

ULTRAVAC 44 V6

COMPOSITION (in wt%)
44 Ni – 3 Mo – bal. Fe

PRODUCT DESCRIPTION

ULTRAVAC® 44 V6 is a low loss NiFe alloy that has been designed to exhibit a specifically high electric resistivity with low hysteresis losses.

Supplied with an isotropic fine-grained microstructure after final annealing ULTRAVAC 44 V6 is particularly used in highly efficient high frequency motor applications.

MAIN PROPERTIES

- Saturation induction $J_s = 1.35$ T
- Low specific iron losses
- Electrical resistivity $\rho_e = 0.8 \mu\Omega\text{m}$

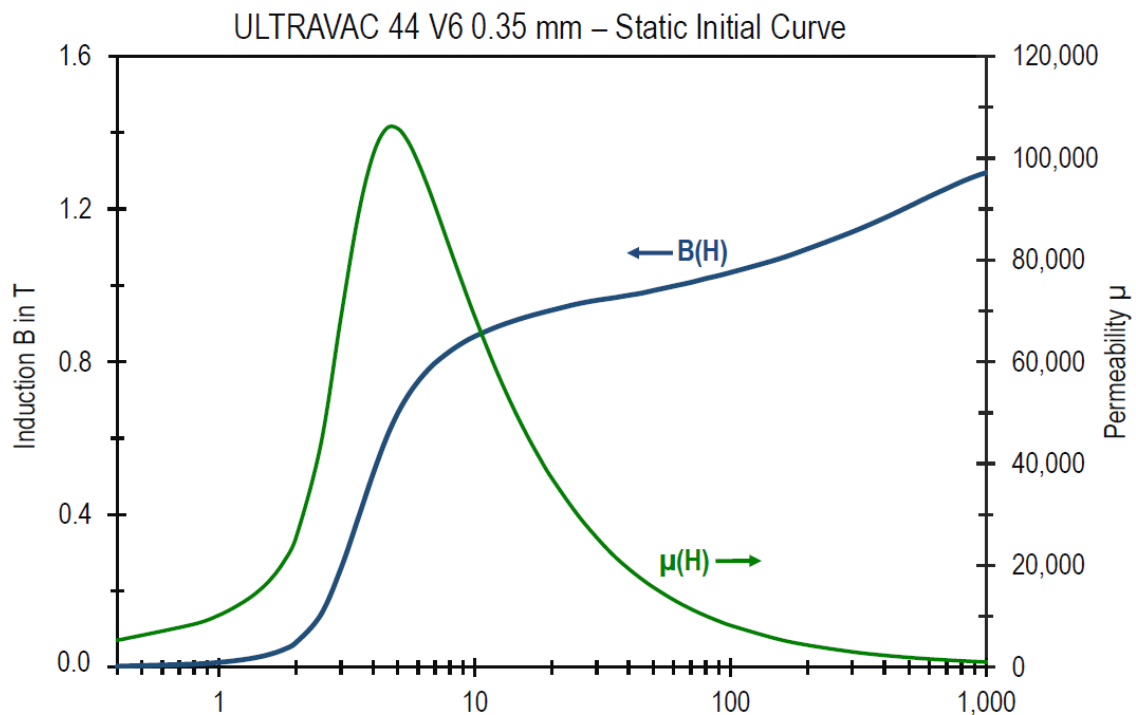
TYPICAL APPLICATIONS

laminated stacks for high speed motors, current and positioning sensors.

FORMS OF SUPPLY

- Strip material, thickness 0.025 – 2 mm, width ≤ 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 ρ	g/cm ³	8.25
Thermal conductivity (25 °C) λ	W/(m·K)	13 – 15
Thermal expansion coefficient (20 – 100 °C) α	10 ⁻⁶ /K	7 – 8
Electrical resistivity ρ_e	$\mu\Omega\text{m}$	0.8

STATIC MAGNETIC PROPERTIES		
Coercivity H_C	A/m	2.5
Saturation polarization J_S	T	1.35
Saturation magnetization B_S at $H = 40$ kA/m	T	1.40
Maximum permeability μ_{\max}		100,000
Magnetostriction constant λ_S	ppm	+ 25
Curie temperature T_C	°C	340

SPECIFIC IRON LOSSES OF STRIP MATERIAL AFTER FINAL HEAT TREATMENT		strip thickness		
		0.10 mm	0.20 mm	0.35 mm
p_{Fe} 1.0 T 50 Hz	W/kg	0.21	0.20	0.25
p_{Fe} 1.0 T 400 Hz	W/kg	2.6	3.8	8.1
p_{Fe} 1.0 T 1,000 Hz	W/kg	9.3	18	45
p_{Fe} 1.2 T 50 Hz	W/kg	0.30	0.30	0.39
p_{Fe} 1.2 T 400 Hz	W/kg	3.8	5.6	12
p_{Fe} 1.2 T 1,000 Hz	W/kg	14	28	69

MECHANICAL PROPERTIES (finally heat treated)		
Young's modulus E	GPa	140
Yield strength $R_{p0.2}$	MPa	160
Hardness	HV	100

MECHANICAL PROPERTIES (delivery state)		cold rolled	soft annealed
Yield strength $R_{p0.2}$	MPa	950	250
Tensile strength R_m	MPa	1,000	500
Elongation A	%	< 2	30
Hardness	HV	280	140

RECOMMENDED PARAMETERS FOR THE FINAL HEAT TREATMENT		
Atmosphere		hydrogen
Temperature	°C	1,150
Annealing time	h	5
Cooling rate	K/h	100 – 300

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