

Arnokrome™ 5

Arnokrome™ 5 is a proprietary ductile permanent magnet alloy developed by Arnold Magnetic Technologies as a low cost alternative to the ironchromium-cobalt alloy, Arnokrome™ 3. Since Arnokrome 5 contains no cobalt, its price is not susceptible to cobalt's price instability. Like Arnokrome 3, the alloy has good ductility which permits the manufacture of a wide variety of products formed from strip products. Arnokrome 5 may be sheared, stamped, drawn, and blanked. Arnokrome 5 is isotropic and supplied in the heat treated form, with applications primarily being in sensor systems. By controlling the heat treatment, the magnetic properties obtained can be tailored to the specific requirements of the application. Its coercivity of 20 to 50 Oersteds and remanence of 12,000 to 16,000 Gauss make it an excellent complementary material to Arnokrome 3. Arnold Magnetic Technologies' applications personnel are available to provide technical assistance to potential customers in their evaluation of Arnokrome 5.

Chemistry

Manganese: 7 to 8.5%	Cobalt: None	Iron: Balance
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Mechanical Properties

	Heat Treated
Tensile Strength	260,000 psi
Yield Strength	240,000 psi
% Elongation	1.7%
Hardness	Rc 57

Magnetic Properties

Magnetic Remanence (Br)	2,000 - 16,000 Gauss
Coercivity (Hc)	20 - 50 Oersteds
Energy Product (BHmax)	0.2 - 0.34 MGOe
Curie Temperature	770°C
Orientation	Isotropic

Physical Properties

Density	0.285 lbs/cu in (7.89 g/cc)
Thickness Available (Strip)	0.002"(0.05mm) - 0.008" (0.20mm)
Widths Available (Strip)	0.040" (1.016mm) to 14" (355.6mm)
Electrical Resistivity (25°C)	40 x 10 ⁻⁶ ohm-cm
Thermal Conductivity (100°C)	0.09 cal/sqcm/cm/sec/°C
Thermal Expansion (30° to 100°C)	11.2 x 10 ⁻⁶ cm/cm/°C

FAST FACTS

When choosing Arnokrome 5, the following factors should be considered:

Magnetic Characteristics:

Arnokrome 5 is best suited for low coercivity applications. Br = 9.0-14.0 kGauss Hc = 20-50 Oe.

Ductility:

Arnokrome 5 is cold rollable to 0.002" (0.051mm) thick foil, and can be supplied in widths from 0.040" (1.016mm) to 14" (355.6mm).

Cost:

Due to the nature of the alloy, it has a much narrower range of magnetic characteristics compared to Arnokrome 3 but at a significantly reduced cost.

Forms Available

Arnokrome 5 is commercially available as rolled strip in 0.002" (0.05mm) - 0.008" (0.20mm) thicknesses.

With more than four decades of precision rolling experience, Arnold Magnetic Technologies is intimately familiar with the potential magnetic properties of a broad range of magnetic materials. Our knowledge of the most efficient and effective means of maximizing the potential of various materials has led to the development of numerous alloy innovations, including Arnokrome 5.

If needed, Arnold engineers can help you customize the properties of Arnokrome 5 to satisfy a wide spectrum of magnetic strip and foil applications.