

**Gems & Gemology Data Depository:** Magnetic characteristics of various gem materials observed by the direct method.

Stone color	Responsive <sup>a</sup>	Unresponsive <sup>b</sup>	Both responsive and unresponsive properties <sup>c</sup>
Red and pink	Almandine, rhodolite, red GGG, rhodochrosite, rhodonite, pink cubic zirconia (and other Mn-rich collector stones not listed here)	Ruby, pink sapphire, red and pink spinel, pink topaz, pyrope (approaching end member), zircon, glass, plastic, red cubic zirconia	Tourmaline, pyrope (departing from end member), garnet-topped glass doublet
Blue and purple	Blue GGG, "True Blue" beryl from Canada (weak)	Aquamarine, natural and synthetic blue sapphire, synthetic blue spinel (various shades), scapolite, glass, plastic, amethyst, topaz	Natural blue and violet spinel, tourmaline, garnet-topped glass doublet
Green	Demantoid, GGG, peridot (sometimes weak)	Sphene, zircon, cubic zirconia, tsavorite (approaching end-member grossular), sinhalite, sapphire, apatite, emerald, green beryl, soudé spinel triplet, jade, glass, plastic	Green grossular (departing from end-member), tourmaline, garnet-topped glass doublet
Yellow/orange/brown	Spessartine, yellow andradite	Hessonite (near end-member grossular), yellow sphene, citrine, topaz, sapphire, scapolite, zircon, orange cubic zirconia, fire opal, orange and yellow glass, plastic	Hessonite (departing from end-member grossular), tourmaline, garnet-topped glass doublet
Colorless	GGG	Cubic zirconia, zircon, moissanite, sapphire, glass, plastic, YAG, strontium titanate, topaz	Garnet-topped glass doublet
Black (mostly opaque specimens)	Star diopside (magnetite needle-like inclusions), melanite, Yttrium Iron Garnet, cubic zirconia	Onyx, obsidian, glass, plastic, epidote, jet	Star sapphire (depending on the occasional presence of needle-like magnetite inclusions vs. rutile inclusions), hematite (rough, unprocessed hematite was often unresponsive)
Color-change and highly pleochroic specimens	Color-change garnet	Alexandrite, color-change corundum, andalusite	Tourmaline

<sup>a</sup> Highlighted specimens exhibited a relatively strong visible response.

<sup>b</sup> Note that magnetic inclusions can occasionally give a misleading result.

<sup>c</sup> Possible causes include isomorphous replacement of Fe and/or Mn, significant magnetic inclusions, garnet composites, etc.