

5182 Road Tanker Shate_{G1}

5182 RTS_{G1}

5182 Road Tanker Shate_{G1} (5182 RTS_{G1}) is Alcoa's new alloy for the construction of road tankers for storage and transportation of dangerous goods.

5182 RTS_{G1}, developed by Alcoa, is an improved version of the 5182, with properties that meet the latest requirements of the ADR (Agreement for transportation of Dangerous goods by Road) regulations.

With the $R_{m \times A}$ value of 7280, higher than the required minimum, the alloy guarantees excellent quality and improved safety. Tankers with a diameter less than 1,8 m can be produced in thicknesses starting from 4,0 mm, tankers with a bigger diameter can be produced in thicknesses starting from 5 mm (depending of the construction).



5182 RTS_{G1} technical data

CHEMICAL COMPOSITION

	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Others (%)	
									each	total
Min.	-	-	-	0.20	4.0	-	-	-	-	-
Max.	0.20	0.35	0.15	0.50	5.0	0.10	0.25	0.10	0.05	0.15

DIMENSIONAL RANGE

Product name	Thickness (mm)		Width (mm)		Length (mm)	
	Min	Max.	Min	Max.	Min.	Max
5182 RTS _{G1} Shate	4.0	8.0	980	2200**	800	9000*

* Higher than 9000 mm lengths maybe supplied upon request

** Wider than 2200 mm widths maybe supplied upon request

DIMENSIONAL TOLERANCES

Dimensional tolerances meet the requirements of EN 485-4 (cold rolled products) and EN14286 with the following exceptions:

■ Thickness tolerance

As standard, 5182 RTS_{G1} is produced with all-plus thickness tolerance with values shown in the table below. Plus/minus tolerance is also available if required. In order to ensure a better homogeneity of the tank walls, thickness variability has been reduced compared to the limits set out in EN 485-4 and EN 14286, and tighter tolerances maybe possible, subject to agreement.

Specified thickness (mm)		Specified width (mm)			
Above	Below or equal to	Below or equal to 1250	Above 1250 and below or equal to 1600	Above 1600 and below or equal to 2000	Above 2000 and below or equal to 2400
4.0	5.0	+ 0.22 - 0	+ 0.24 - 0	+ 0.24 - 0	+ 0.26 - 0
5.0	6.0	+ 0.24 - 0	+ 0.24 - 0	+ 0.26 - 0	+ 0.26 - 0
6.0	8.0	+ 0.30 - 0	+ 0.30 - 0	+ 0.32 - 0	+ 0.38 - 0

■ Other dimensions

Tighter tolerances than the EN 485-4 standard values, subject to agreement.

MECHANICAL PROPERTIES

The following chart compares the minimum tensile values of 5182 RTS_{G1} to other commonly used products used for Road Tanker manufacture.

Alloy/Product	Temper	R _m (MPa)	R _{p0.2} (MPa)	A ⁽²⁾ (%)	R _m x A _s
EN AW - 5086*	0/H111	≥ 240	≥ 100	≥ 18	≥ 4320
EN AW - 5083*	0/H111	≥ 290	≥ 145	≥ 17	≥ 4930
EN AW - 5186/5182*	0/H111	≥ 275	≥ 125	≥ 24	≥ 6600
5182 RTS_{G1}	0/H111	≥ 280	≥ 125	≥ 26	≥ 7280

*) Mechanical properties according to EN14286 : 2004

1) Mechanical properties obtained from tensile testing according to EN 10002-1 standard at ambient temperature on samples taken on the long transverse.

2) The elongation is measured using an original gauge length (flat sample) which is calculated with the formula $L_0 = 5.65 \sqrt{S_0}$ (where S_0 is the initial section of the sample).

TYPICAL PHYSICAL PROPERTIES

Density	2.65 x 10 ³ kg/m ³
Average Coefficient of Thermal Expansion (20 - 100 °C)	24.1 x 10 ⁻⁶ per °C
Approximate Melting Range	580 - 640 °C
Thermal Conductivity	123 W/m °C (at 25 °C)
Modulus of Elasticity	71 GPa
Poisson's ratio	0.33

BENDING CAPABILITY

5182 RTS, 0/H111 sheets are capable of being bent cold through an angle of 90° or 180°, as applicable, around a pin having a radius equal to k times the thickness (t) of the sheet without cracking (see table below).

Product	Thickness (mm)	Minimum bending radii	
		180°	90°
5182 RTS _{G1}	4.0 - 8.0	1.5t	1.0t

WELDING CAPABILITY

5182 RTS_{G1} 0/H111 is capable of being fusion welded by a variety of methods such as TIG (GTA-W), MIG (GMA-W), Electron Beam and Spot Welding.

Using 5183 filler alloy, mechanical properties in the heat affected zone for butt welds equal the minimum specified in EN 14286:2004 for the parent material.