ULTRAVAC 816

strip material

COMPOSITION (in wt%)

81 Ni – 6 Mo – bal. Fe
IEC 60404-8-6 E11
DIN 17405 (1979) RNi2 / RNi5

PRODUCT DESCRIPTION

The copper free alloy ULTRAVAC® 816 has been optimized to exhibit a round hysteresis loop that is correlated with high initial permeability.
These high permeability values at low magnetic fields are obtained even without an additional tempering of the workpiece in trade off with a slightly lower saturation induction, distinguishing ULTRAVAC 816 from the other soft magnetic 80 % NiFe alloys produced by VACUUMSCHMELZE.

TYPICAL APPLICATIONS

Magnetic shielding, high sensitivity current sensors, relay parts for residual current devices. transformer cores

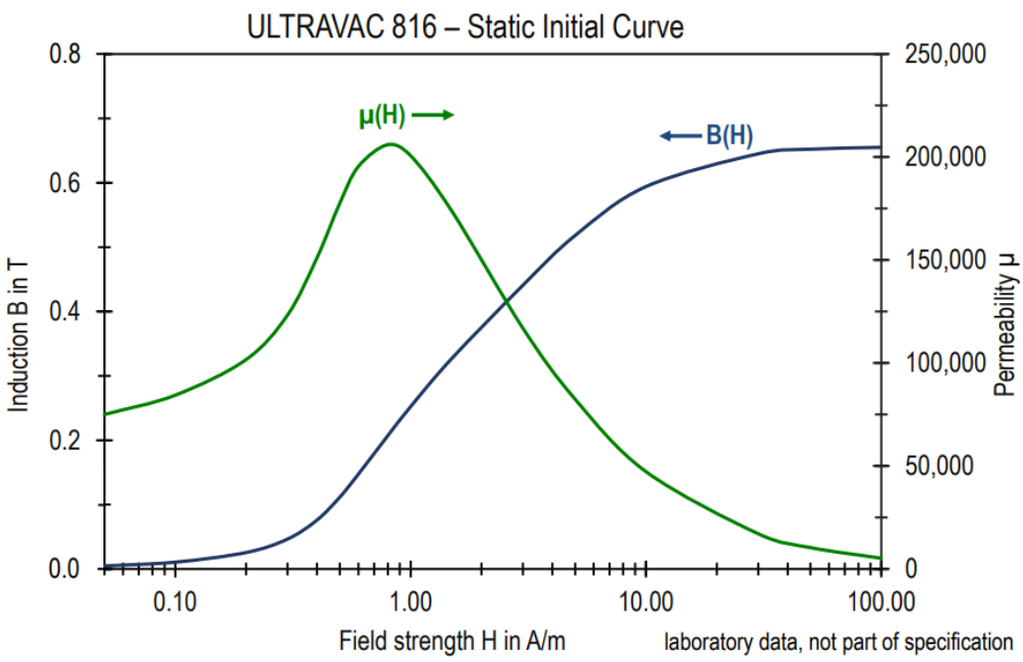
MAIN PROPERTIES

- Saturation induction J_S = 0.65 T
- Low coercivity H_C = 0.6 A/m
- Round Hysteresis Loop

FORMS OF SUPPLY

- Strip material, thickness 0.025 – 2 mm, width ≤ 305mm
- Stamped parts, laminations, and laminated assemblies

Other dimensions and tolerances upon request.



STRIP MATERIAL 0.35 mm – TYPICAL VALUES

PHYSICAL PROPERTIES	Unit	
Mass density ρ	g/cm³	8.7
Thermal conductivity (25 °C) λ	W/(m·K)	18 – 20
Thermal expansion coefficient (20 – 100 °C) α	10^{-6}/K	13.5
Electrical resistivity ρ_e	µΩm	0.6

STATIC MAGNETIC PROPERTIES		
Coercivity H_C	A/m	0.6
Saturation polarization J_S	T	0.74
Saturation magnetization B_S at H = 40 kA/m	T	0.79
Maximum permeability μ_{max}		210,000
Initial permeability $\mu_{0.1\ A/m}$		90,000
Magnetostriction constant λ_S	ppm	~ 1
Curie temperature T_C	°C	360

MECHANICAL PROPERTIES (after recommended heat treatment)		
Young's modulus E	GPa	190
Yield strength $R_{p0.2}$	MPa	150
Hardness	HV	105

MECHANICAL PROPERTIES (delivery state)		cold rolled	soft annealed
Yield strength $R_{p0.2}$	MPa	1,250	290
Tensile strength R_m	MPa	1,290	660
Elongation A	%	1	30
Hardness	HV	350	150

RECOMMENDED PARAMETERS FOR HEAT TREATMENT		
Atmosphere		hydrogen
Temperature	°C	1,150
Annealing time	h	5
Cooling rate	K/h	50 – 300

Published by VACUUMSCHMELZE GmbH & Co. KG, Hanau, March 2024