

Datasheet

SileksMagNA™ and **SileksMagNA-G™**
magnetic particles covered with SiO₂

Sileks

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Magnetic particles covered with SiO₂

Cat. No.	Description	Pack size*
MPD001	SileksMagNA-G™ mag. particles, 50 mg/ml	1 ml
MPD010	SileksMagNA-G™ mag. particles, 50 mg/ml	10 ml
MPR001	SileksMagNA™ mag. particles, 50 mg/ml	1 ml
MPR010	SileksMagNA™ mag. particles, 50 mg/ml	10 ml

* Standard pack size is indicated. Bulk orders can be supplied in bigger volume containers on demand.

Description:

Magnetic particles covered with SiO₂ are supplied as an aqueous suspension in ready-to-use concentration. The particles have paramagnetic core. It provides easy particles resuspension. When an external magnetic field is removed, particles lose their magnetisation and do not agglomerate.

Silicon dioxide shell of the particles has different nanostructure depending on their type. SileksMagNA-G™ particles efficiently bind and hold big molecules of nucleic acids (for example, genomic DNA). SileksMagNA™ are a universal kind of particles for isolation of total nucleic acids (both DNA and RNA).

Normally neutral surface of the particles is activated in specific buffers (for example, buffers supplied with our isolation kits). Activated surface of the particles binds with target molecules. But any particles also have some nonspecific sorption. Along with target molecules some small amount of other compounds will be bound. Such compounds are admixtures. It can be proteins, polysaccharides, polyphenols, lipids, resins and many other. To remove them some washing procedures are required.

Application:

Isolation of total nucleic acids

Quality control:

All particles are checked for declared sorption capacity using internal test protocols.

Storage:

Store at +4 °C

Transportation:

No special conditions required

Safety measures:

Avoid contact with skin, eyes and clothing.

The particles are not a toxic material and do not represent direct threat to a human health. But, being an abrasive nanodispersion, the particles can cause irritation when in contact with sensitive tissues. The size of the particles do not allow them to penetrate cell wall. Due to iron oxide, contained in the particles, they have strong coloring effect and may stain clothing if spilled.

The magnetic particles have higher nucleic acids sorption capacity compared with regular nonmagnetic sorbents, based on silicon dioxide, and even with many analogous particles by other manufacturers. Only 5 µl of particles suspension can bind about 0.5 µg of λ-phage DNA or about 0.4 µg of genomic DNA from human blood. Now it is possible to have higher yield of nucleic acids using smaller amounts of sorbent.

No more centrifugation needed for sorbent

All isolation operations in one place

Main advantages of the presented magnetic particles over regular SiO₂-based sorbents:

- ★ avoiding using centrifugation for pelleting sorbent minimizes damage to isolated nucleic acids
- ★ the particles have higher sorption capacity at binding stage and higher release ratio at elution stage
- ★ it is possible to completely collect aqueous phase without risking to capture some part of sorbent pellet because it is safely held on a tube wall by a magnetic field of the magnetic rack
- ★ isolation procedure can be easily scaled to work with any amount of source biological material having almost linear increase in isolated nucleic acids yield, which is hard or almost impossible with regular sorbents
- ★ reliable isolation of nucleic acids in field laboratories, where it is impossible to use many power-consuming devices (centrifuges, shakers, vortexes, thermal blocks etc.)

Related products

An efficient magnetic rack is required for works with magnetic particles. Its main characteristic is strength of generated magnetic field. This property determines particles separation speed. All our racks are based on rare-earth neodymium magnets. Such magnets are the strongest permanent magnets of those available for industrial use at present moment.

The functionality of the rack is very important too. Ergonomic and considered design of the rack significantly simplifies and speeds-up isolation procedure. You can see the whole range of models of magnetic racks for various purposes, designed by our company, on our website.



Magnetic rack can be efficiently combined with hand-held mixer to create a high-productive isolation complex. Such mixers allow to resuspend magnetic particles at high speed and with very good quality. But it is not their only functionality. Compact laboratory hand-held mixer can be used for mixing of various liquid samples in standard laboratory vessels. The mixer creates strong turbulent flows in liquid. It utilizes special rod-shaped mixing probes for this purpose. Such flows provide soft but very efficient mixing of the content of the vessel. With special steel probes the mixer can be turned into a compact homogenizer.

You can read more information on using hand-held mixers for various laboratory tasks on our website.

It is often much more rational to use ready isolation kit, based on magnetic particles, than to develop your own isolation system with all its buffers and treatment conditions. Our series of isolation kits allows to work with almost any kinds of biological material. Depending on nature of a certain sample, a corresponding kit has to be used in accordance to its protocol. Due to the fact that all our kits are based on the same approaches to works with magnetic particles, the keypoints of isolation protocol remain the same for all the kits. The difference usually is in samples' pretreatment stage. The aim of this stage is to extract the contents of cells to solution. The extracted material has to contain minimum amount of solid particles and impurities that critically decrease nanoparticles' binding efficiency. For cells-free samples (like blood plasma or other bioliquids) this stage may be absent or significantly minimized. The core of any of our isolation protocols is sorption of target macromolecules on nanoparticles followed by successive wash stages. Wash procedure includes resuspending of particles in special buffer. Then, after particles are separated in a magnetic field, the buffer with washed impurities is discarded.

You can read more information about our kits on our website.