

GENERAL DATA ON LAMINATIONS

For standard type laminations, the following pages contain information on the types of materials available, their mechanical and physical characteristics, and their electrical and magnetic properties.

Types of Material

TSC-bourgeois laminations are made from various grades of electrical steels, silicon steels, nickel-iron alloys, and cold rolled motor lamination steel.

Electrical & Silicon Steels

Laminations made from various grades of electrical silicon steels are the most economical for use in small transformers and reactors. These steels are classified according to ASTM A664.

Grain Oriented

TSC-bourgeois provides grain-oriented laminations in thickness of .006 and .014 (29 gauge) inches. This material shows very low core losses and high permeability in the rolling direction. Laminations made from this material are supplied in a fully stress relief annealed condition with high interlaminar resistance and a high stacking factor.

Non-Oriented

TSC-bourgeois provides various grades of non-oriented silicon steels. The most common thicknesses are .0185 (26 gauge) and .025 (24 gauge) inches. Silicon content for these types of steels influences the core loss characteristics. Steels with higher silicon contents typically have lower core losses. Laminations made from these grades of steels are supplied in a fully stress relief annealed condition with high interlaminar resistance and high stacking factors.

Cold Rolled Motor Lamination Steel

TSC-bourgeois provides cold rolled motor lamination steel in thickness of .018 (26 gauge) and .025 (24 gauge). Laminations produced from cold rolled motor lamination steel are used in fractional motors and transformers where low core losses are not critical and better permeability at a high KG is desired. Laminations made from this material are supplied in a fully stress relief annealed condition.

Nickel-Iron Alloys

Laminations produced from both low nickel iron alloys (50% nickel) and high nickel iron alloys (80% nickel) are used where both high performance and compactness are essential.

High Nickel-Iron Alloys (80% Nickel)

TSC-bourgeois provides high nickel alloys in thickness of .006" and .014" (29 gauge). This material has very high initial and maximum permeability for use in low density, high frequency applications, including telecommunications, ground fault interrupters and magnetic shielding. Laminations made from this material are supplied in a fully annealed condition, for highest permeability or lowest total harmonic distortion, with an inorganic coating for an optimum stacking factor. The thickness and the designation HN is used as a suffix after the lamination shape to form the catalog part number. *For example: EI375-0140-HN.*

Low Nickel-Iron Alloys (50% Nickel)

TSC-bourgeois provides low nickel alloys in thickness of .006" and .014" (29 gauge). This material shows high initial and maximum permeability for use in moderately low flux density applications, such as: servomotors, relay, armatures, and solenoids. Laminations made from this material are supplied in a fully annealed condition, assuring high permeability, with an inorganic coating for an optimum stacking factor. The thickness and the designation LN is used as a suffix after the lamination shape to form the catalog part number. *For example: EI3750140-LN.*