

## 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 573-3:2009 Alloy 5083	
Element	% Present
Magnesium (Mg)	4.00 - 4.90
Manganese (Mn)	0.40 - 1.00
Iron (Fe)	0.40 Typical
Silicon (Si)	0.0 - 0.40
Titanium (Ti)	0.05 - 0.25
Chromium (Cr)	0.05 - 0.25
Copper (Cu)	0.10 Typical
Others (Total)	0.0 - 0.15
Zinc (Zn)	0.0 - 0.10
Other (Each)	0.0 - 0.05
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 <sup>3</sup>
Melting Point	570 °C
Thermal Expansion	25 x10 <sup>-6</sup> /K
Modulus of Elasticity	72 GPa
Thermal Conductivity	121 W/m.K
Electrical Resistivity	0.058 x10 <sup>-6</sup> 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

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

## CONTACT

**Address:** Please make contact directly with your local service centre, which can be found via the Locations page of our web site  
**Web:** [www.aalco.co.uk](http://www.aalco.co.uk)

## REVISION HISTORY

**Datasheet Updated** 12 July 2016

## DISCLAIMER

This Data is indicative only and as such is not to be relied upon in place of the full specification. In particular, mechanical property requirements vary widely with temper, product and product dimensions. All information is based on our present knowledge and is given in good faith. No liability will be accepted by the Company in respect of any action taken by any third party in reliance thereon.

Please note that the 'Datasheet Update' date shown above is no guarantee of accuracy or whether the datasheet is up to date.

The information provided in this datasheet has been drawn from various recognised sources, including EN Standards, recognised industry references (printed & online) and manufacturers' data. No guarantee is given that the information is from the latest issue of those sources or about the accuracy of those sources.

Material supplied by the Company may vary significantly from this data, but will conform to all relevant and applicable standards.

As the products detailed may be used for a wide variety of purposes and as the Company has no control over their use; the Company specifically excludes all conditions or warranties expressed or implied by statute or otherwise as to dimensions, properties and/or fitness for any particular purpose, whether expressed or implied.

Advice given by the Company to any third party is given for that party's assistance only and without liability on the part of the Company. All transactions are subject to the Company's current Conditions of Sale. The extent of the Company's liabilities to any customer is clearly set out in those Conditions; a copy of which is available on request.