

Soft magnetic

CRYOPHY

CRYOPHY is nickel-iron soft magnetic alloy suitable for magnetic shieldings at cryogenic temperature (typically 4K).

International standards

N14080 - A753

Chemical composition

Elements (% weight)	Ni	Cr	Fe
Typical value	81	5	Bal

Physical properties

Density (g/cm ³)	Melting T° (°C - °F)	Curie T° (°C - °F)	Thermal expansion between 25°C and -269°C (10 ⁻⁶ .°K ⁻¹)	Resistivity at -269°C (μΩ.cm)	Thermal conduction at -269°C (W/°Km)	Specific heat at -269°C (J.Kg ⁻¹ .°K ⁻¹)
8.72	1450 - 2642	400 - 752	-8	47.5	0.3	0.6

Magnetic properties*

Conditions	Thickness (mm - ")	Saturation induction (G - T at 2 Oe ≈ 160 A/m)	Coercive force (Oe - A/m)	Coercive force (Oe - A/m)
DC	1 - 0.04	8000 - 0.80	0.010 - 0.8	70000

* Typical values at 4K measured on rings sample th. 1mm / 0.04» after heat treatment at 1170°C / 2138°F in pure & dry Hydrogen after proper cooling

Mechanical properties*

Temper	Hardness Hv	Grain size	Tensile strength (MPa - KSI)	Yield strength (MPa - KSI)	Elongation %	Young's modulus (MPa - KSI)
Soft	160	8	650 - 94	280 - 41	35	205000 - 29730
Hard	320	-	1010 - 146	990 - 144	3	255000 - 36980

* Typical values at 20°C for material to be tested in accordance with NF EN 10002, NF EN ISO 6507, NFA 04102

Standard delivery & dimensions available

Form	Coil - Sheet
Thickness (mm / ")*	0.10 to 3.5 / .004 to .138
Width (mm / ")	10 to 640 / .4 to 25.2
Length (mm / ")	500 to 3500 / 19.7 to 137.8
Temper	Soft / Hard

* Depending on thickness, width or diameter & temper

Available Forms

CRYOPHY is delivered in cold rolled strip. Contact us for other specific formats.

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The data enclosed in this document are given as indicative values and correspond to our standard product. Different specific requirements are subject to discussion and formal approval by Aperam Alloys Imphy. For further information or special request, please contact us.

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