

Metglas has capabilities in-house to make distribution transformer cores in order to support our customer designs and their production needs.

Our Amorphous Transformer cores are manufactured from low loss **Metglas® 2605HB1M transformer core alloy**. This low loss, high permeability alloy has excellent performance for **Single and Three phase** commercial, industrial and distribution transformer applications.

Metglas cores are installed using industry standard transformer assembly techniques.

## General Properties & Characteristics for Metglas® 2605HB1M transformer core alloy

### Physical Properties

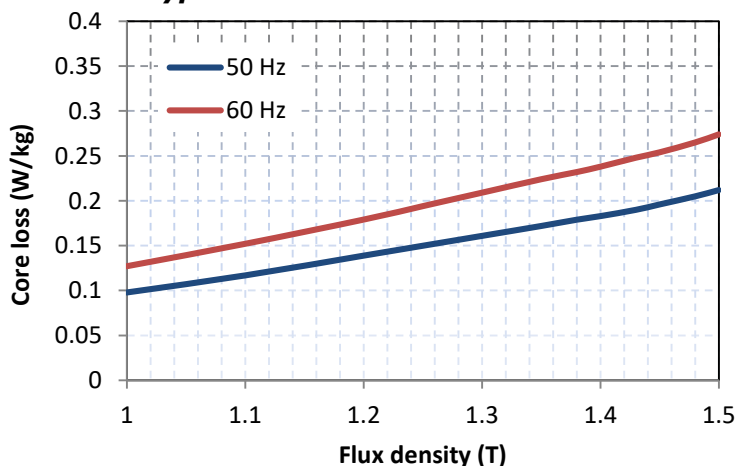
Alloy	Nominal Composition	Density (g/cm <sup>3</sup> )	Standard Available Widths (mm)*	Vickers Hardness Hv-50 g load	Tensile Strength (N/mm <sup>2</sup> )	Thermal Expansion Coefficient (x10 <sup>-6</sup> /°C) 30 - 300°C	Crystallization Temperature (°C)
2605HB1M	FeBSi	7.33	142.2 170.2 213.4	900	2,100	4.3	489

\*Please contact sales representative for custom ribbon width

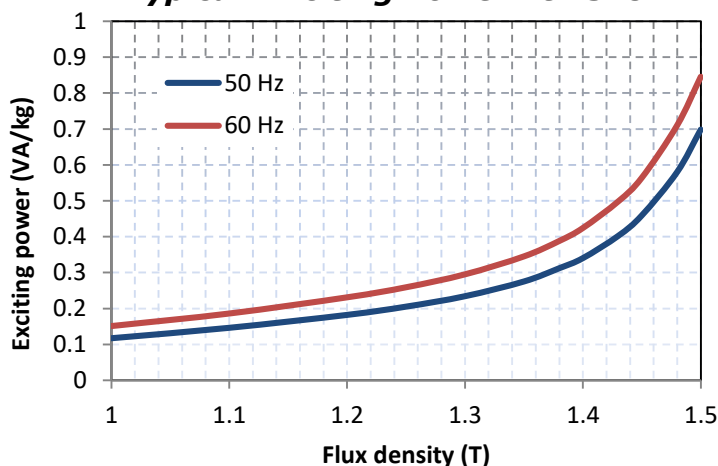
### Magnetic Properties

Saturation Induction (T)	Remnant Induction (T)	Coercivity, Hc (A/m)	Max DC Permeability	Electrical Resistivity (μΩm)	Curie Temperature (°C)	Magnetostriction (x10 <sup>-6</sup> )
	Annealed	Annealed	Annealed			
1.63	1.53	0.9	1,000,000	1.2	364	27

Typical Core Loss At 25°C\*\*



Typical Exciting Power At 25°C\*\*



\*\*DT Core Data – 142.2 mm wide ribbon

### Operating Flux Density

Design induction is dependent upon various considerations such as operating temperature, overvoltage requirements, sound level etc.

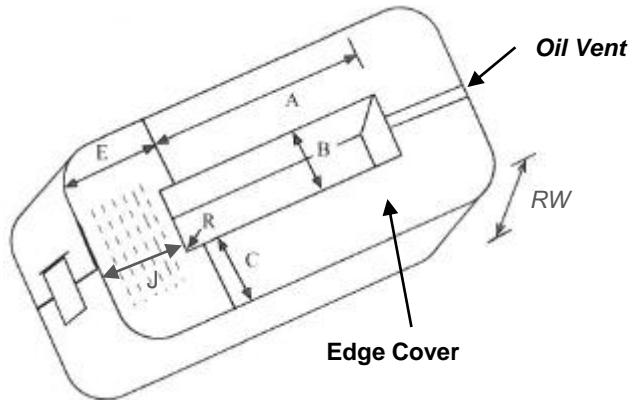
Typical Single Phase / Three Phase: **1.42 Tesla**



## Technical Bulletin

## Amorphous Metal Transformer Cores

### Core Design Specification Example



<b>Geometric Properties:</b>	<b>mm</b>	<b>Inches</b>
RW = Ribbon Width	170	6.7
A = Window Height (Nom.)	280	11.02
B = Window Width (Nom.)	100	3.94
C = Core Build	75	2.95
D = Core + Epoxy Cover Width	174	6.85
R = Window Radius (Nom.)	6.4	0.25
J = Maximum Build at Joint	93.8	3.69
Minimum Core Net Area	113.5 cm <sup>2</sup>	17.59 in <sup>2</sup>

### Nominal Properties:

Weight: 83.4 kg 183.9 lbs  
 Material: Metglas 2605HB1M

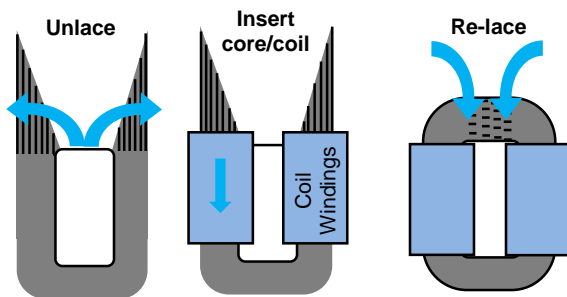
**Core Space Factor** - 89%

### Typical Magnetic Properties at 1.42 Tesla:

Frequency	50 Hz	60 Hz
Core Loss	0.20 Watts/kg	0.25 Watts/kg
Total Core Loss	16.5 Watts	20.8 Watts
Exciting Power	0.52 VA/kg	0.63 VA/kg
Total Exciting Power	43.3 VA	52.2 VA

Measurements taken without oil impregnation at ambient temperature.

### Core Coil Assembly Process



Core Coil Assembly process with Metglas Amorphous Metal Distribution Transformer cores is much easier compared to traditional silicon steel cores.

### Maximizing Core Performance

Lowest losses are achieved when the core is in its lowest stress conditions:

- Use magnets for lifting and handling cores
- Avoid supporting the coils on the core
- Avoid packing the coils forcefully against the cores
- Avoid overtightening of coil framing fixtures

### Core Packing

Metglas Cores are packed with three levels of protection: corrosion inhibiting paper, moisture resistant polyethylene barrier, and a rigid corrugated exterior. For maximum protection, cores should remain in original packaging until ready for assembly.

### Energy Savings and CO2 Reduction with Amorphous Metals

Metglas® amorphous alloys are earth-friendly, high technology materials for distribution transformers that can reduce no-load loss (standby electricity) in distribution transformers to about one-third the level compared to those using grain-oriented electrical steel. Worldwide use of amorphous metal-based transformers, therefore, will help us reduce fossil-fuel dependency and create a cleaner environment with higher air quality

**Metglas® 2605HB1M - Next Generation of Amorphous Transformer Core Alloy is made in America!**

[www.metglas.com](http://www.metglas.com)