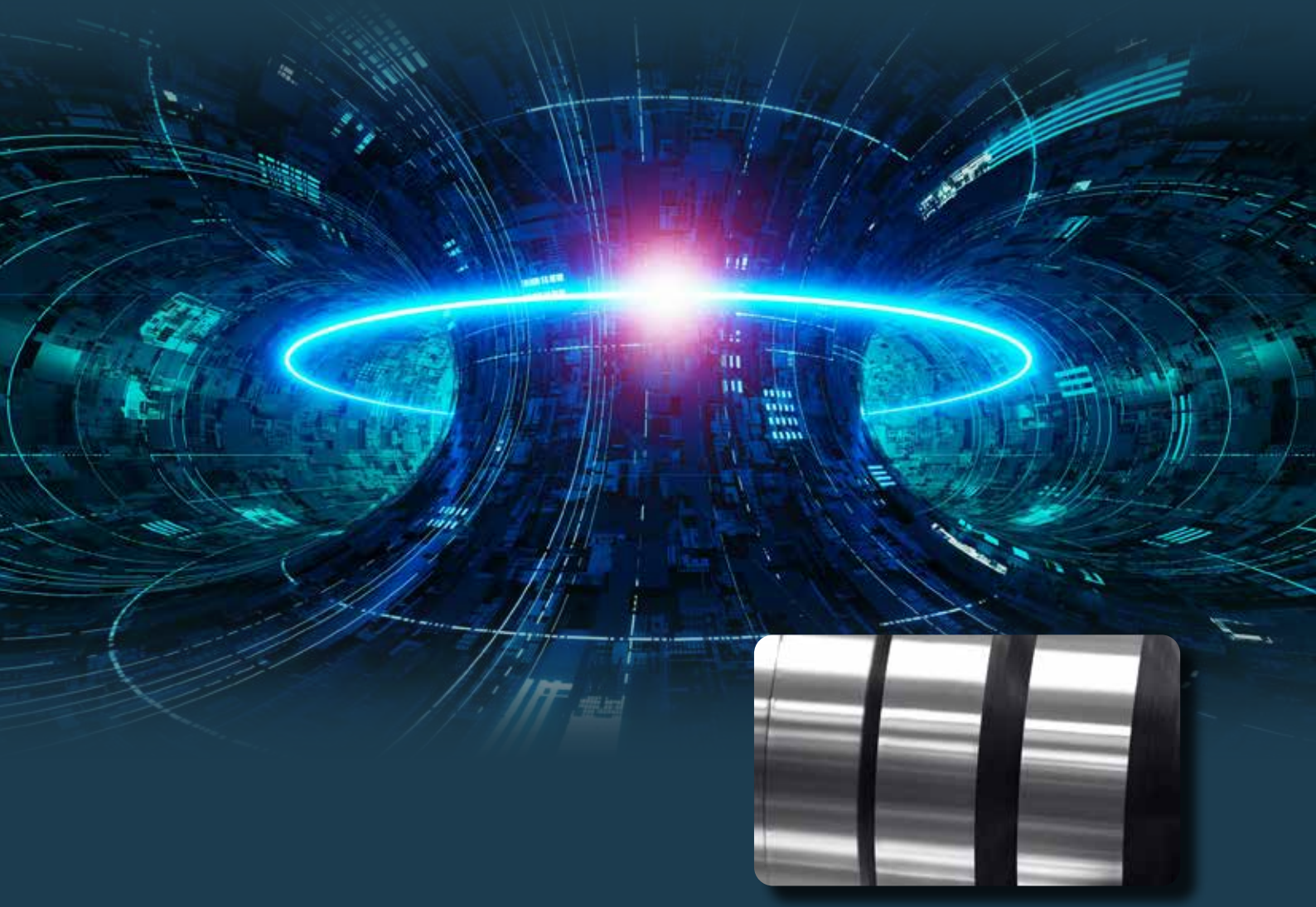
HAMILTON PRECISION METALS / AMETEK SPECIALTY METAL PRODUCTS

HASTELLOY® HPM® C276 STRIP

For High-Temperature Superconducting (HTS) Tapes



Hastelloy® HPM® C276 Strip (UNS N10276)

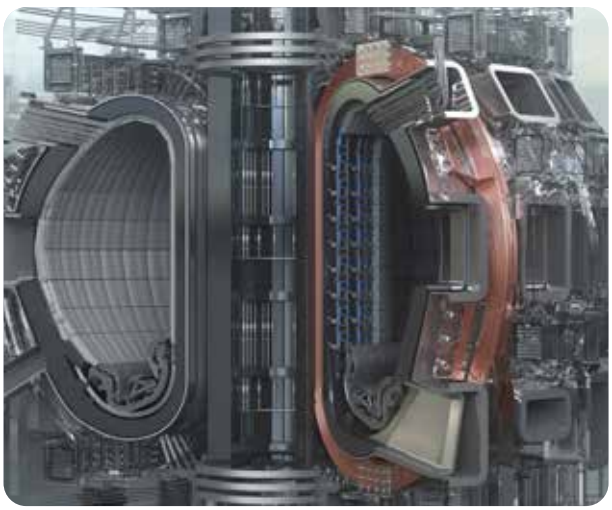
Hastelloy® HPM® C276 Strip is a Nickel-Molybdenum-Chromium-Tungsten alloy with a high level of corrosion resistance. A low carbon content enables the alloy to resist intergranular corrosion at weld joints. These attributes make it an important alloy for the most severe applications.

General information

The alloy is readily formed from the annealed temper. All standard welding methods except oxy-acetylene can be used for joining.

Availability

Hastelloy® HPM® C276 Strip is available from Hamilton Precision Metals as strip product in thicknesses from 0.0005" to 0.050" (0.0127 mm to 1.27 mm) and widths up to 12.0" (304.8 mm). The material conforms to ASTM B575 and UNS N10276.



Why Hastelloy® HPM® C276 Strip Alloy for Superconductors?

Superconducting cables require ultra-smooth, high-purity substrate material to support thin-film deposition. Our Hastelloy® HPM® C276 Strip (UNS N10276) meets these exacting standards with:

Ultra-Smooth Surface Finish

Ultra smooth surfaces with roughness less than 2 micro-inch Ra, ideal for thin-film coatings such as MOCVD (Metal Organic Chemical Vapour Deposition) and IBAD (Ion Beam Assisted Deposition).

Tight Thickness Tolerances

Precision cold-rolling delivers thicknesses tolerances of ±0.00005", ensuring uniform current distribution in HTS tapes.

Mechanical Customization

Capability to temper the foil substrate to meet specific mechanical properties.

> Technical Data

TYPICAL MECHANICAL PROPERTIES[1]		
	ANNEALED	COLD ROLLED
Ultimate Tensile Strength	130,000 PSI	240,000 PSI
Yield Strength (0.2% Offset)	70,000 PSI	220,000 PSI
Elongation in 2" *	40%	2%
Modulus of Elasticity (Tension)	29.8 X 10^6 PSI	-
Poisson's Ratio	0.304	-

*The measured elongation will be less as thickness decreases to 0.002" and less.

[1] These values may be adjusted by control of process variables – consult HPM for desired values.

PHYSICAL PROPERTIES [2]	
Density	0.321 lbs./cu.in.
Melting Point (Approx.)	1325°C
Electrical Resistivity @ R.T.	130 Microhm · cm
Thermal Expansion Coefficient (25° to 100°C)	11.2 x 10^{-6}/ °C
Thermal Conductivity @ R.T.	10.2 W/m · K
Magnetic Attraction	None

NOMINAL COMPOSITION	
Molybdenum	16.0%
Chromium	15.6%
Iron	5.7%
Tungsten	3.6%
Carbon	0.004%
Nickel	Balance

[2] Typical values to guide alloy selection but are not a guarantee of minimum or maximum.

HPM® HAMILTON PRECISION METALS / AMETEK® SPECIALTY METAL PRODUCTS

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