

# ULTRAVAC 816

## COMPOSITION (in wt%)

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

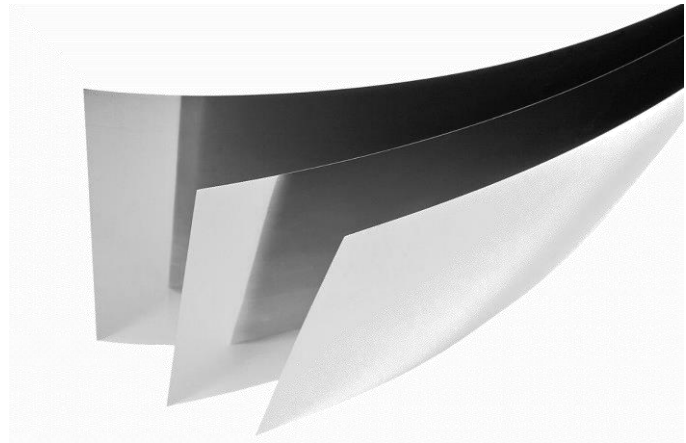
## PRODUCT DESCRIPTION

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®.

## MAIN PROPERTIES

- Saturation Induction  $J_S = 0.65$  T
- Low Coercivity  $H_C = 0.6$  A/m
- Round Hysteresis Loop



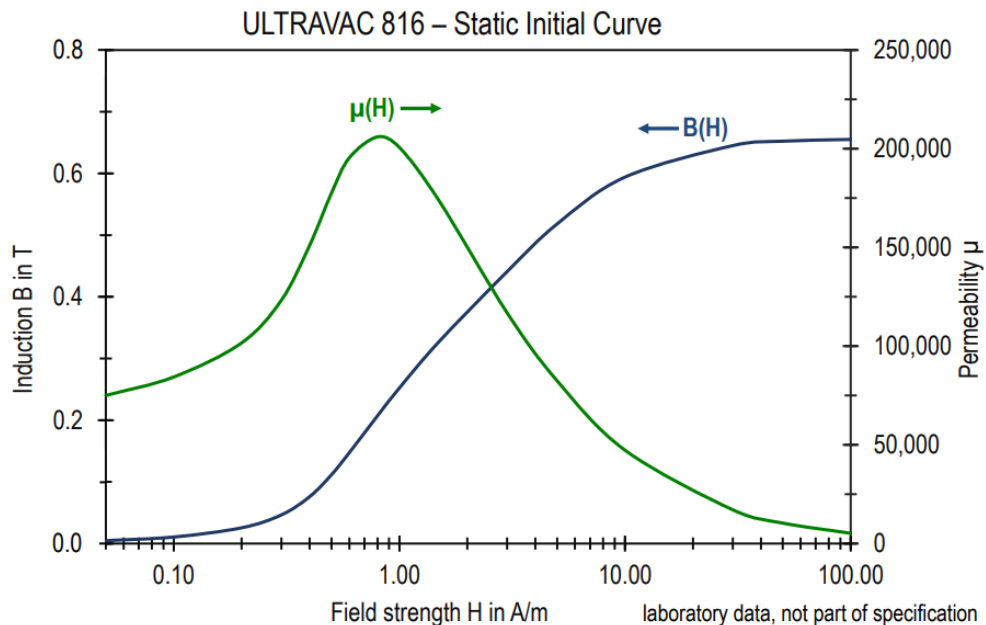
## TYPICAL APPLICATIONS

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

## FORMS OF SUPPLY

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

Other dimensions and tolerances upon request.



## STRIP MATERIAL 0.35 mm – TYPICAL VALUES

PHYSICAL PROPERTIES	Unit	
Mass density $\rho$	g/cm <sup>3</sup>	8.7
Thermal conductivity (25 °C) $\lambda$	W/(m·K)	18 – 20
Thermal expansion coefficient (20 – 100 °C) $\alpha$	10 <sup>-6</sup> /K	13.5
Electrical resistivity $\rho_e$	$\mu\Omega\text{m}$	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 $\mu_{\text{max}}$		210,000
Initial Permeability $\mu_{0,1\text{A/m}}$		90,000
Magnetostriction constant $\lambda_S$	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