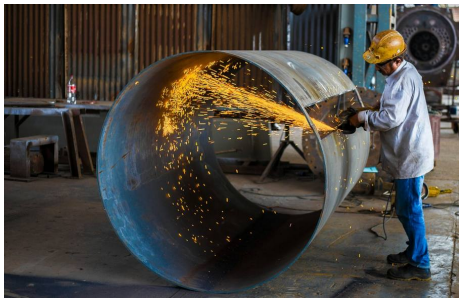
ALLOY STEEL Advanced Materials. Engineered for Performance.

SA387 Grade 91 Class 2



Alloy Steel | ASTM / ASME: A387 / SA387 Grade 91 Class 2 | EN: X10CrMoVNb9-1 / 1.4903

Modified 9Cr-1Mo-V (Grade 91) plate. Vanadium and niobium micro-alloying gives roughly twice the creep rupture strength of Grade 22 at 550 - 600 C, enabling thinner, lighter pressure parts in supercritical steam and high temperature process plant. Heat treatment and PWHT control are critical and are recorded on the certificate.

Stock status: Mill indent - Typical lead time: 4 - 8 weeks mill indent

Key features

- Chromium-molybdenum creep strength at elevated temperature
- Resistance to hydrogen attack (Nelson curve service)
- Supplied normalised and tempered with simulated PWHT on request
- Ultrasonic testing to SA578 and through-thickness Z grades available

Available forms & sizes

Form	Size range
Plates	6 - 150 mm thk, up to 3000 mm wide, N or Q+T
Flanges	1/2" - 24", 150# - 2500#, F11 / F12 / F22 / F5 / F9 / F91
Fittings	1/2" - 24" butt weld fittings, WP11 / WP22 / WP91

Chemical composition (%)

Element	Min	Max
C	0.08	0.12
Cr	8.00	9.50
Mo	0.85	1.05
V	0.18	0.25
Nb	0.06	0.10
N	0.030	0.070

Mechanical properties

Property	Value	Unit
Yield Strength (0.2%)	415 min	MPa

Property	Value	Unit
Tensile Strength	585 - 760	MPa
Elongation	18 min	%
Condition	Normalised and tempered	-

Physical properties

Property	Value	Unit
Density	7.85	g/cm3
Max Service Temperature	550 - 650 depending on grade	C

Standards

ASTM A387 / ASME SA387 Class 2, ASME Section II Part A, EN 10028-2, EN 10204 3.1 / 3.2

Equivalent grades

X10CrMoVNb9-1, 1.4903, P91, A387 Gr 91

Industries served

Oil & Gas, Petrochemical, Refining, Power Generation, Fertiliser

Typical applications

- Pressure vessel shells and heads for elevated temperature service
- Hydrogen service reactors and separators
- Boiler drums, headers and steam plant
- Petrochemical heaters and hot wall equipment

Live datasheet