ASTM A387/A387M

ASTM A387/A387M Standard Specification for Pressure Vessel Plates, Alloy Steel, Chromium-Molybdenum

ASTM A387/A387M specification covers chromium-molybdenum alloy steel plates for welded broilers and pressure vessels designed for elevated temperature service. Materials considered under ASTM A387/A387M specification are available in grades 2, 12, 11, 22, 22L, 21, 21L, 5, 9 and 91. The steel materials shall be killed and shall be thermally treated. The steel specimens shall undergo heat analysis and product analysis and shall conform to the chemical requirements for carbon, manganese, phosphorus, sulfur, silicon, chromium, molybdenum, nickel, vanadium, columbium, boron, nitrogen, aluminum, titanium, and zirconium. The steel specimens shall also undergo tension tests and shall conform to the required values of tensile strength, yield strength, and elongation.

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Standard:ASTM A387/A387M

Grade : SA387 GR 2, 12, 11, 22, 21, 5, 9, 91 Class 1 or 2.

Thickness : 8mm -260mm

Width : 1000mm-4000mm

Length : 1000mm-20000mm

MOQ: 1 PC

Product type : Steel plate

Delivery time : Promptly (Stock) or 10-40 days (Production)

Stock : Available

MTC: Available

Delivery condition: Quenched and Tempered

TABLE 1 Chemical Requirements

Element	Composition, %										
	Grade 2	Grade 12	Grade 11	Grade 22	Grade 22L	Grade 21	Grade 21L	Grade 5	Grade 9	Grade 91	Grade 911
Carbon:											
Heat analysis	0.05–0.21	0.05–0.17	0.05–0.17	0.05–0.15[A]	0.10 max	0.05–0.15[A]	0.10 max	0.15 max	0.15 max	0.08–0.12	0.09–0.13
Product analysis	0.04–0.21	0.04–0.17	0.04–0.17	0.04–0.15[A]	0.12 max	0.04–0.15[A]	0.12 max	0.15 max	0.15 max	0.06–0.15	0.08–0.14
Manganese:											
Heat analysis	0.55–0.80	0.40–0.65	0.40–0.65	0.30–0.60	0.30–0.60	0.30–0.60	0.30–0.60	0.30–0.60	0.30–0.60	0.30–0.60	0.30–0.60
Product analysis	0.50–0.88	0.35–0.73	0.35–0.73	0.25–0.66	0.25–0.66	0.25–0.66	0.25–0.66	0.25–0.66	0.25–0.66	0.25–0.66	0.25–0.66
Phosphorus, max:											
Heat analysis	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.030	0.020	0.020
Product analysis	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.030	0.025	0.025
Sulfur, max:											
Heat analysis	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.030	0.030	0.010	0.010
Product analysis	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.030	0.030	0.012	0.012
Silicon:											
Heat analysis	0.15–0.40	0.15–0.40	0.50–0.80	0.50 max	0.50 max	0.50 max	0.50 max	0.50 max	1.00 max	0.20–0.50	0.10–0.50
Product analysis	0.13–0.45	0.13–0.45	0.44–0.86	0.50 max	0.50 max	0.50 max	0.50 max	0.55 max	1.05 max	0.18–0.56	0.08–0.56
Chromium:											
Heat analysis	0.50–0.80	0.80–1.15	1.00–1.50	2.00–2.50	2.00–2.50	2.75–3.25	2.75–3.25	4.00–6.00	8.00–10.00	8.00–9.50	8.50–10.50
Product analysis	0.46–0.85	0.74–1.21	0.94–1.56	1.88–2.62	1.88–2.62	2.63–3.37	2.63–3.37	3.90–6.10	7.90–10.10	7.90–9.60	8.40–10.70
Molybdenum:											
Heat analysis	0.45–0.60	0.45–0.60	0.45–0.65	0.90–1.10	0.90–1.10	0.90–1.10	0.90–1.10	0.45–0.65	0.90–1.10	0.85–1.05	0.90–1.10
Product analysis	0.40–0.65	0.40–0.65	0.40–0.70	0.85–1.15	0.85–1.15	0.85–1.15	0.85–1.15	0.40–0.70	0.85–1.15	0.80–1.10	0.85–1.15
Nickel, max:											
Heat analysis	...	...	...	...	...	...	...	...	...	0.40	0.40
Product analysis	...	...	...	...	...	...	...	...	...	0.43	0.43
Vanadium:											
Heat analysis	...	...	...	...	...	...	...	...	...	0.18–0.25	0.18–0.25
Product analysis	...	...	...	...	...	...	...	...	...	0.16–0.27	0.16–0.27
Columbium:											
Heat analysis	...	...	...	...	...	...	...	...	...	0.06–0.10	0.060–0.10
Product analysis	...	...	...	...	...	...	...	...	...	0.05–0.11	0.05–0.11
Boron:											
Heat analysis	...	...	...	...	...	...	...	...	...	...	0.0003–0.006
Product analysis	...	...	...	...	...	...	...	...	...	...	0.0002–0.007
Nitrogen:											
Heat analysis	...	...	...	...	...	...	...	...	...	0.030–0.070	0.04–0.09
Product analysis	...	...	...	...	...	...	...	...	...	0.025–0.080	0.035–0.095
Aluminum, max:											
Heat analysis	...	...	...	...	...	...	...	...	...	0.04	0.04
Product analysis	...	...	...	...	...	...	...	...	...	0.05	0.05
Tungsten:											
Heat analysis	...	...	...	...	...	...	...	...	...	...	0.90–1.10
Product analysis	...	...	...	...	...	...	...	...	...	...	0.85–1.15

[A] The carbon content for plates over 5 in. [125 mm] in thickness is 0.17 max on product analysis.

TABLE 2 Tensile Requirements for Class 1 Plates

	Grades 2 and 12	Grade 11	Grades 22, 21, 5, 9, 21L, 22L
Tensile strength, ksi [MPa]	55 to 80 [380 to 550]	60 to 85 [415 to 585]	60 to 85 [415 to 585]
Yield strength, min, ksi [MPa]	33 [230]	35 [240]	30 [205]
Elongation in 8 in. [200 mm], min, %[A]	18	19	...
Elongation in 2 in. [50 mm], min, %[A]	22	22	18
Reduction of area, min, %	...	...	45[B] 40[C]

[A] See Specification A 20/A 20M, elongation adjustments.
[B] Measured on round test specimens.
[C] Measured on flat specimen.

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TABLE 3 Tensile Requirements for Class 2 Plates[A]

	Grade 2	Grade 11	Grade 12	Grades 22, 21, 5, 9	Grade 91	Grade 911
Tensile strength, ksi [MPa]	70 to 90 [485 to 620]	75 to 100 [515 to 690]	65 to 85 [450 to 585]	75 to 100 [515 to 690]	85 to 110 [585 to 760]	90 to 120 [620 to 840]
Yield strength, min, ksi [MPa]/(0.2 % offset)	45 [310]	45 [310]	40 [275]	45 [310]	60 [415]	64 [440]
Elongation in 8 in. [200 mm], min, %[B]	18	18	19	...	...	...
Elongation in 2 in. [50 mm], min, %[B]	22	22	22	18	18	18
Reduction of area, min, %	...	...	...	45[C] 40[D]	...	...

[A] Not applicable to annealed material.
[B] See Specification A 20/A 20M, elongation adjustments.
[C] Measured on round test specimens.
[D] Measured on flat specimen.

We are professional ASME SA387 and ASTM A387 steel stockist and supplier. We can supply different product type and steel grades like grade 2, grade 12, grade 11, grade 22, grade 22L, grade 21, grade 21L, grade 5 , grade 9 , grade 91 steel.If you have any need of ASME SA387 or ASTM A387 steel please do not hesitate to contact us .

ASME SA387

ASME SA387 Grade 2 ,ASME SA387 Grade 12 ,ASME SA387 Grade 22 ,ASME SA387 Grade 11 , ASME SA387 Grade 22L , ASME SA387 Grade 21 , ASME SA387 Grade 21L , ASME SA387 Grade 5 , ASME SA387 Grade 9 , ASME SA387 Grade 91

ASME SA387 Grade 11 Class 1 , ASME SA387 Grade 11 Class 2

ASME SA387 Grade 22 Class 1 , ASME SA387 Grade 22 Class 2

ASTM A387 Grade 2 ,ASTM A387 Grade 12 ,ASTM A387 Grade 22 ,ASTM A387 Grade 11 , ASTM A387 Grade 22L , ASTM A387 Grade 21 , ASTM A387 Grade 21L , ASTM A387 Grade 5 , ASTM A387 Grade 9 , ASTM A387 Grade 91

ASTM A387 Grade 11 Class 1, ASTM A387 Grade 11 Class 2

ASTM A387 Grade 22 Class 1, ASTM A387 Grade 22 Class 2

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