

# Radiometal 4550

## Technical Datasheet



Service. Quality. Value.

### 45% Nickel-Iron Alloy

#### Typical Applications

- Toroidal cores and laminations
- Telecommunications transformers
- High performance motors
- Protection relays
- Servo valves and actuators
- Gas valves
- Missile systems
- Watch movements

#### Product Description

Radiometal 4550 has a nominal 45% nickel content and combines excellent permeability with high saturation flux density. The alloy is used to great advantage in sensitive relays which need to respond to very weak currents. It is also widely employed in transformers, chokes and special motors where the properties of silicon-iron do not provide the required magnetic performance. Material is supplied in the hot rolled condition. It should be noted that optimum magnetic properties in components are only achieved after heat treatment at 1,180°C in dry hydrogen – our laboratory can provide full details of the process. The density of this nickel-iron alloy is 8,250 kg/m<sup>3</sup>.

#### Material Specifications

Proprietary

#### Forming & Machining

Nickel-iron alloys are austenitic in structure and are therefore readily formable by bending, stretching and deep drawing. Machining is not difficult but it must be recognised that this type of material work hardens readily and care needs to be taken over the choice of tool geometry and material feeds, speeds and cutting fluids. We are able to provide recommendations.

#### Availability

Black, peeled or precision ground hot rolled bar.

#### Chemical Composition (weight %)

Weight (%)	C	Si	Mn	Ni	Fe
	0.025	0.25	0.30	45.50	Balance

#### Mechanical Properties (as supplied condition)

Tensile Strength, MPa	470
Hardness, HV	130

#### Minimum Magnetic Properties (after final heat treatment)

Magnetising field, H(A/m)	16	40	800	1600
Flux density, B(T)	0.50	0.90	1.40	1

Test certificates supplied with this alloy demonstrate that, when correctly heat treated, Radiometal 4550 has the capability to meet the above minimum values.

#### Technical Assistance

Our knowledgeable staff backed up by our resident team of qualified metallurgists and engineers, will be pleased to assist further on any technical topic.

#### UK Service Centres:

Smiths Belfast 02895 908 897  
Smiths Biggleswade 01767 604 704  
Smiths Birmingham 0121 728 4940  
Smiths Bristol 0117 971 2800  
Smiths Chelmsford 01245 466 664  
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#### Quality & Testing:



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