



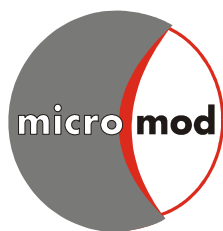
**Products 2018**

**Fluorescent Magnetic Particles**

## Product overview

	10 nm	100 nm	1 $\mu$ m	10 $\mu$ m	100 $\mu$ m	Product matrix
Magnetic particles	20 nm - 500 nm					dextran
		80 nm - 100 nm				bionized nanoferrite
			2 - 12 $\mu$ m			polystyrene
				30 $\mu$ m - 100 $\mu$ m		poly(lactic acid)
		350 nm - 6 $\mu$ m				silica
		150 nm				poly(ethylene imine)
		150 nm				chitosan
		50 - 250 nm				iron oxide
Fluorescent particles	10 nm - 20 $\mu$ m					silica
	25 nm	-	6 $\mu$ m			polystyrene, polymethacrylate
		250 nm	-	100 $\mu$ m		poly(lactic acid)
Fluorescent magnetic particles		250 nm				albumin
		100 nm - 300 nm				dextran
		100 nm		30 $\mu$ m - 100 $\mu$ m		bionized nanoferrite poly(lactic acid)
White particles	10 nm - 20 $\mu$ m					silica
	25 nm	-	100 $\mu$ m			polystyrene, polymethacrylate
		250 nm	-	100 $\mu$ m		poly(lactic acid)
		300 nm				latex
		250 nm				albumin
Colored particles		100 nm	-	100 $\mu$ m		silica
			1 $\mu$ m - 12 $\mu$ m			polystyrene
		250 nm	-	100 $\mu$ m		poly(lactic acid)
	10 nm	100 nm	1 $\mu$ m	10 $\mu$ m	100 $\mu$ m	

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Modern particle applications require high levels of functionality and quality with regard to substrate fixation, separation and detection. Micromod's customers are predominantly producers of diagnostic kits and high-throughput equipment, biotechnology companies, and various research institutions.

Chemical surface-functionalized and/or magnetizable polymer particles for predominantly biochemical applications take center stage in the portfolio and the development activities. The synthetic strategies designed within the company enable particle production from milliliter to bulk scale quantities depending on application. The broad range of micro- and nanoparticle products is reflected in our comprehensive catalog, which contains about 1000 items.

The major line of products are nanomag® (magnetic polysaccharide particles), micromer® (polystyrene copolymer particles) and sicastar® (silica particles). These particle types are complemented with a variety of biodegradable particles and additional highly specialized particles such as magnetic BNF-particles (Bionized NanoFerrite), which are thermally blocked at room temperature or IDA-latex particles, which possess a very high binding capacity for trace elements. Dextran based magnetic particles of the perimag® and synomag® series feature excellent properties in MRI, MPI and hyperthermia applications. For the separation of nucleic acids, nanomag®-particles are available that combine unique surface properties with a high magneto-mobility. Fluorescent sicastar® and micromer® particles are of particular interest for applications in Life Sciences due to their high fluorescence intensity and variable surface chemistry. The offered particle types are available in a broad range of particle diameters and functionalizations. Selected products can be supplied according to the cGMP requirements in coordination with the customer.

Most recent scientific findings in the area of particle technology are constantly embedded into the ongoing operations to develop customized solutions as a partner in cooperative projects with renowned domestic and foreign research institutions.

A modern quality management according to EN ISO 13485 in combination with a sophisticated particle analysis system allows the micromod Partikeltechnologie GmbH to ensure customers a high quality standard in all product categories.



## Special services

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- **Development and production of customized particles types**
- **Customized filling of products**
- **Surface design of custom particles**
- **Particle production under controlled hygienic conditions**
- **Coupling of antibodies, peptides, oligonucleotides and other molecules**
- **Size determination of particles**
- **Zeta potential measurement of particles**
- **Determination of AC susceptibility of magnetic particles**
- **Drying of particles on request**
- **Research samples and prototypes on request**

# Fluorescent magnetic particles

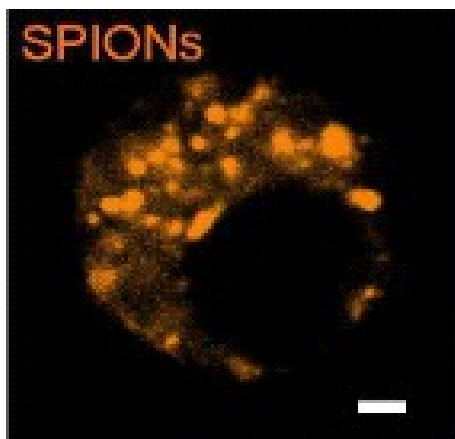
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## nanomag<sup>®</sup>-CLD-F

Fluorescent magnetic particles allow the application of magnetic properties together with the ability of optical visualization. nanomag<sup>®</sup>-CLD-redF particles combine separation and detection purposes. They show a red fluorescence with an excitation at 552 nm and an emission at 580 nm. The 100 nm nanomag<sup>®</sup>-CLD-redF particles are prepared by precipitation of iron oxide in the presence of dextran. The particles consist of about 80-90% (w/w) iron oxide in a particle matrix of cross-linked dextran (MW: 40.000 Da). They can not be separated with a conventional permanent magnet, but in a high gradient magnetic field. The 100 nm nanomag<sup>®</sup>-CLD-redF are supplied in water without any surfactants with an iron concentration of 2.4 mg/ml.

The 300 nm nanomag<sup>®</sup>-CLD-redF particles also have a red fluorescence with an excitation at 552 nm and an emission at 580 nm. They are prepared by the core-shell method and consist of an iron oxide core in a matrix of cross-linked dextran. They can easily be separated with a conventional permanent magnet.



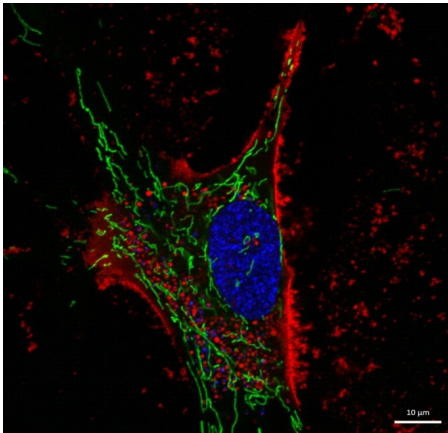
Confocal imaging of the location of LAMP1 conjugated nanomag<sup>®</sup>-CLD-redF in INS-1 cells (scale bar: 2  $\mu$ m) (Zhang E et al., ACS Nano, 2014;8(4):3192–3201)

The 100 nm nanomag<sup>®</sup>-CLD-redF particles are available with a plain surface or with amino groups on the surface for the covalent binding of proteins, antibodies or other molecules.

Product code	Product name	Surface	Diameter	Solid content	Quantity
23-00-102	nanomag <sup>®</sup> -CLD-redF	plain	100 nm	5 mg/ml	5 ml
23-00-302	nanomag <sup>®</sup> -CLD-redF	plain	300 nm	5 mg/ml	5 ml
23-01-102	nanomag <sup>®</sup> -CLD-redF	NH <sub>2</sub>	100 nm	5 mg/ml	5 ml

# BNF-F particles

BNF-Starch-redF and BNF-Dextran-redF particles are thermally blocked at room temperature and show specific interaction with alternating magnetic fields. They are prepared via the core-shell method with a core of 75-80% (w/w) magnetite with crystallite diameters of about 20 nm and a shell of cross-linked dextran (BNF-Dextran-redF) or cross-linked hydroxyethyl starch (BNF-Starch-redF). Fluorescent and magnetic BNF particles combine separation and detection purposes with a red fluorescence (excitation at 552 nm and emission at 580 nm).



Labeling of mesenchymal stem cells with poly-D-lysine modified BNF-Starch-redF (blue: nucleus, green: mitochondria)

The 100 nm BNF particles can be separated with strong conventional permanent magnets and easily be filtered through 0.22  $\mu\text{m}$  filters.

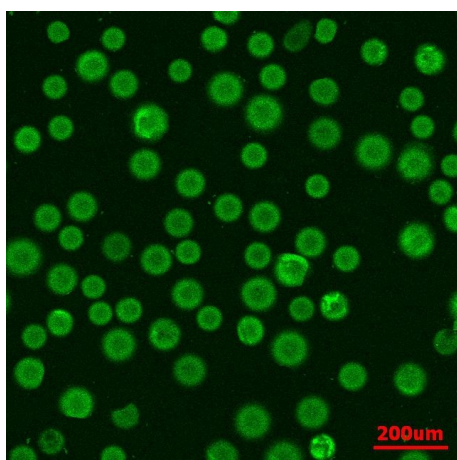
BNF-redF are available with a plain surface or with amino groups on the surface for the covalent binding of proteins, antibodies or other molecules. Streptavidin coated BNF-redF particles are provided for the binding of biotinylated antibodies, dyes, oligonucleotides or other molecules. All BNF-redF particles are supplied in PBS buffer (pH = 7.4) without any surfactants. The streptavidin coated BNF-redF particles are stabilized with 0.02 % sodium azide.

Product code	Product name	Surface	Diameter	Solid content	Quantity
64-00-102	BNF-Starch-redF	plain	100 nm	10 mg/ml	5 ml
64-01-102	BNF-Starch-redF	NH <sub>2</sub>	100 nm	10 mg/ml	5 ml
64-19-102	BNF-Starch-redF	streptavidin	100 nm	5 mg/ml	1 ml
94-00-102	BNF-Dextran-redF	plain	100 nm	10 mg/ml	5 ml
94-01-102	BNF-Dextran-redF	NH <sub>2</sub>	100 nm	10 mg/ml	5 ml
94-19-102	BNF-Dextran-redF	streptavidin	100 nm	5 mg/ml	1 ml



## PLA-M-F particles

Fluorescent and magnetic poly(lactic acid) particles combine the biocompatibility of the particles with separation and detection purposes. They consist of magnetite (40% w/w) in a matrix of poly(D,L-lactic acid) with a molecular weight of 17.000 Da. The particles are available with mean diameters of 30  $\mu\text{m}$  and 100  $\mu\text{m}$  (broader size distributions) and can be loaded with drugs on request. We provide these magnetic particles with green or red fluorescence. The PLA-M-greenF particles have an excitation at 502 nm and an emission at 527 nm. The PLA-M-redF particles have an excitation at 552 nm and an emission at 580 nm.



Fluorescence microscopy image of 100  $\mu\text{m}$  PLA-M-greenF

Product code	Product name	Surface	Diameter	Solid content	Quantity
70-00-304	PLA-M-greenF	plain	30 $\mu\text{m}$	10 mg/ml	10 ml
70-00-105	PLA-M-greenF	plain	100 $\mu\text{m}$	10 mg/ml	10 ml
71-00-304	PLA-M-redF	plain	30 $\mu\text{m}$	10 mg/ml	10 ml
71-00-105	PLA-M-redF	plain	100 $\mu\text{m}$	10 mg/ml	10 ml



# Order conditions

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## Shipping Charges

All prices listed in catalogue are FCA (Free Carrier) due to INCOTERMS 2010, these are applicable for customers using an own courier account for delivery. We normally employ courier services like UPS and DHL for worldwide shipments under DAP conditions (Delivered At Place). Some countries imposes Entry customs clearance / Entry Taxation fees for import, these are not included.

We will add a shipment flat rate to invoice:

Germany: free ; Europe: 25 € ; USA: 60 \$ ; All others: 70 €.

## Purchase Orders

Any offers of the micromod GmbH are exclusively directed to merchants, governmental entities or special governmental estates within the meaning of Sec. 310 para.1 BGB (German Civil Code). Orders from customers are regarded as invitations to bid. Orders can be made via e-mail (Internet) or fax. The binding contract is only concluded upon receipt of the order confirmation by micromod GmbH. All offers of the micromod GmbH are non-binding and subject to confirmation (so-called invitatio ad offerendum) unless they are expressly marked as binding or they include a particular term of acceptance. The legal relations between the micromod GmbH and the customer are solely governed by the written order confirmation, including these order terms and conditions. This represents all consideration between the parties with regard to the subject matter of the contract. We recommend to review the order confirmation and inform micromod GmbH immediately about any discrepancies.

## Payments

Invoices can be paid per bank remittance (Commerzbank Germany, account number 1322262, BIC: COBADEFFXXX, IBAN: DE 08 1304 0000 0132 2262 00) or by crossed cheque. For payments with credit card (we accept VISA and MASTERCARD), please convey us the credit card number as well as the expiry date by fax at: (+49) 381 543 456 20.

## Storage

We recommend storage of products according to TDS (Technical Data Sheet) and Delivery Note. Please do not freeze the products! Use slow circular shake movements to re-disperse particles. Avoid any processes that result in a foam-formation! Any liability for damages arising from an inappropriate storage is hereby disclaimed.

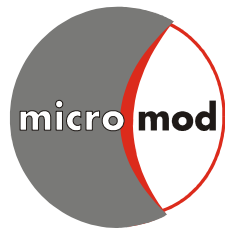
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The goods delivered by micromod GmbH comply with the specifications provided in the technical data sheets. They are only intended to be used for research and development in-vitro, unless agreed upon otherwise in writing. In particular, they are not intended to be used for application as or with comestibles (foodstuffs), pharmaceuticals (drugs), cosmetics or for household or agricultural uses, respectively. The micromod GmbH assumes no liability or guarantee that the acquired products are capable for the purposes or applications assumed by the customer or for the infringement of any third party rights, in particular patent rights or any other intellectual property rights, by the use of the products, respectively.

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