

# ZGF TECH BRIEF

## WHAT ARE RARE EARTH MAGNETS?

The Most Advanced, Automatic,  
Non-Disposable Liquid Filtration System



### What Are Rare Earth Magnets?

Rare Earth Magnets are made from Rare Earth Elements / Metals as defined in the periodic table of elements. The term “rare earth” can be misleading as rare earth metals are relatively abundant in the Earth’s crust. However, they are rarely found in large, concentrated deposits, but dispersed among other elements instead.

There are two types of rare earth magnet materials - Neodymium (NdFeB) and Samarium Cobalt (SmCo). Both materials come in different grades (strengths) and have different magnetic and physical properties. Neodymium magnets are the stronger of the two.

Rare earth magnets are the strongest permanent magnets available and have significantly higher performance than ferrite (ceramic) and alnico magnets.

Rare earth permanent magnets maintain their field strength forever if they are operated within design operating specifications. Temperature is critical. When a rare earth magnet is exposed to a temperature exceeding the maximum specification, it may lose part or all its magnetic performance. Depending on the temperature and duration to which a magnet is subjected to, magnetic loss can be reversible.

### Are all Rare Earth Magnets Equal?

**NO, all rare earth magnets are NOT EQUAL!** In fact, many of rare earth magnets currently purchased probably are not even rare earth magnets.

A “real” rare earth magnet must be manufactured by a patent licensee in accordance with Sumitomo Special Metals Co (Hitachi Special Metals) patent using licensed materials and certified processes. There are a limited number of companies licensed or authorized to manufacture and sell sintered rare earth magnets under the Hitachi Metals’ patents. The only way to ensure that your rare magnets has and maintains the specified properties is to purchase a “real rare earth magnet”. Quite often, “internet rare earth magnets” do not have the specified field strength and lose field strength over time.

### Zero Gravity Filters (ZGF) Rare Earth Magnets

**ZGF uses N45 Neodymium Iron Boron magnets purchased from a licensed and authorized manufacturer of rare earth magnets in every ZGF Maggie!**

**The magnetic field strength within every ZGF Maggie is up to 13,500 gauss. To put it into perspective, A ZGF rare earth magnet is more than 100x stronger than your most powerful refrigerator magnet, and up to 10x stronger than many industrial grade ceramic magnets.**

**The magnetic field strength of real N45 rare earth magnets in conjunction with the patented Maggie design allow it to capture most particles 5 micron and larger, as well as sub-micron magnetic particles.**

The image to the right shows the Maggie family with models ranging from 12 – 250 gpm. Manifold Maggie’s for higher flows.

