

SPECIFICATIONS

Commercial	5083
EN	5083

Aluminium 5083 is known for exceptional performance in extreme environments. 5083 is highly resistant to attack by both seawater and industrial chemical environments.

Alloy 5083 also retains exceptional strength after welding. It has the highest strength of the non-heat treatable alloys but is not recommended for use in temperatures in excess of 65°C.

Applications

Alloy 5083 is typically used in:

- ~ Shipbuilding
- ~ Rail cars
- ~ Vehicle bodies
- ~ Tip truck bodies
- ~ Mine skips and cages
- ~ Pressure vessels

Mechanical Properties shown are for O/H111 temper

CHEMICAL COMPOSITION

BS EN 573-3:2019 Alloy 5083	
Element	% Present
Magnesium (Mg)	4 - 4.9
Manganese (Mn)	0.4 - 1
Iron (Fe)	0.4 max
Silicon (Si)	0.4 max
Chromium (Cr)	0.05 - 0.25
Titanium (Ti)	0.15 max
Others (Total)	0.15 max
Copper (Cu)	0.1 max
Zinc (Zn)	0.1 max
Other (Each)	0.05 max
Aluminium (Al)	Balance

ALLOY DESIGNATIONS

Alloy 5083 corresponds to the following standard designations and specifications **but may not be a direct equivalent** :

- GM41
- A95083
- AIMG4.5Mn
- Al Mg4.5 Mn0.7

TEMPER TYPES

The most common tempers for 5083 aluminium are:

- O - Soft
- H111 - Some work hardening imparted by shaping processes but less than required for H11 temper
- H32 - Work hardened by rolling then stabilised by low-temperature heat treatment to quarter hard

SUPPLIED FORMS

- Plate
- Sheet

GENERIC PHYSICAL PROPERTIES

Property	Value
Density	265 g/cm ³
Melting Point	570 °C
Thermal Expansion	25 x10 ⁻⁶ /K
Modulus of Elasticity	72 GPa
Thermal Conductivity	121 W/m.K
Electrical Resistivity	0.058 x10 ⁻⁶ Ω .m

MECHANICAL PROPERTIES

BS EN 485-2:2008 Sheet 0.2 - 6.3mm Thick	
Property	Value
Proof Stress	125 Min MPa
Tensile Strength	275 - 350 MPa
Hardness Brinell	75 HB

Properties above are for material in the Soft O/H111 condition

Aluminium Alloy

5083 - 'O' - H111 Sheet and Plate

BS EN 485-2: 2008
Plate
6.3mm to 80mm

Property	Value
Proof Stress	115 Min MPa
Tensile Strength	270 - 345 MPa
Hardness Brinell	75 HB

Properties above are for material in the Soft O/H111 condition

BS EN 485-2: 2008
Plate
80mm to 120mm

Property	Value
Proof Stress	110 Min MPa
Tensile Strength	260 Min MPa
Hardness Brinell	70 HB
Elongation A	12 Min %

Properties above are for material in the Soft O/H111 condition

WELDABILITY

When welding 5083 to itself or another alloy from the same sub-group, the recommended filler metal is 5183. Other suitable fillers are 5356 and 5556.

Weldability – Gas: Average

Weldability – Arc: Excellent

Weldability – Resistance: Excellent

Brazability: Poor

Solderability: Poor

FABRICATION

Workability – Cold: Average

Machinability: Poor

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REVISION HISTORY

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