

# MICRON ALLOY CASTINGS LTD

## TECHNICAL DATA - Special Alloys 440C

### Description

This material will achieve the highest hardness of the available hardenable stainless steels. It possesses good corrosion resistance, particularly in the hardened and tempered condition. The material is magnetic in all conditions

### Heat Treatment

Material is usually supplied in the Annealed condition in order to aid machining.

Hardening should be carried out under vacuum conditions to avoid surface decarburisation and to maintain a clean bright product.

Preheat 760°C - 800°C

Austenitize 1010°C - 1065°C

Nitrogen gas quench 2 - 6 bar overpressure

As quenched hardness 60/62 HRc

To further enhance surface characteristics, post heat treatment nitriding may be carried out on this material. Typical depth achieved being 0.008/0.010"

### Applications

Widely used in the aerospace, chemical, petrochemical and food processing industries where toughness and hardness is a requirement together with corrosion and heat resistance.

Corrosion resistance is comparable to 304 stainless steel.

### Design Considerations

Section thicknesses from 10mm up can be cast satisfactorily in 440C. Designs with drastic changes in section should be avoided and uniform thickness maintained whenever possible.

### Summary of Properties

#### Chemical Composition %

C	Mn	Si	P	S	Cr
1.0	0.8	0.85	0.02	0.02	17.0

#### Physical Properties

Specific Gravity	8.05
Density g/cm <sup>3</sup>	7.70
Specific Heat (kJ/kg/°C)	0.46
Electrical Resistivity, microhms/cm <sup>3</sup>	80
Thermal Conductivity(W/m°C)	15

#### Mean Coefficient of Thermal Expansion

( cm/cm/°C x 10<sup>-6</sup> )

20 - 100°C	10.5
20 - 300°C	11.0
20 - 400°C	11.5

*Properties listed are typical of published laboratory tests and are intended as a guide only. This data should not be considered as guaranteed maximums or minimums. Materials should be tested under actual service conditions to determine their suitability for particular applications.*