

SeraSil-Mag™

Silica coated superparamagnetic particles for nucleic acid isolation

User Guide

Product numbers:

29357369 SeraSil-Mag 400 5 ml

29357371 SeraSil-Mag 400 60 ml

29357372 SeraSil-Mag 400 450 ml

29357373 SeraSil-Mag 700 5 ml

29357374 SeraSil-Mag 700 60 ml

29357375 SeraSil-Mag 700 450 ml



Page Finder

1. INTRODUCTION	2
2. ABOUT SERASIL-MAG	2
3. GENERAL TIPS	2
4. GUIDELINES	2
4.1 Representative application: DNA extraction from human blood	2
5. FAQS AND TIPS	3
6. ORDERING INFORMATION & RELATED PRODUCTS	4
7. LEGAL	5

1. INTRODUCTION

About the user guide

- This guide provides information for use of SeraSil-Mag silica beads for nucleic acid extraction.
- Tips and FAQs are included to help the user to get the best results possible.

Find your local support representative at <https://www.gelifesciences.com/en/gb/support/contact-us>

For Laboratory Use Only

Do not use internally or externally in humans or animals. See SDS(s) and/or SS(s) for specific component handling instructions

2. ABOUT SERASIL-MAG

SeraSil-Mag beads are silica coated superparamagnetic particles designed for nucleic acid isolation, are particularly effective when trace amounts of DNA are available. These particles provide an optimal binding surface for the extraction of nucleic acids from biofluids and liquid biopsy samples for diagnostic applications.

SeraSil-Mag makes the transition from column purification to high throughput bead-based purification easy and delivers high purity extraction, enabling low limits of detection assay after assay.

Description

As part of the Sera-Mag portfolio, SeraSil-Mag superparamagnetic beads are provided as 20 mg/ml monodispersed suspensions with regular morphology for reduced variability. The SeraSil-Mag beads are available in two sub-micron sizes, 700 nm and 400 nm nominal diameter, providing choice based on surface area requirements.

The general characteristics are described in Table 1.

Characteristic	SeraSil-Mag 400	SeraSil-Mag 700
Nominal diameter	400 nm, monodisperse	700 nm, monodisperse
Structure	Core-shell, non-porous	Core-shell, non-porous
Surface group	SiOH (non-functionalised)	SiOH (non-functionalised)
Magnetism	Superparamagnetic	Superparamagnetic
Buffer	Water	Water
Concentration	20 mg/ml	20 mg/ml
Preservative	0.05% NaN ₃	0.05% NaN ₃

3. GENERAL TIPS

- SeraSil-Mag beads are stored at room temperature. Do not freeze the SeraSil-Mag particles as it may result in irreversible aggregation.

- It is recommended to mix and resuspend SeraSil-Mag beads to a visibly homogeneous suspension and ensure that no settling occurs prior use.
- SeraSil-Mag beads are superparamagnetic and provide an extremely fast magnetic response. However, when collected to a magnet, the bead pellet can be disturbed during overly vigorous supernatant aspiration. This effect can be avoided by an appropriate choice of magnetic separators and using gentle pipetting and handling. See related products page 4.
- Avoid foaming during pipetting steps. This prevents SeraSil-Mag beads from being trapped inside air bubbles, which may result in a decrease of the magnetic response and loss of sample.

4. GUIDELINES

SeraSil-Mag can be used for extraction of nucleic acids using the appropriate protocol and buffers such as chaotropic salts for binding and extraction (Figure 1).

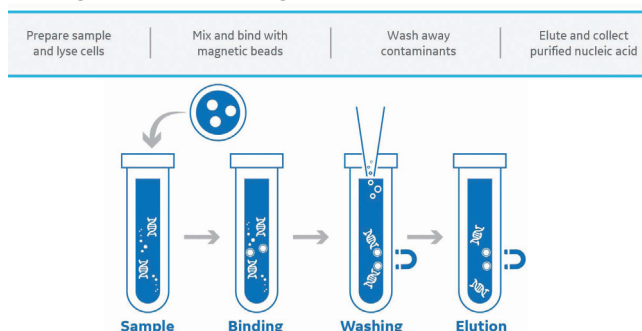


Figure 1. Main steps for extraction of nucleic acids using SeraSil-Mag beads.

SeraSil-Mag beads are compatible with chaotropic and non-chaotropic buffer systems. In both cases the appropriate buffer salts, pH specific conditions, or crowding agents are required.

4.1 Representative application: DNA extraction from human blood

Using a chaotropic buffer system, SeraSil-Mag beads have shown to recover ~30 ng DNA concentration from 200 µl human blood (Figure 2a), resulting in A260/280 ratio between 1.70-1.90 (Figure 2b).

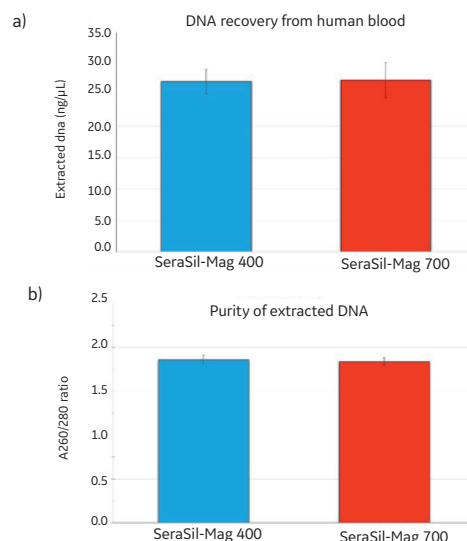


Figure 2. a) Total DNA extracted and b) associated A260/A280 ratio obtained from 200 µl human blood using SeraSil-Mag 400 (blue) and SeraSil-Mag 700 (red).

5. FAQs

Applications and automation for SeraSil-Mag

Q: Can I use SeraSil-Mag for nucleic acid isolation?

A: SeraSil-Mag is a silica coated superparamagnetic particle (bead) for nucleic acid isolation and diagnostic extraction applications, for sample types including biofluids and liquid biopsies, when small or trace amounts of DNA are available. It provides an optimal surface for DNA binding with high performance and low background.

Q: Are there any limitations on the sample types that can be extracted with SeraSil-Mag?

A: Not in theory. However, every type of nucleic acid will require specific buffers and an optimized method.

Q: Can SeraSil-Mag beads be used with chaotropic salt chemistry for DNA extraction?

A: Yes.

Q: Can SeraSil-Mag magnetic particles be left in the extracted DNA?

A: It is recommended to ensure the complete collection of the SeraSil-Mag beads on the magnet during the elution step, to avoid any carry over into downstream activities.

Q: Is SeraSil-Mag superparamagnetic?

A: Yes.

Q: What is the response time to the magnetic field?

A: The response time depends on the magnetic field generated by the magnet. For instance, the separation time of SeraSil-Mag beads is ~5 seconds for 5 ml of suspension (concentration 20 mg/ml) via SepMag Biomagnetic Separator. This assures a very fast magnetic response during the assay and an advantage for automation.

Q: Is SeraSil-Mag automation friendly?

A: Yes. When automating, pay attention to the settling time and employ intermittent mixing if necessary.

Storage and handling of SeraSil-Mag

Q: How should SeraSil-Mag be stored?

A: Store SeraSil-Mag at room temperature. It is important to resuspend the particles thoroughly and efficiently prior use.

Q: Can SeraSil-Mag beads be frozen?

A: We do not recommend freezing as this is not necessary and may affect performance of the product.

Q: What is the best way to mix the SeraSil-Mag beads?

A: SeraSil-Mag beads are compatible with vortex mixing, roller mixing, and sonication, and should be mixed until they are visibly homogeneous.

Q: How long should the SeraSil-Mag beads be mixed before adding them to my sample?

A: Mixing time will be dependent on the method used for mixing and the volume to re-suspend. We recommend mixing thoroughly and efficiently until the suspension is visibly homogeneous. As examples, ~1 min mixing via bench-top ultrasonic bath, ~20 seconds mixing via ultrasonic processor probe, or up to ~30 seconds mixing via vortexing are generally sufficient to resuspend the beads. Be sure to adjust the power of the mixing device to avoid an over-heating of the suspension.

Q: How fast do the beads settle after mixing?

A: Gravity settling will be dependent on the bead concentration and volume. At 20 mg/ml concentration (as provided), SeraSil-Mag 400 will start settling after 15 minutes, while SeraSil-Mag 700 will be stable for over 90 minutes. At 1 mg/ml concentration, both SeraSil-Mag 400 and SeraSil-Mag 700 are stable for over 90 minutes, therefore showing a low settling rate at potential working concentration.

Physical characteristics of SeraSil-Mag

Q: Where can I find the Certificate of Analysis (CofA) for my lot of SeraSil-Mag?

A: Enter your specific lot number to retrieve the CofA at gelifesciences.com/certificates.

Q: What are the particle sizes of SeraSil-Mag?

A: ~400 nm and ~700 nm, monodispersed.

Q: What volumes are available for SeraSil-Mag?

SeraSil-Mag is supplied in 5 ml, 60 ml and 450 ml bottles. Please visit gelifesciences.com/SeraSil-Mag for ordering information.

6. ORDERING INFORMATION & RELATED PRODUCTS

Ordering information

Product	Code
SeraSil-Mag 400 5 ml	29357369
SeraSil-Mag 400 60 ml	29357371
SeraSil-Mag 400 450 ml	29357372
SeraSil-Mag 700 5 ml	29357373
SeraSil-Mag 700 60 ml	29357374
SeraSil-Mag 700 450 ml	29357375

Related products

Product	Code
Sera-Mag SpeedBead Carboxylate-Modified Magnetic Particles (Hydrophobic) 15 mL	65152105050250
Sera-Mag SpeedBead Carboxylate-Modified Magnetic Particles (Hydrophobic) 100 mL	65152105050350
Sera-Mag SpeedBead Carboxylate-Modified Magnetic Particles (Hydrophobic) 1000 mL	65152105050450
Sera-Mag Carboxylate-Modified Magnetic Particles (Hydrophylic) 15 mL	24152105050250
Sera-Mag Carboxylate-Modified Magnetic Particles (Hydrophylic) 100 mL	24152105050350
Sera-Mag Carboxylate-Modified Magnetic Particles (Hydrophylic) 1000 mL	24152105050450
Sera-Mag Select Size Selection and PCR Clean-Up Reagent 5 ml	29343045
Sera-Mag Select Size Selection and PCR Clean-Up Reagent 60 ml	29343052
Sera-Mag Select Size Selection and PCR Clean-Up Reagent 450 ml	29343057
MagRack 6	28948964
MagRack Maxi	28986441

7. LEGAL

GE, imagination at work, GE Monogram, SeraSil-Mag and Sera-Mag are trademarks of General Electric Company.

All other third party trademarks are the property of their respective owners.

© 2019 General Electric Company – All rights reserved.
First published January 2019.

All goods and services are sold subject to the terms and conditions of sale of the company within GE Healthcare which supplies them. A copy of these terms and conditions is available on request. Contact your local GE Healthcare representative for the most current information.

For your local office contact information, visit www.gelifesciences.com/contact

GE Healthcare UK Limited
Amersham Place
Little Chalfont, Buckinghamshire,
HP7 9NA, UK

<http://www.gelifesciences.com>

GE Healthcare offices:

GE Healthcare Bio-Sciences AB
Björkgatan 30, 751 84 Uppsala,
Sweden

GE Healthcare Europe GmbH
Munzinger Strasse 5, D-79111 Freiburg,
Germany

GE Healthcare Bio-Sciences Corp.
100 Results Way, Marlborough,
MA 01752
USA

GE Healthcare Japan Corporation
Sanken Bldg. 3-25-1, Hyakunincho,
Shinjuku-ku, Tokyo 169-0073,
Japan