
Aluminium 5383 Data Sheet

5383 Overview

5383 aluminium plate is an upgrade on alloy 5083 optimising the productivity of ship building and the performance of vessels. 5383 aluminium plate has a higher resistance to corrosion, and increased durability. 5383 has increased mechanical properties resulting in up to 10% increase in strength as compared to 5083 and providing performance improvements by reducing the number of welding vessels or scantlings and increasing the welded structure yield point by up to 15%. 5383 is suitable for small to large vessels where high stress, minimal weight management and yield gain are important.

5383 Mass Conversion Factor: Kilograms (kg) per millimeter per square metre = 2.66kg

Machining

5383 has fair to good machinability. Harder tempers = good whereas softer tempers = fair.

Welding

5383 has excellent weldability by all standard methods especially with GMAW (MIG) and GTAW (TIG). Filler alloy 5356 is the most common filler alloy dependent on alloy joining combinations. Other 5xxx series filler alloys are available producing varying strengths.

Corrosion Resistance

Marine grade 5383 is tested per ASTM B928 to ensure product exhibits no evidence of exfoliation corrosion. Intergranular corrosion (IGC) and stress corrosion (SCC) tests (Interacid test ASTM G44 and G67) as well as ASSET tests (ASTM G66) on base and welded metal samples of 5383 show significantly better corrosion resistance than standard 5083-H116. Accelerated (artificial ageing for 7 days at 100C) and natural exposure (marine atmosphere and immersion) have proven the long-term corrosion resistance of 5383 to be a marked improvement on that of 5083-H116 / H321.

Certified Accreditation

5383 sheet and plate has been approved by several classification societies including American Bureau of Shipping, USA (ABS); Bureau Veritas, France (BV); Det Norske Veritas, Norway (DNV); Germanischer Lloyd, Germany (GL); Lloyd's Register of Shipping, UK (LR); Nippon Kaiji Kyokai, Japan (Class NK); and Registro Italiano Navale, Italy (RINA).

Chemical Composition Specification (%) Single values are maxima except as noted

Alloy	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Other	
									Each	Total
5083	0.40	0.40	0.10	0.40-1.0	4.0-4.9	0.05-0.25	0.25	0.15	0.05	0.15
5383	0.25	0.25	0.20	0.70-1.0	4.0-5.2	0.25	0.40	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)
	Over	Up to	Ultimate Rm (MPa)		Yield Rp (MPa)		
			Min	Max	Min	Max	
5083-0	1.2	40	275	350	125	200	16
5083-H321	3	40	305	385	215	295	10
5083-H116	3	40	305	-	215	-	10
5383-H321	3	50	305	380	220	-	10
5383-H116	3	50	305	-	220	-	10

Bend radii

Recommended Minimum Bend Radii for 90-Degree Cold Forming of Sheet of 5383 (Reference test method - ASTM E290) Thickness (t)

Temper	3mm-6mm	6mm - 12.5mm	12.5mm – 40mm
O	1.5t	-	-
H111	-	2.5t	-
H321	2t	2.5t	4t
H116	2t	2.5t	4t

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.

Standards Referenced

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

ASTM B209M – 14. Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

ASTM B928M-09 - Standard Specification For High Magnesium Aluminum-Alloy Sheet And Plate For Marine Service And Similar Environments

ASTM G66 - Standard Test Method for Visual Assessment of Exfoliation Corrosion Susceptibility of 5XXX Series Aluminum Alloys (ASSET Test)

ASTM G67 -Standard Test Method for Determining the Susceptibility to Intergranular Corrosion of 5XXX Series Aluminum Alloys by Mass Loss After Exposure to Nitric Acid (NAMLT Test)

ASTM G44 - Standard Practice for Exposure of Metals and Alloys by Alternate Immersion in Neutral 3.5 % Sodium Chloride Solution

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