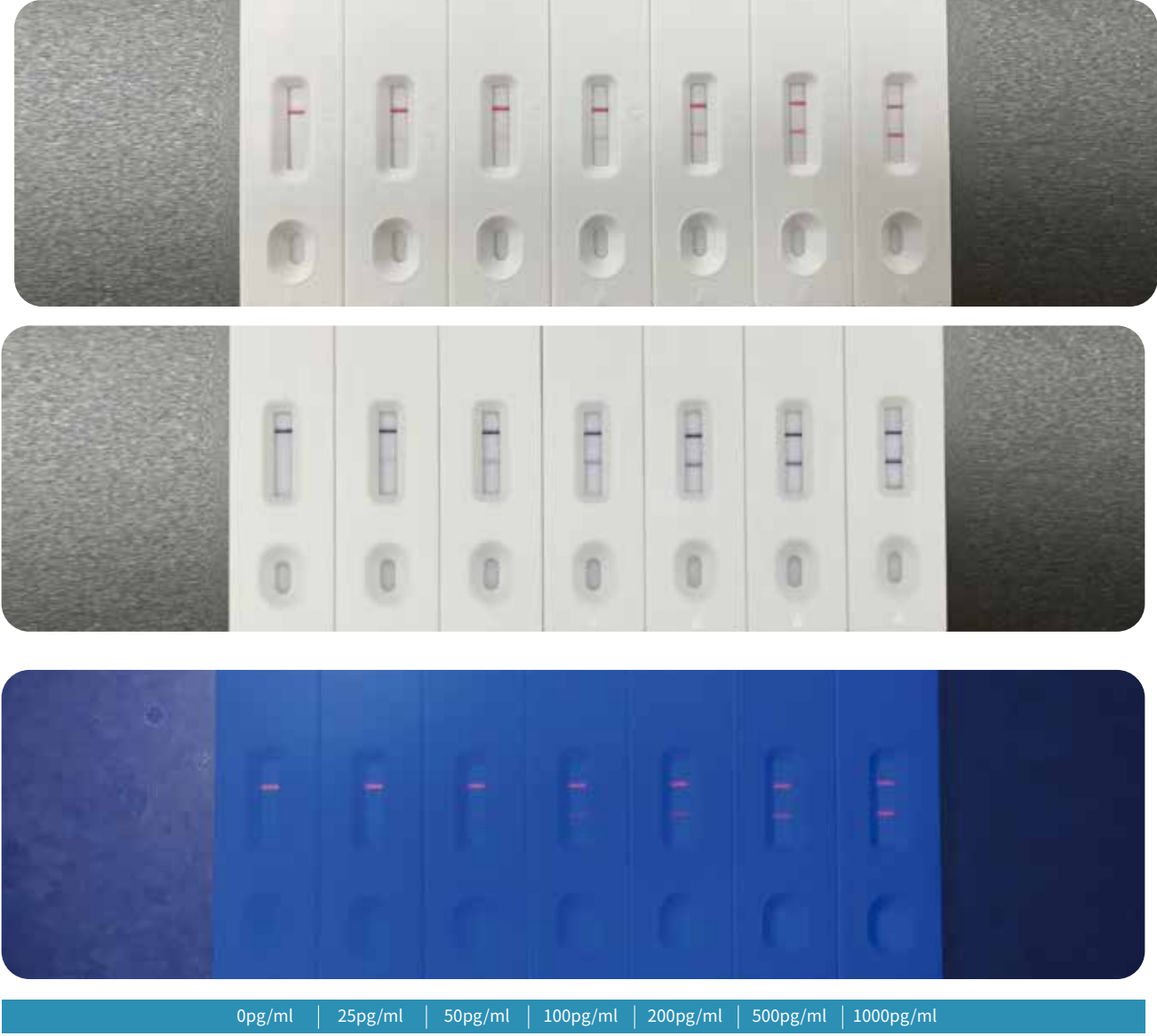
Fluorescent Microspheres

VDO Biotech's fluorescent microspheres are designed for ultra-sensitive lateral flow detection. The data can be read by fluorescence detector to achieve a more sensitive quantitative detection, and it is the preferred material for ultra-sensitive lateral flow detection. The dyes of this product series are embedded in the microspheres and filled firmly. With strong and long-lasting fluorescence intensity, our fluorescent microspheres are ideal for the quantitative detection reagents development.



- **Material:** Polystyrene polymers containing encapsulated dyes
- **Surface Functional Groups:** Carboxyl (COOH) / Streptavidin (SA)
- **Dispersion medium:** DI water
- **Uniformity:** C.V% < 5%
- **Size range:** 100nm - 400nm
- **Additives:** Contains trace amount of surfactant
- **Storage conditions:** Carboxyl-coated microspheres: 2 - 25°C in dark condition, do not freeze; Streptavidin-coated microspheres: 2 - 25°C in dark condition, do not freeze

Case Studies:
Application of color-dyed and fluorescent microspheres in lateral flow



- ▲ SARS-CoV-2 N protein was detected by VDO Biotech's color-dyed microspheres and fluorescent microspheres respectively, and the protein can still be detected when the concentration is as low as 25pg/ml.

Ordering Information

Green Fluorescent Microspheres

| Cat. No. | Particle Size | Fluorescence | Excitation | Emission | Surface Groups | Solids | Size |
|----------|---------------|--------------------|------------|----------|----------------|--------|------------------|
| FG0100CA | 100nm | Green fluorescence | 488nm | 520nm | COOH | 1.0% | 1ml, 10ml, 100ml |
| FG0200CA | 200nm | Green fluorescence | 488nm | 520nm | COOH | 1.0% | 1ml, 10ml, 100ml |
| FG0300CA | 300nm | Green fluorescence | 488nm | 520nm | COOH | 1.0% | 1ml, 10ml, 100ml |
| FG0400CA | 400nm | Green fluorescence | 488nm | 520nm | COOH | 1.0% | 1ml, 10ml, 100ml |

Other specifications can be customized according to customers' requirements.

SA-coated Fluorescent Microspheres

| Cat. No. | Particle Size | Fluorescence | Excitation | Emission | Surface Groups | Solids | Size |
|----------|---------------|--------------------|------------|----------|----------------|--------|------------------|
| FG0100SA | 100nm | Green fluorescence | 488nm | 520nm | SA | 0.1% | 1ml, 10ml, 100ml |
| FG0200SA | 200nm | Green fluorescence | 488nm | 520nm | SA | 0.1% | 1ml, 10ml, 100ml |
| FG0300SA | 300nm | Green fluorescence | 488nm | 520nm | SA | 0.1% | 1ml, 10ml, 100ml |
| FG0400SA | 400nm | Green fluorescence | 488nm | 520nm | SA | 0.1% | 1ml, 10ml, 100ml |

Other specifications can be customized according to customers' requirements.

Red Fluorescent Microspheres

| Cat. No. | Particle Size | Fluorescence | Excitation | Emission | Surface Groups | Solids | Size |
|----------|---------------|------------------|------------|----------|----------------|--------|------------------|
| FR0100CA | 100nm | Red fluorescence | 535nm | 610nm | COOH | 1.0% | 1ml, 10ml, 100ml |
| FR0200CA | 200nm | Red fluorescence | 535nm | 610nm | COOH | 1.0% | 1ml, 10ml, 100ml |
| FR0300CA | 300nm | Red fluorescence | 535nm | 610nm | COOH | 1.0% | 1ml, 10ml, 100ml |
| FR0400CA | 400nm | Red fluorescence | 535nm | 610nm | COOH | 1.0% | 1ml, 10ml, 100ml |

Other specifications can be customized according to customers' requirements.

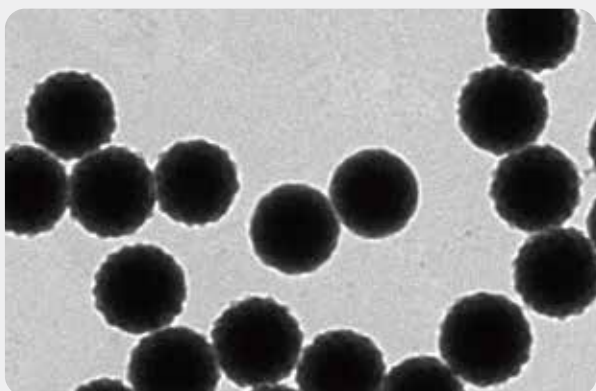
SA-coated Fluorescent Microspheres

| Cat. No. | Particle Size | Fluorescence | Excitation | Emission | Surface Groups | Solids | Size |
|----------|---------------|------------------|------------|----------|----------------|--------|------------------|
| FR0100SA | 100nm | Red fluorescence | 535nm | 610nm | SA | 0.1% | 1ml, 10ml, 100ml |
| FR0200SA | 200nm | Red fluorescence | 535nm | 610nm | SA | 0.1% | 1ml, 10ml, 100ml |
| FR0300SA | 300nm | Red fluorescence | 535nm | 610nm | SA | 0.1% | 1ml, 10ml, 100ml |
| FR0400SA | 400nm | Red fluorescence | 535nm | 610nm | SA | 0.1% | 1ml, 10ml, 100ml |

Other specifications can be customized according to customers' requirements.

Time-resolved Fluorescent Microspheres

VDO Biotech's fluorescent microspheres are designed for ultra-sensitive lateral flow detection. The data can be read by fluorescence detector to achieve a more sensitive quantitative detection, and it is the preferred material for ultra-sensitive lateral flow detection. The dyes of this product series are embedded in the microspheres and filled firmly. With strong and long-lasting fluorescence intensity, our fluorescent microspheres are ideal for the quantitative detection reagents development.

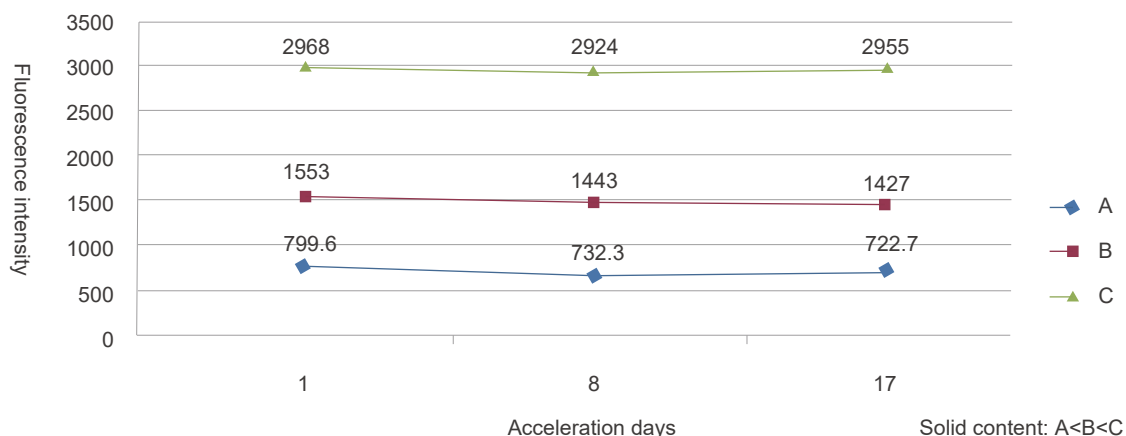


- High Sensitivity: 100-1,000 times higher than colloidal gold
- Easy Operation: fast detection, ideal for POCT (point of care testing)
- Anti-interference: rare earth ion markers, long half-life, and large Stokes Shift value
- Quantitative Detection: the sample concentration can be detected according to the built-in standard curve



- **Material:** Polystyrene polymers containing Rare earth element dyes
- **Uniformity:** CV<5%
- **Particle Size:** 100nm - 400nm
- **Surface Functional Groups:** Carboxyl (COOH), Streptavidin (SA)
- **Additive:** Contains trace amount of surfactant
- **Storage Condition:** Carboxyl-coated microspheres: 2-25°C; do not freeze
Streptavidin-coated microspheres: 2-8°C; do not freeze

Stability verification of Time-resolved Fluorescent Microspheres (particle size: 200nm, temperature: 37°C, acceleration time: 17 days)



▲ After accelerating at 37°C for 17 days, there was no significant change in the fluorescence intensity of the time-resolved fluorescent microspheres solutions with different solid contents, and the microspheres shows high stability.

Ordering Information

Time-resolved Fluorescent Microspheres Carboxyl-modified

| Cat. No. | Particle Size | Excitation | Emission | Surface Groups | Solids | Size |
|----------|---------------|------------|----------|----------------|--------|------------------|
| FT0100CA | 100nm | 360nm | 615nm | COOH | 1.0% | 1ml, 10ml, 100ml |
| FT0200CA | 200nm | 360nm | 615nm | COOH | 1.0% | 1ml, 10ml, 100ml |
| FT0300CA | 300nm | 360nm | 615nm | COOH | 1.0% | 1ml, 10ml, 100ml |
| FT0400CA | 400nm | 360nm | 615nm | COOH | 1.0% | 1ml, 10ml, 100ml |

Time-resolved Fluorescent Microspheres SA-modified

| Cat. No. | Particle Size | Excitation | Emission | Surface Groups | Solids | Size |
|----------|---------------|------------|----------|----------------|--------|------------------|
| FT0100SA | 100nm | 360nm | 615nm | SA | 0.1% | 1ml, 10ml, 100ml |
| FT0200SA | 200nm | 360nm | 615nm | SA | 0.1% | 1ml, 10ml, 100ml |
| FT0300SA | 300nm | 360nm | 615nm | SA | 0.1% | 1ml, 10ml, 100ml |
| FT0400SA | 400nm | 360nm | 615nm | SA | 0.1% | 1ml, 10ml, 100ml |

Flow Cytometry Microspheres

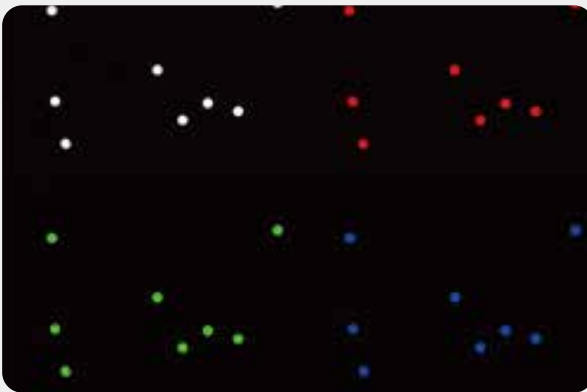
Flow cytometry (FCM) is a multi-parameter and rapid quantitative analysis method at the cellular molecular level. Through the use of flow cytometry, flow cytometry microspheres and monoclonal antibodies, single cells or other biological particles can be quantitatively analyzed. FCM can analyze tens of thousands of cells at high speed, and can measure multiple parameters from one cell at the same time. With the advantages of fast, high precision and accuracy, FCM is recognized as one of the most advanced cell quantitative analysis techniques.

Flow Cytometry Cell Counting Microspheres

Flow cytometry microspheres apply to the quality control of cell-counting, which makes detection results of flow cytometry more reliable.

Multicolor Flow Fluorescent Microspheres

Multicolor Flow Fluorescent Microspheres (internal dyed) is used for the development of multi-index joint inspection reagent. Multi-index joint inspection reagent combined with multi-laser multi-color flow cytometer can maximize detection throughput.



Technical Parameters

- **Composition:** Multiple fluorescent dyed polystyrene microparticles
- **Concentration:** 2.0×10^7 beads/ml
- **Density:** 1.05g/cm³
- **Color:** Green fluorescence (488/520nm), red fluorescence (535/610nm), near infrared fluorescence (635/700nm)
- **Uniformity:** CV<5%
- **Additive:** 0.05% tween-20 dispersant/surfactant
- **Storage Condition:** Store at 2-25°C, do not freeze



Applications

- Absolute counting
- Quality control of instruments
- Multiple detection

Ordering Information

Flow Cytometry Multiple Fluorescent Microspheres

| Cat. No. | Particle Size | Size | Description |
|-----------|---------------|-----------|-----------------------|
| FM1004CTA | 4µm | 1ml, 25ml | Tri-color fluorescent |
| FM1005CTA | 5µm | 1ml, 25ml | Tri-color fluorescent |
| FM1004CDA | 4µm | 1ml, 25ml | Bi-color fluorescent |
| FM1005CDA | 5µm | 1ml, 25ml | Bi-color fluorescent |

Other specifications can be customized according to customers' requirements.

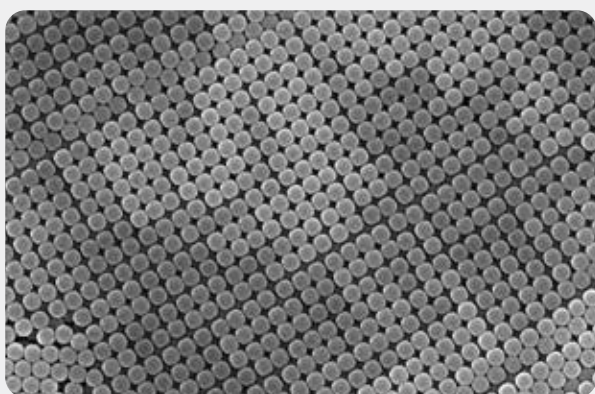
Flow Cytometry Cell Counting Microspheres

| Cat. No. | Particle Size | Size | Concentration |
|----------|---------------|-----------|------------------------------|
| FC1004CA | 4µm | 1ml, 25ml | 2.0×10 ⁷ beads/ml |
| FC1005CA | 5µm | 1ml, 25ml | 2.0×10 ⁷ beads/ml |

Other specifications can be customized according to customers' requirements.

Size Standard Microspheres

Size standard microspheres are a series of solutions containing polymer microspheres. The calibrated average particle size is traceable to the standard ruler and standard microspheres through the US National Institute of Standards and Technology (NIST). The size standard microspheres are verified by a series of particle size analyzers, including photon correlation spectrometer (PCS), disc centrifugal photometer (DCP), tunable resistance pulse sensing (TRPS), nanoparticle tracking analysis (NTA), or laser diffraction (LD), etc. The particle size of our standard microspheres ranges from 10nm to 100µm, which can be used to calibrate and monitor the instrument in a wide range.



- **Composition:** Polystyrene polymer
- **Particle Size:** 10nm-100µm
- **Density:** 1.05g/cm³
- **Dispersion Medium:** DI water
- **Particle Refractive Index:** 1.59 (589nm wavelength, 25°C)
- **Uniformity:** CV<3%
- **Additive:** Trace amount of surfactant
- **Storage Condition:** Store at 2-25°C, do not freeze



- Particle size analyzer calibration/quality control
- Light scattering research
- Glial system research
- Self-assembled monolayer
- Photonic crystal research

Ordering Information

Size Standard Microspheres

| Cat. No. | Particle Size | Particle Size Level | Solids | Size |
|----------|---------------|---------------------|--------|------------|
| 30010 | 10nm | Nanoscale | 1.0% | 15ml, 50ml |
| 30020 | 20nm | Nanoscale | 1.0% | 15ml, 50ml |
| 30030 | 30nm | Nanoscale | 1.0% | 15ml, 50ml |
| 30040 | 40nm | Nanoscale | 1.0% | 15ml, 50ml |
| 30050 | 50nm | Nanoscale | 1.0% | 15ml, 50ml |
| 30060 | 60nm | Nanoscale | 1.0% | 15ml, 50ml |
| 30070 | 70nm | Nanoscale | 1.0% | 15ml, 50ml |
| 30080 | 80nm | Nanoscale | 1.0% | 15ml, 50ml |
| 30090 | 90nm | Nanoscale | 1.0% | 15ml, 50ml |
| 30100 | 100nm | Nanoscale | 1.0% | 15ml, 50ml |
| 30120 | 120nm | Nanoscale | 1.0% | 15ml, 50ml |
| 30150 | 150nm | Nanoscale | 1.0% | 15ml, 50ml |
| 30200 | 200nm | Nanoscale | 1.0% | 15ml, 50ml |
| 30250 | 250nm | Nanoscale | 1.0% | 15ml, 50ml |
| 30300 | 300nm | Nanoscale | 1.0% | 15ml, 50ml |
| 30350 | 350nm | Nanoscale | 1.0% | 15ml, 50ml |
| 30400 | 400nm | Nanoscale | 1.0% | 15ml, 50ml |
| 30450 | 450nm | Nanoscale | 1.0% | 15ml, 50ml |
| 30500 | 500nm | Nanoscale | 1.0% | 15ml, 50ml |
| 30600 | 600nm | Nanoscale | 1.0% | 15ml, 50ml |
| 30700 | 700nm | Nanoscale | 1.0% | 15ml, 50ml |
| 30800 | 800nm | Nanoscale | 1.0% | 15ml, 50ml |
| 30900 | 900nm | Nanoscale | 1.0% | 15ml, 50ml |
| 31001 | 1 μ m | Micron | 1.0% | 15ml, 50ml |
| 31002 | 2 μ m | Micron | 1.0% | 15ml, 50ml |
| 31003 | 3 μ m | Micron | 1.0% | 15ml, 50ml |
| 31004 | 4 μ m | Micron | 1.0% | 15ml, 50ml |
| 31005 | 5 μ m | Micron | 1.0% | 15ml, 50ml |
| 31006 | 6 μ m | Micron | 1.0% | 15ml, 50ml |
| 31007 | 7 μ m | Micron | 1.0% | 15ml, 50ml |
| 31008 | 8 μ m | Micron | 1.0% | 15ml, 50ml |
| 31009 | 9 μ m | Micron | 1.0% | 15ml, 50ml |
| 31010 | 10 μ m | Micron | 1.0% | 15ml, 50ml |

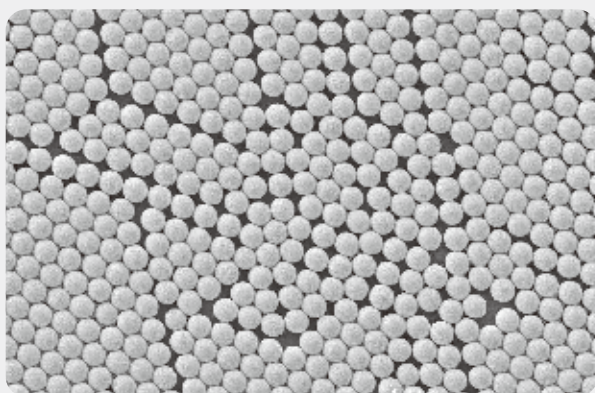
Size Standard Microspheres

| Cat. No. | Particle Size | Particle Size Level | Solids | Size |
|----------|---------------|---------------------|--------|------------|
| 31012 | 12µm | Micron | 1.0% | 15ml, 50ml |
| 31015 | 15µm | Micron | 1.0% | 15ml, 50ml |
| 31020 | 20µm | Micron | 1.0% | 15ml, 50ml |
| 31030 | 30µm | Micron | 1.0% | 15ml, 50ml |
| 31040 | 40µm | Micron | 1.0% | 15ml, 50ml |
| 31050 | 50µm | Micron | 1.0% | 15ml, 50ml |
| 31060 | 60µm | Micron | 1.0% | 15ml, 50ml |
| 31070 | 70µm | Micron | 1.0% | 15ml, 50ml |
| 31080 | 80µm | Micron | 1.0% | 15ml, 50ml |
| 31090 | 90µm | Micron | 1.0% | 15ml, 50ml |
| 31100 | 100µm | Micron | 1.0% | 15ml, 50ml |

Other specifications can be customized according to customers' requirements.

Counting Standard Microspheres

The counting standard microspheres are designed for the development, calibration and verification of particle counting equipment. When there are problems with the instruments or during routine maintenance, this series of microspheres can be used to verify and calibrate the instruments to ensure normal operation and correct data output. This series of products strictly abide by the measurement procedures provided by the US National Bureau of Standards Technology (NIST), and are highly NIST traceable. It can meet traceable compliance requirements such as ISO 900, ISO10012, ANSI/NCSL-Z540 and GMP/GLP. Through strict resuspension procedures and particle counting detection, the microsphere suspension with accurate particle number can be obtained, which is an indispensable tool for calibrating particle counting instruments.



- **Composition:** Polystyrene polymer
- **Particle Size:** 10nm-100 μ m
- **Density:** 1.05g/cm³
- **Dispersion Medium:** DI water
- **Particle Refractive Index:** 1.59 (589nm wavelength, 25°C)
- **Uniformity:** CV<3%
- **Additive:** Trace amount of surfactant
- **Storage Condition:** Store at 2-25°C, do not freeze



- Calibration of microsphere counting instrument
- Drug counting
- Water quality monitoring
- Low concentration liquid counting

Ordering Information

| Cat. No. | Nominal Diameter | Approximate | Size |
|----------|------------------|--------------------------|------|
| 40100 | 100nm | 10 ⁷ beads/ml | 15ml |
| 40120 | 120nm | 10 ⁷ beads/ml | 15ml |
| 40150 | 150nm | 10 ⁷ beads/ml | 15ml |
| 40200 | 200nm | 10 ⁷ beads/ml | 15ml |
| 40250 | 250nm | 10 ⁷ beads/ml | 15ml |
| 40300 | 300nm | 10 ⁷ beads/ml | 15ml |
| 40350 | 350nm | 10 ⁷ beads/ml | 15ml |
| 40400 | 400nm | 10 ⁷ beads/ml | 15ml |
| 40450 | 450nm | 10 ⁷ beads/ml | 15ml |
| 40500 | 500nm | 10 ⁷ beads/ml | 15ml |
| 40600 | 600nm | 10 ⁷ beads/ml | 15ml |
| 40700 | 700nm | 10 ⁷ beads/ml | 15ml |
| 40800 | 800nm | 10 ⁷ beads/ml | 15ml |
| 40900 | 900nm | 10 ⁷ beads/ml | 15ml |
| 41001 | 1µm | 10 ⁷ beads/ml | 15ml |
| 41002 | 2µm | 10 ⁷ beads/ml | 15ml |
| 41003 | 3µm | 10 ⁷ beads/ml | 15ml |
| 41004 | 4µm | 10 ⁷ beads/ml | 15ml |
| 41005 | 5µm | 10 ⁷ beads/ml | 15ml |
| 41006 | 6µm | 10 ⁷ beads/ml | 15ml |
| 41007 | 7µm | 10 ⁷ beads/ml | 15ml |
| 41008 | 8µm | 10 ⁷ beads/ml | 15ml |
| 41009 | 9µm | 10 ⁷ beads/ml | 15ml |
| 41010 | 10µm | 10 ⁷ beads/ml | 15ml |
| 41012 | 12µm | 10 ⁷ beads/ml | 15ml |
| 41015 | 15µm | 10 ⁷ beads/ml | 15ml |
| 41020 | 20µm | 10 ⁷ beads/ml | 15ml |
| 41030 | 30µm | 10 ⁷ beads/ml | 15ml |
| 41040 | 40µm | 10 ⁷ beads/ml | 15ml |
| 41050 | 50µm | 10 ⁷ beads/ml | 15ml |
| 41060 | 60µm | 10 ⁷ beads/ml | 15ml |
| 41070 | 70µm | 10 ⁷ beads/ml | 15ml |

We provide customized drug counting microspheres, water quality monitoring microspheres, low concentration counting microspheres according to customers' requirements.