Technical Datasheet

AA 7003

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BRIEF DESCRIPTION

7003-S, high strength aluminium extruded profiles, are developed to combine high strength with good weldability. 7003-S was developed especially for welding since the final strength at the joints of the welded spot is only slightly lower than that of the base material. This alloy is used in air container equipment, railway carriages, truck fenders and other applications where the strength/weight ratio is highly valued.

PROCESSING METHODS

Weldability

- TIG/MIG excellent
  Filler alloy AA 5183
  AA 5356
- by resistance good

Anodizing

- technical good
- decorative moderate

Machinability excellent

Corrosion Behaviour

- good in inland atmosphere
- moderate in marine atmosphere

CORROSION

The alloy has an acceptable resistance to inter-crystalline and exfoliation corrosion in the delivery T5 temper. Note that corrosion resistance of
7003-S can be severely reduced by unsuitable finishing operations. In order to avoid problems, users of this alloy should contact their supplier

AVAILABILITY

7003 alloy profiles are heat treated according to ASTM B807 and available in temper T5, F and temper T0 (heat annealed) in the following dimensions:

Thickness	Max. length
1,5 - 10,0 mm	8000 mm

CHEMICAL COMPOSITION (weight %)

Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Zr
max. 0.01	max. 0.15	max. 0.05	0.20. 0.30	0.7 1.0	max. 0.1	5.8 6.1	max 0.05	max 0.15

Remainder is aluminum

PHYSICAL PROPERTIES (nominal values)

Density	2.77g/cm^3
Elastic Modulus	72000 MPa
Lin. thermal expansion coefficient (20°C-100°C)	23.8 10^{-6} K^{-1}
Electrical conductivity (Temper T5)	22 - 24 MS/m

MECHANICAL STRENGTH

Typical tensile properties (T5)

Thickness	Temper	Rm [MPa]	Rp0.2 [MPa]	A50 [%]
1.5 – 4.0 mm	T5	360	300	12

HEAT TREATMENT T0 -> T5 (according to ASTM B807)

The T0 temper has optimal formability properties and may be used for difficult bended products. After the product is formed, the T5 temper can be reached by a multiple heat treatment.
Info on the specific heat treatment is available upon request.
Please note that T0 material is subject to natural aging.

WELDING

7003 alloy is excellent for TIG/MIG welding methods. The strength level of welds increases by natural ageing and reaches after 3 months almost the T5 temper (quenched – artificially aged) level.

Heating the alloy can result in loss of strength and / or corrosion resistance. Whenever a new application of this alloy is contemplated, and if this application involves special properties such as corrosion resistance, toughness, fatigue strength, it is strongly recommended that the user should consult the producer in order to make a precise and appropriate selection of the material. The information in this publication does not imply a guarantee of properties or of capability for fabrication, assembly or application in a particular case. Euralco reserves the right to modify this data sheet without prior warning. This edition march 2005 replaces all previous editions.