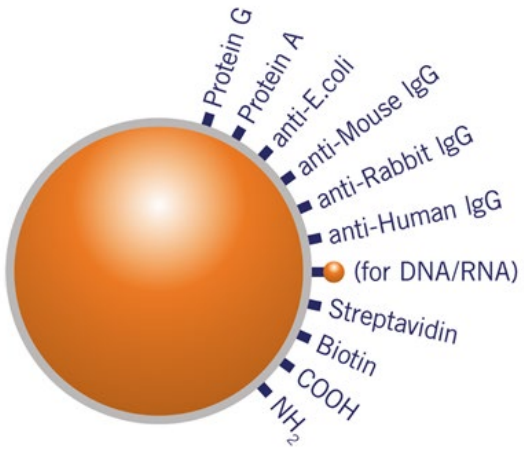
AbraMag® Magnetic Beads are superparamagnetic, non-aggregating iron oxide particles (or 'microspheres') for sample prep, or for capturing / purifying targets such as proteins, antibodies, DNA/RNA, exosomes, and *E. coli*. **AbraMag**'s design enables faster binding kinetics, with high sensitivity & selectivity, in both manual and automated biomedical and research applications.

Superior yield, purity, quality, and value over the leading competitors.

- **Multiple Advantages** – Over conventional methods (columns, centrifugation).
- **Superior Performance** – We have designed them to *match or outperform the competition*.
- **Superior Capacity and Yield** – High binding capacity for rapid and efficient target purification.
- **Superior Purity** – Stable, pre-blocked particles provide clean purification even from complex samples.
- **Customizable** – Custom beads and coupling services available.



General Limited Warranty: Gold Standard Diagnostics warrants the products manufactured by the Company, against defects and workmanship when used in accordance with the applicable instructions for a period not to extend beyond the product's printed expiration date. **Gold Standard Diagnostics makes no other warranty, expressed or implied. There is no warranty of merchantability or fitness for a particular purpose.**

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GOLD STANDARD DIAGNOSTICS

Protein G Magnetic Beads

Product No. 544042 (1 mL)
544041 (5 mL)

1. General Description

The Gold Standard Diagnostics' superparamagnetic nanoparticles are coupled with a biomolecule, such as Protein G, and are utilized in the magnetic separation and isolation of antibodies from serum, cell culture supernatants, or ascites. The magnetic beads have a large surface area with high capture efficiencies.

2. Safety Instructions

Reagents contain 0.05-0.1% sodium azide as a preservative. Sodium azide may react with lead or copper plumbing to produce metal azides which might cause explosion. To prevent azide accumulation in plumbing, flush with copious amounts of water immediately after disposal.

3. Storage and Stability

The Protein G Magnetic Beads should be stored in the refrigerator (2-8°C). The reagent must be allowed to reach room temperature (20-25°C) before use and may be used until the last day of the month as indicated by the expiration date on the vial. Do not freeze, dry, or centrifuge the beads as they may result in loss of binding activity and aggregation.

4. Test Principle

Protein G magnetic beads are incubated with the antibody solution and then separated by magnets. After the unbound particulates are washed from the beads, the bound antibodies are eluted from the beads using the elution buffer. The beads are then magnetically separated from the eluted solution, which is removed manually.

5. Warning and Precautions

-**Do not freeze the reagent.**
-Prior to use, ensure that the product has not expired by verifying that the date of use is prior to the expiration date on the label.
-Ensure that reagent bottle caps are tight after each use to prevent drying of reagents.
-Mistakes in handling the test can also cause errors. Possible sources for such errors can be: inadequate storage conditions of the test kit (or reagents), incorrect pipetting sequence or inaccurate volumes of the reagents, too long or too short incubation times, and/or short magnetic separation times.
-Reagent contains 0.05% sodium azide as a preservative. Sodium azide may react with lead or copper plumbing to produce metal azides which might cause explosion. To prevent azide accumulation in plumbing, flush with copious amounts of water immediately after disposal.

6. Characteristics

Beads mean diameter: ~0.5 µm
Beads concentration: 5 mg/mL
Binding capacity: ≥ 60 µg rabbit IgG/mg of beads

A. Materials Provided

1. Protein G magnetic beads, 5 mg/mL

B. Additional Materials (not provided with the kit)

1. Binding/Wash Buffer: TBS - 0.05% Tween 20 detergent
2. Elution Buffer: 0.1 M Glycine pH 2.0, 5 mL
3. Neutralization Buffer: 1M Tris pH 8.0, 1 mL
4. Micro-pipettes with disposable plastic tips (10-200 and 200-1000 µL)
5. 1.5 mL or 2.0 mL Eppendorf or microcentrifuge vials
6. Timer
7. Rotator
8. Distilled or deionized water
9. Vortex mixer
10. Solo or Multi-6 Microcentrifuge Separator (PN 472270; PN 472260)

C. Procedures

1. Add 100 µL (0.5 mg) of beads to 1 mL of binding buffer in each tube to wash beads.
2. Magnetically separate using a magnetic separator for 2 minutes or when the supernatant is clear.
3. Remove the supernatant and wash once more by adding 1 mL of binding buffer.
4. Repeat step 2 and remove the supernatant.
5. Resuspend beads by adding 450 µL of binding buffer.
6. Add 50 µL of serum or cell culture supernatant to the particles.

   Note: Sample volume can be modified according to user preference. If the sample volume is < 50 µL, dilute it to a final volume of 500 µL with Binding/Wash Buffer.
7. Gently mix using vortex or rotator for 30 minutes.
8. Magnetically separate using a magnetic separator for 2 minutes or when the supernatant is clear.
9. Remove supernatant and wash with 0.5 mL Binding/Wash buffer to remove unbound proteins.
10. Repeat steps 8 and 9 once more. Remove supernatant.
11. Add 100 µL of elution buffer to beads and mix well.
12. Incubate at room temperature for 10 minutes with occasional gentle mixing or vortex.
13. Separate for 2 minutes and remove the eluent to a new tube containing 15 µL of neutralization buffer.

D. Binding Capacities for IgG Proteins Table

Antibody binding affinity to Protein A and Protein G*

Species	IgG Class	Protein A	Protein G
Chicken egg	IgY	—	—
Cow	IgG	—	+
Dog	IgG	+	+
	IgM	+	—
Goat	IgG	+	+++
	IgM	—	—
Horse	IgG	+++	+++
Rabbit	IgG	+++	+++
	IgM	—	—
Rat	IgG	+	++
	IgM	—	—
Sheep	IgG	+++	+++
	IgM	—	—
Mouse	IgG1	+	++
	IgG2a	++	++
	IgG2b	++	++
	IgG3	+	++
	IgM	++	+
	IgA	++	++
Human	IgG1	+++	+++
	IgG2	+++	+++
	IgG3	—	+++
	IgG4	+++	+++
	IgA	+	—
	IgM	+	—
	IgE	+	—

— No binding + weak binding ++ moderate binding +++ strong binding

*** Data obtained from Handbook of Affinity Chromatography by David S. Hage (ISBN 0824740572). Chapter 14 "Affinity Chromatography in Antibody and Antigen Purification" by Terry M. Phillips.**