

OPTICORE™

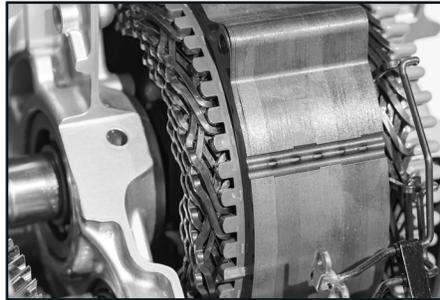
0.010" (0.25-mm)

Opticore 10 Non-Oriented Electrical Steel

SPATIALLY OPTIMIZED DIFFUSION ALLOY (SODA)

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Opticore 10 is a fully processed, non-oriented electrical steel designed for use in high-frequency applications such as highspeed motors and generators used in the aerospace and medical industries, amongst others. Opticore 10 is made using Arcanum Alloys' spatially optimized diffusion alloy (SODA™) manufacturing technology and is offered at a nominal thickness of 0.010 inches.



Arcanum Alloys Inc., head-quartered in greater Grand Rapids, Michigan, USA, uses a revolutionary platform technology to dramatically improve the steel manufacturing process. Arcanum Alloys uses its technology to make Spatially Optimized Diffusion Alloy (SODA™) products. In the SODA process, alloying elements such as Silicon, Aluminum, Manganese, etc. are introduced to the steel by vapor transport after it has reached a finished or semi-finished form. This technology allows the surface and bulk properties of the steel to be decoupled, allowing the performance of each region to be independently optimized. Arcanum Alloys' Opticore™ product category is a range of light-gauge Non-Oriented Electrical Steels (NOES).

SPECIFICATIONS

MAGNETIC CORE LOSS

Core Loss (W/kg) at Polarization/Frequency (Tesla/Hz)

1.0/50	1.0/400	1.0/1000	1.0/2500
0.9	14.0	55.9	262.5

Typical core loss properties of Opticore 10 after stress relief at 850°C in H₂, measured using a 150-mm x 150-mm single sheet test apparatus with 90 primary windings and 90 secondary windings, constructed in accordance with IEC 60404-3, on a Brockhaus MPG-200D.



MAGNETIC INDUCTION

	50-Hz	400-Hz	1000-Hz	2500-Hz
Magnetic Induction at 400-A/m (B ₄):	1.47-T	1.47-T	1.47-T	1.30-T
Magnetic Induction at 2500-A/m (B ₂₅):	1.65-T	1.65-T	1.65-T	1.64T
Magnetic Induction at 5000-A/m (B ₅₀):	1.74-T	1.74-T	1.74-T	1.74T

OTHER TYPICAL PROPERTIES

Density:	7.55-g/cm ³
Resistivity:	42-μΩ·cm
Yield Strength:	42-KSI (290-MPa)
Tensile Strength:	55-KSI (379-MPa)
% Elongation in 2":	13%
Hardness (Knoop):	171 HK
Nominal Thickness:	0.004" (0.10-mm)
Thickness Variation:	± 0.0005" (0.02-mm)
Coeff. of Thermal Expansion:	12.6E-6-K ⁻¹