

Alloy: **AA303**



Chemical Composition Limits:

Governing Specification:	AS 1874-2000
AAC Alloy Designation:	AA303

Hayes Metals Internal	D6303
Product Code(s):	

Element	Standard	
	Min %	Max %
Al	Remainder	
Si	4.0	5.0
Fe		0.8
Cu	2.0	4.0
Mn		0.7
Mg		0.15
Cr		0.10
Ni		0.30
Zn		0.50
Sn		0.15
Pb		0.15
Ti		0.20
Footnote: Fe + Mn not to exceed 1.3%		
Others - each		0.05
Total Others		0.20

Nearest Related Chemical Composition Specifications: (Guide only)

British Standard Alloy: **LM4**

Aluminium Association (US) **319**
Alloy Type:

German Alloy: **AlSi5Cu3**

Japanese (JIS) Alloy: **AC2A**

ISO Alloy: **AlSi5Cu3**

Mechanical Properties of Test Bars:

Temper	Casting Method	Tensile Strength (MPa)	
		Ult (min)	Ult (typ)
T1	Sand Casting	135	150
T6	Sand Casting	225	250
T1	Gravity Diecast	150	195
T6	Gravity Diecast	275	310

Yield (Mpa) (typ)	Elongation (% on 50 mm min)		Brinell Hardness (typ)
	(min)	(typ)	
85	1.5	2	70
140		1	100
95	2	3	80
165		2	110

Recommended Heat Treatment Method:

515°C for 4-12 hrs, quench in hot water (not less than 60°C). Age at 165°C for 6-18 hrs.

- Footnotes:**
1. Nominal metal temperature should be obtained as rapidly as possible and maintained within $\pm 5^\circ\text{C}$ during the time at temperature.
 2. For maximum effectiveness of solution heat treatment, quench water should be kept as low as possible consistent with a minimum of 60°C.

Typical Physical Properties:

Density kg/m ³ x 10 ³	Thermal Conductivity at 25°C W/m.K	Freezing Range Approx. °C	
		Solidus	Liquidus
2.77	121	525	625

Electrical Conductivity at 20°C %IACS Equal Volume	Average Coefficient of Thermal Expansion per °C
32	21.0

Relative Ratings: (Ratings: Excellent - Good - Fair - Unsuitable)

Corrosion Resistance	Weldability (see footnote 1)	Pressure Tightness	Machinability	Castability By Method of Casting		
				Sand Cast	Gravity Die	Pressure
Fair	Good	Good	Good	Good		

- Footnotes:**
1. Unsoundness in castings may adversely affect the weldability rating.
 2. Corrosion Resistance ratings refer to atmospheric corrosion.

Typical Uses / General Comments:

General purpose alloy with a moderate degree of strength used in general engineering purposes in such applications as pump bodies, crankcases, auto cylinder heads and blocks.

The alloy data given above has been prepared by Hayes Metals for use by its customers and associates as a guide to this alloy's typical properties. For editorial reasons the given specifications may not include all the minute details of the governing specification and therefore at any dispute or query, the relative original Specification should be consulted.