BlueScope Distribution

Aluminium 5052 Data Sheet

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5052 Overview

Alloy 5052 is a non-heat treatable rolled product supplied as either sheet or coil. 5052 is stronger than 5005 and is used in applications requiring more structural integrity or impact resistance. 5052 has excellent corrosion resistance, medium static strength, medium to high fatigue strength, good weldability and very good corrosion resistance especially in marine applications. It was low density and excellent thermal conductivity.

5052 Mass Conversion Factor: Kilograms (kg) per millimeter per square metre = 2.70kg (Flat Rolled Only)

Common Applications

5052 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 5052 aluminium rolled are “H32” & “H38” and aluminium mill finish 5BAR tread plate is “O” whereby:

- H32 is ¼ Hard
- H38 is Full Hard
- O is Soft Annealed

Welding

5052 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 5052 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 5251 may be offered as a substitute to 5052. These two alloys are similar in composition chemically and mechanically, and are often functionally interchangeable, however they are different alloys and therefore need to be considered on a fit for purpose basis by the purchaser. 5005 is softer and 5083 is harder than 5052.

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	3.20	270	-	220	-	4
5251-H32	0.5	50	200	255	130	-	5-11
5251-H38	0.2	3.25	260	-	225	-	3-4

Bend radii

Recommended Minimum Bend Radii for 90-Degree Cold Forming of Sheet of 5052 (Reference test method - ASTM E290) Thickness (t)					
Temper	0.8mm	1.6mm	3.2mm	4.8mm	6.0mm
O	-	0t	½t	1t	1t
H32	0t	1t	1½t	1½t	1½t
H38	1½t	2½t	3t	-	-

Bend radii listed are minimum recommendations only for bending sheets without fracture. Application method based on cold forming in a standard press brake with air bend dies. Alternative types of bending operations may require larger radii or smaller radii. Tooling quality and design may vary radii outcomes. No bend radii standards available for 5251, which may be offered as a substitute for 5052.

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

ASTM E290 – Bend Radii reference test method