

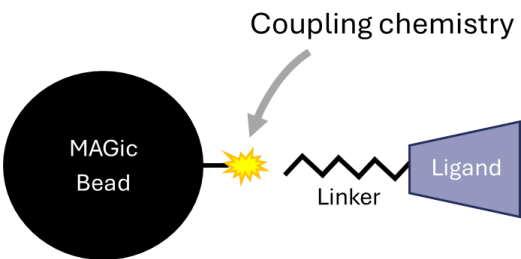
Tailor made magnetic beads

MAGic™ BioProcessing

A tailored resin can significantly enhance selectivity and precision for your specific application, as it is engineered specifically for that intended purpose. These resins often reduce overall costs by optimizing parameters that improve purity, yield, and process performance. This is especially important in industrial or high-throughput settings.

If our standard magnetic beads do not meet your needs, our specialists can custom design a magnetic bead using the right base matrix, ligand and chemistry. We work with you to create solutions that match your binding capacity, selectivity, and process requirements.

The key components of any bead include the magnetized base matrix, the ligand, and the coupling chemistry. Together, these factors contribute to the resin's high selectivity, capacity, and unique properties, making it possible to achieve cost-effective purification.



Parameters to consider for tailor made MAGic beads

- | | | |
|---------------|----------|----------------------|
| • Base matrix | • Ligand | • Coupling chemistry |
| • Magnetism | • Scale | • Ligand density |
| • Bead size | • Linker | |

Magnetized base matrix

Any kind of bead or material can be magnetized using our proprietary technology where metallic iron is directly applied to the surface of a solid bead or incorporated onto and into a porous agarose bead. This ensures an even spread of magnetic material on (and in) the bead making them highly robust and paramagnetic. This even distribution of magnetic material on the beads contrasts with many other magnetic beads on the market, which rely on a magnetic core that is surrounded by a layer of either silica, polystyrene, or agarose.

Using the proprietary Magic-specific magnetization technology ensure beads to have very low magnetic remanence, preventing aggregation issues and maximises separation speed.

Each base matrix has its own distinct profile in terms of compactness, hydrophobicity, pore size, bead size, and chemical tolerances. The optimal matrix can then be combined with the appropriate ligand to suit your specific application and process requirements (see Table 1).

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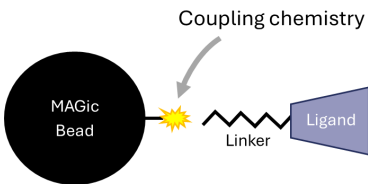
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Table 1. Characteristics of bead matrices

	Silica	Polystyrene	Agarose
Typical bead size	0.5-5 µm	0.5-5 µm	30-100 µm
Compactness	solid	solid	porous
Hydrophobicity	hydrophilic	hydrophobic	hydrophilic
Properties	High rigidity, heat/pressure resistant, monodispersed bead sizes	High flexibility, low shear resistance, unspecific interactions to base matrix	High flexibility, soft, high chemical tolerance, low pressure tolerance, biocompatible
Applications	Small scale applications, diagnostics	Small scale applications, diagnostics, SPRI	Biomolecule separations, easy to scale up

Ligand and chemistry

The ligand is a critical component, as it determines target selectivity and specificity. In capture affinity applications, it must offer high specificity, maintain stability under both process and regeneration conditions, and be compatible with the selected coupling chemistry. Common ligands include proteins such as Protein A for monoclonal antibody capture, as well as peptides, oligonucleotides (antisense or aptamer-based), metal-chelated ligands, functional groups (e.g., carboxyl), and polymers.



The choice of coupling chemistry depends on the ligand's available reactive groups, the required orientation for effective binding, and the stability of the immobilized complex. Most coupling strategies target amine or thiol groups. Both coupling conditions and ligand density typically require optimization to achieve optimal binding capacity and yield.

Coupling chemistry

- ACT is our patented proprietary coupling chemistry
- ACT coupling via primary amine or thiol group
- Alternative chemistries: aldehyde, carboxyl, NHS etc
- Coupling efficiency depends on:
 - Accessibility of reactive groups
 - Ligand orientation
 - Stability of ligand
 - Type of ligand

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MAGic BioProcessing partners with you to design a resin precisely tailored to your process requirements.

You can leverage our proprietary bead materials or incorporate your own beads and/or ligands, whichever best supports your goals. Selecting the right chemistry requires careful evaluation, and with our extensive expertise, we ensure you achieve optimal performance and the best possible results.

Contact us today to get started!

Magic BioProcessing – we make magic possible!

Explore our full portfolio of magnetic beads engineered for consistent performance across diverse workflows.

Discover our magnetic bead lineup

Ordering information

Visit www.magicbioprocessing.com for information regarding all MAGicBeads resins.

Orders via web shop or contact us via info@magicbioprocessing.com

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