

# Core Specifications

The high permeability 80% nickel-iron, Mu metal® type alloys are the materials used in the manufacture of high metering accuracy (HMA) current transformer cores. Close control of the magnetic properties over a wide flux density range permits the most economic design of the transformer for requirements in both ratio and phase angle error.

## Core Magnetic Guarantees

### Guaranteed relative permeability at 0.4m<sup>-1</sup> rms

Strip Thickness mm	Mumetal Type	Mumetal Plus-type	Super Mumetal-type
0.20	55,000	65,000	85,000
0.30	50,000	55,000	60,000

- Other guarantees may be given to meet specific customer requirements

## Dimensional Specifications

### Range of limiting core sizes

Strip Thickness mm	Minimum inside diameter mm	Maximum height mm	Minimum height mm
0.20	25	25	5.00
	30	40	5.00
	50	50	5.00
0.30	50	40	6.35
	70	50	6.35

## Dimensional tolerances

Outside diameter mm	Tolerance mm	Inside diameter mm	Tolerance mm	Height tolerance mm
> 25 to 50	± 0.80	> 25 to 50	± 0.50	± 0.50
> 50 to 150	± 1.25	> 50 to 150	± 0.80	± 0.80
> 150 to 300	± 2.00	> 150 to 300	± 1.50	± 1.50
> 300 to 500	± 3.00	> 300 to 500	± 2.50	± 2.50
> 500 to 700	± 4.00	> 500 to 700	± 3.50	± 3.50

## Material Properties

### Typical Magnetic Properties

Saturation Induction	(T)	0.77
Remanence from saturation	(T)	0.40
Curie temperature	(°C)	350

### Typical Physical Properties

Density	(kg m <sup>-3</sup> )	8,800
Resistivity	(μΩ m)	0.6
Coefficient of linear expansion	(x10 <sup>-6</sup> °C <sup>-1</sup> )	13
Thermal conductivity	(W m <sup>-1</sup> °C <sup>-1</sup> )	33
Specific heat capacity	(kJ kg <sup>-1</sup> °C <sup>-1</sup> )	0.46

## Notes

- Cores fabricated using 0.1mm thick strip can be supplied by prior arrangement
- Core maximum outside diameter is 900mm. However, cores may be supplied up to 1200mm diameter with reduced magnetic guarantees, subject to a minimum build-up limitation of 5% of the diameter
- Where cores are required with greater height they can be supplied in two or more sections.