

GENERAL INFORMATION

Alloy Nifer®50 – is a magneto-soft iron-nickel alloy with the content of nickel 48%, saturation magnetic induction is 1,55 T and alloys with similar high saturation induction. Nifer®50 has the highest saturation induction, possible for similar alloys. Typical scopes: low-frequency power sensor, rotor and stator plates, throttles, high-purity relays, integrated current transformers for protective switches, stepper motors, magnetic gates, shielding. Nifer®50 it can be produced in three options depending on a scope.

Classification

DIN	1.3922
UNS	K94840

Chemical composition, %

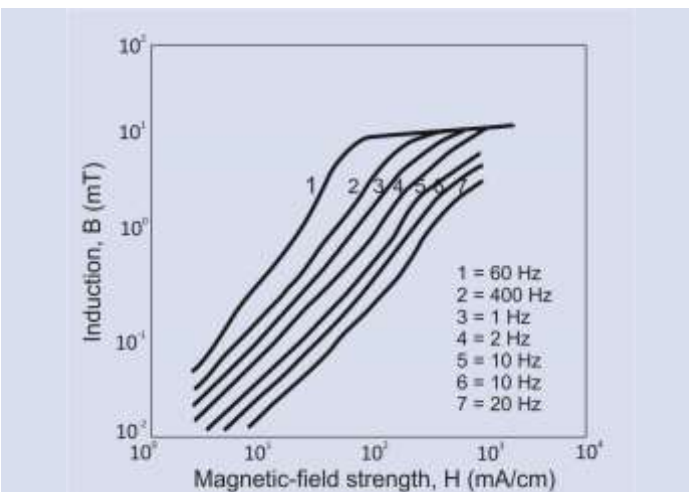
Ni	Fe	C	Mn	Si
48.0	rest	0.02	0.4	0.4

MECHANICAL PROPERTIES AT 20°C IN ANNEALED CONDITION

Tensile strength, MPa	530
Yield strength (0.2%), MPa	220
Elongation, %	30
Hardness, HRB	55-69

PROCESSING PROPERTIES

Density, g/cm ³	8.2
Melting range, °C	1369-1376
Heat conductivity, W/(m·°C)	15
TCLE, mm/m·°C (from 20° to 100°C)	8.9
Elastic modulus, KN/mm ²	160
Saturation magnetostriction	25·10 ⁻⁶
Electric resistance, μΩ·m	0.45
Curie temperature, °C	470



Pic.1 - The typical induction curves and magnetic field strength for Nifer®50 alloy, measured on cores of ring-shaped sheaf with thickness of sheet 0,2 mm at different frequencies

MAGNETIC PROPERTIES

Magnetical inductive capacity, μ4	≥10000
Magnetical inductive capacity, μmax	≥80000
Coercive field, A/m	≥8
Induction(at Heff= 160mA/cm), mT	≥1000
Core losses, W/kg	0,25

It is possible to receive the specified magnetic properties only after special final annealing. Temperature condition of annealing is set in limits 1050°C and 1250°C. After final annealing cooling is carried out to 450°C in furnaces during 5-70 hours. Further cooling isn't critical. After final heat treatment, details shouldn't be loaded mechanically as each plastic transformation leads to loss of magnetic properties.

CORROSION RESISTANCE

Resistance to corrosion has an average value in the damp atmosphere.

WELDING

In general, Spot welding is suitable for welding of products from alloy Nifer®50. Application of other types of welding is possible. There is an opportunity to provide information in case of your special questions

MAIN DELIVERY CONDITIONS

Blanks

Strands, strips, sheets, round bars, wire

Ready details

Belt-type toroidal core, rolled sheeting for the core, relay details, stamped and bent other flexible details.

Production of products with other sizes under the order is possible.