BlueScope Distribution

Aluminium 5251 Data Sheet

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5251 Overview

Alloy 5251 is a non-heat treatable rolled product supplied as either sheet or coil. 5251 is stronger than 5005 and is used in applications requiring more structural integrity or impact resistance. 5251 has excellent corrosion resistance, medium static strength, medium to high fatigue strength, good weldability and very good corrosion resistance especially in marine applications.

5251 Mass Conversion Factor: Kilograms (kg) per mm per square metre = 2.70kg

Common Applications

5251 is ideal for general fabrication and manufacturing in both industrial and commercial building applications. Products include marine products such as “tinnies” and marine componentry, boiler making and pressure vessels, fuel tanks, containers, road signs, architectural panelling and irrigation.

The most common tempers for 5251 rolled aluminium are “H32 – ¼ Hard” & “H38 – Full Hard” though both “H34 - 1/2 Hard” and “H36 - 3/4 Hard” are included as alternative tempers.

Welding

5251 has excellent weldability by all standard methods especially with GMAW (MIG) and GTAW (TIG). Filler alloy 4043 and 5356 are common filler alloys dependant on alloy joining combinations.

Machining

Machinability of 5251 is good whereby the workability improves as tempers harden. Accuracy of machining is managed with high speeds, ample lubrication, sharp tools, positive rakes, adequate clearance and continuous cutting.

Similar Products

Alloy 5052 may be offered as a substitute to 5251 as its more readily available in Australia. These two alloys are similar in composition chemically and mechanically, and are often functionally interchangeable, however they are different allows and therefore need to be considered on a fit for purpose basis by the purchaser. Alloy 5005 has lower strength than 5052 whereas 5083 is stronger.

Chemical Composition Specification (%) Single values are maxima except as noted										
Alloy	**Si**	**Fe**	**Cu**	**Mn**	**Mg**	**Cr**	**Zn**	**Ti**	**Other**	
									Each	Total
5052	0.25	0.40	0.10	0.10	2.2-2.8	0.15-0.35	0.10	-	0.05	0.15
5251	0.40	0.50	0.15	0.1-0.5	1.7-2.4	0.15	0.15	0.15	0.05	0.15

Mechanical Property Specification - Single values are maxima except as noted							
Alloy and Temper	Thickness mm		Tensile Strength				Elongation (% min in 50mm)
			Ultimate		Yield		
	Over	Up to	Min	Max	Min	Max	
5052-O	1.2	6.3	170	215	65	-	19
5052-H32	0.63	50	215	265	160	-	5-11
5052-H38	0.63	3.2	270	-	220	-	4
5251-O	0.63	75	170	215	65	-	15-20
5251-H32	0.63	50	200	255	130	-	5-11
5251-H34	1.3	25	230	275	180	-	6-8
5251-H36	0.8	4	250	295	210	-	4
5251-H38	0.8	3.25	260	-	225	-	4

Standards Referenced

AS/NZS 1734:1997 Reconfirmed 2020 – Aluminium and aluminium alloys – Flat sheet, coiled sheet and plate.

ASTM B209M-14 – Aluminum and Aluminum Alloy Sheet and Plate