



BRODER METALS GROUP Alloy 625

Alloy 625, a Nickel Alloy grade, combines nickel, chromium and molybdenum, giving high strength (from room temperature to 816°C), ease of fabrication, and excellent corrosion resistance.

Alloy 625 is particularly useful in situations where oxidation resistance and avoidance of pitting is required. In the annealed condition, Alloy 625 is fully austenitic and is suitable for machining.

Alloy 625 can be hot or cold worked (although as it does work harden, intermediate heat treatments are advisable), formed and welded.

Broder Metals Group stock Alloy 625 in the annealed condition to provide good strength and hardness, and typical applications are where contact with sea water and other harsh chemical environments and high mechanical stresses apply.

We stock the following Specifications:

ASTM B446-03 Grade 1,
UNS N06625 GRADE 1/DIN 2.4856
AMS 5666 REV F BS3076 1989 NA21
NACE MR0175 (ISO 15156-3, latest revision)

We can convert to ASTM B446-03 Grade 2 – please enquire

Our size range is as follows:

6 mm	10 mm	12 mm	12.7 mm	15.87 mm
15.87 mm	19.05 mm	20 mm	25.4 mm	28.575 mm
31.75 mm	34.925 mm	38.1 mm	40 mm	44 mm
44.45 mm	50.8 mm	53.975 mm	57.15 mm	63.5 mm
69.85 mm	76.2 mm	88.9 mm	94 mm	101.6 mm

Larger sizes are stocked for specific customers – please enquire

We can also supply rings and bored bar – please contact us with your requirements.
Material is made with a fine grained melting method practice.

+44 (0)114 232 9241



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Technical data

Material is made with a fine grained melting method practice.

Chemistry - nominal percentages:

	C	Mn	Si	P	S	Cr	Ni	Mo	Ti	Al	Co	Fe	Nb
Min	-	-	-	-	-	20.0	58.0	8.00	-	-	-	-	.15
Max	0.10	0.50	0.50	0.01 5	0.01 5	23.0	Bal	10.0	0.40	0.40	1.0	5.0	4.15

Heat Treatment

Furnaces meet the requirements of at least one of the following:

AMS-H-6875*

Annex P, API 6A (19th ed)*

MIL-STD-1984

BS 2M 54

* also including temperature uniformity requirements of AMS 2750.

Material temperature is measured by use of either a contact surface thermocouple or a heat sink as described in ISO 10423.

Type	Temperature	Cycle time	Cooling Method
Anneal	871-1038 degrees C	Not less than ½ hour and not more than 4 hours at temperature, but sufficient time to achieve the mechanical properties	Air Cool or liquid quench
If material fails to meet required hardness or strength levels only:			
Age harden	718-746 degree C	7-8 hours	Furnace cool at approx 56 degree C to 607-635 degrees C
Age harden	607-635 degrees C	7-9 hours	Air Cool

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Mechanical Data

Up to 4" (100 mm)	@ Room Temperature
Tensile Strength	120 Ksi (828 Mpa) minimum
Yield Strength (0.2% offset stress)	60 Ksi (414 Mpa) minimum
Elongation in 2in. min %	30.00%
Reduction in area min %	35.00%
Charpy V-notch test	At or below -60 deg C in longitudinal and the transverse direction where the section size permits. Pass Values: Longitudinal: Average of 3 tests impact value – 42 Joules minimum Single impact value – 33 Joules minimum. Transverse: Average of 3 tests impact value – 21 Joules minimum Single impact value – 14 Joules minimum
Hardness	2 Brinell hardness tests, one on a test piece and one on the product. Pass value 187-321 HB.
Between 4" (100 mm) and 10" (250 mm)	
@ Room Temperature	
Tensile Strength	110 Ksi (758 Mpa) minimum
Yield Strength (0.2% offset stress)	60 Ksi (414 Mpa) minimum
Elongation in 2in. min %	30.00%
Reduction in area min %	35.00%
Charpy V-notch test	At or below -60 deg C in longitudinal and the transverse direction where the section size permits. Pass Values:

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Charpy notch test (continued)	Longitudinal: Average of 3 tests impact value – 42 Joules minimum Single impact value – 33 Joules minimum. Transverse: Average of 3 tests impact value – 21 Joules minimum Single impact value – 14 Joules minimum
Hardness	2 Brinell hardness tests, one on a test piece and one on the product. Pass value 187-321 HB.

Alloy 625 is just one of a range of corrosion resistant materials stocked by Broder Metals Group Ltd – please see our website for the full range stocked: www.broder-metals-group.com

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