

# ASTM B575 / ASME SB575

## Standard Specification for Low-Carbon Nickel-Chromium-Molybdenum, Low-Carbon-Nickel-Chromium-Molybdenum-Copper, Low-Carbon Nickel-Chromium-Molybdenum-Tantalum, Low-Carbon Nickel-Chromium-Molybdenum-Tungsten, and Low-Carbon Nickel-Molybdenum-Chromium Alloy Plate, Sheet, and Strip

This specification covers plate, sheet, and strip of low-carbon nickel-chromium-molybdenum alloys (UNS N10276, N06022, N06455, N06035, UNS N06058, UNS N06059), low-carbon nickel-chromium-molybdenum-copper alloy (UNS N06200), low-carbon nickel-molybdenum-chromium (UNS N10362), low-carbon nickel-chromium-molybdenum-tantalum alloy (UNS N06210), and low-carbon nickel-chromium-molybdenum-tungsten alloy (UNS N06686) as shown in Table 1, for use in general corrosive service.

The following products are covered under this specification:

Sheet and Strip—Hot or cold rolled, solution annealed, and descaled unless solution anneal is performed in an atmosphere yielding a bright finish.

Plate—Hot or cold rolled, solution annealed, and descaled.

### A. General Requirements :-

1. Material furnished to this specification shall conform to the applicable requirements of Specification B906 unless otherwise provided herein.

### B. Chemical Composition :-

The material shall conform to the composition limits specified in Table 1.

**Table 1**

Element	Alloy N06035	Alloy N10276	Alloy N06022	Alloy N06455	Alloy N06059	Alloy N06058	Alloy N06200	Alloy N06210	Alloy N10362	Alloy N06686
Molybdenum	7.60–9.00	15.0–17.0	12.5–14.5	14.0–17.0	15.0–16.5	18.5–21.0	15.0–17.0	18.0–20.0	21.5–23.0	15.0–17.0
Chromium	32.25–34.25	14.5–16.5	20.0–22.5	14.0–18.0	22.0–24.0	20.0–23.0	22.0–24.0	18.0–20.0	13.8–15.6	19.0–23.0
Iron	2.00max	4.0–7.0	2.0–6.0	3.0max	1.5max	1.5max	3.0max	1.0max	1.25max	5.0max
Tungsten	0.60max	3.0–4.5	2.5–3.5	...	...	0.3max	...	...	...	3.0–4.4
Cobalt, max	1.0	2.5	2.5	2.0	0.3	0.3	2.0max	1.0	...	...
Carbon, max	0.05	0.01	0.015	0.015	0.01	0.01	0.01	0.015	0.01	0.01
Silicon, max	0.6	0.08	0.08	0.08	0.10	0.10	0.08	0.08	0.08	0.08
Manganese,	0.5	1.0	0.5	1.0	0.5	0.5	0.5	0.5	0.6	0.75

max										
Vanadium, max	0.2	0.35	0.35	...	...	...	...	0.35	...	...
Phosphorus, max	0.03	0.04	0.02	0.04	0.015	0.02	0.025	0.02	0.025	0.04
Sulfur, max	0.015	0.03	0.02	0.03	0.01	0.01	0.01	0.02	0.01	0.02
Titanium	...	...	...	0.7max	...	...	...	...	...	0.02-0.25
Nickel	remainder <sup>A</sup>	remainder <sup>A</sup>	remainder <sup>A</sup>	remainder <sup>A</sup>	Bal	Bal	remainder <sup>A</sup>	remainder <sup>A</sup>	remainder <sup>A</sup>	remainder <sup>A</sup>
Aluminum	0.40max	...	...	...	0.1-0.4	0.10-0.30	0.50max	...	0.50max	...
Copper	0.30max	...	...	...	0.50max	0.30max	1.3-1.9	...	...	...
Tantalum	...	...	...	...	...	...	...	1.5-2.2	...	...

<sup>A</sup> Shall be determined arithmetically by difference.

**C. Mechanical Properties and Other Requirements :-**

1. Tensile Properties—The material shall conform to the room temperature tensile properties prescribed in Table 2.
2. Hardness—The hardness values given in Table 2 are informative only.
3. Grain Size for Sheet and Strip—Sheet and strip shall conform to the grain sizes as illustrated in Plate 1 of Test Methods E112. The requirements shall be as indicated in Table 3.

**Table 2**

Alloy	Tensile Strength, min, psi (MPa)	Yield Strength (0.2 % Offset), min, psi (MPa)	Elongation in 2 in. (50.8 mm) or 4D <sup>A</sup> min, %	Rockwell Hardness, <sup>B</sup> max
N10276	100000 (690)	41000 (283)	40	100 HRB
N06022	100000 (690)	45000 (310)	45	100 HRB
N06455	100000 (690)	40000 (276)	40	100 HRB
N06035	85000 (586)	35000 (241)	30	100 HRB
N06058	110000 (760)	52000 (360)	40	100 HRB
N06059	100000 (690)	45000 (310)	45	100 HRB
N06200	100000 (690)	45000 (310)	45	100 HRB
N10362	105000 (725)	45000 (310)	40	100 HRB
N06686	100000 (690)	45000 (310)	45	100 HRB
N06210	100000 (690)	45000 (310)	45	100 HRB

<sup>A</sup> *D* refers to the diameter of the tension specimen.

<sup>B</sup> Hardness values are shown for information purposes only and are not to be used as a basis of acceptance or rejection. For approximate hardness conversions, see Hardness Conversion Tables E140.

**Table 3**

Thickness, in. (mm)	ASTM Micro grain Size Number	Average Grain Diameter, mm (in. )
0.125 (3.175) and under	3.0 or finer	0.127 (0.0050)
Over 0.125 (3.175)	1.5 or finer	0.214 (0.0084)

**D. Weight :-**

For calculations of mass or weight, the following densities shall be used:

Alloy	Density	
	lb/in. <sup>3</sup>	g/cm <sup>3</sup>
N10276	0.321	(8.87)
N06022	0.314	(8.69)
N06455	0.312	(8.64)
N06035	0.296	(8.18)
N06058	0.318	(8.8)
N06059	0.311	(8.6)
N06200	0.307	(8.5)
N06210	0.316	(8.76)
N10362	0.319	(8.83)
N06686	0.315	(8.73)

**E. Length :-**

1. Plate—Permissible variations in the length of rectangular plate shall be as prescribed in Specification B906.
2. Sheet and Strip—Sheet and strip may be ordered to cut lengths, in which case a variation of 1/8 in. (3.175 mm) over the specified length shall be permitted, with a 0 minus tolerance.

**Related Keywords**

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