

Quality	F12
According to Standard	ASTM A 182/A 182M - 10a
Number	-

Comparable Standards	EN	W.N.	BS
	16CrMo4-4	1.7337	-

Chemical Analysis - Class 1	C %	Mn %	Si %	P%	Cr %	Ni %	Mo %	S%	Other Elements
		0.05 to 0.15	0.30 to 0.60	0.50 max.	0.045	0.80 to 1.25	—	0.44 to 0.65	0.045
Class 2	C %	Mn %	Si %	P%	Cr %	Ni %	Mo %	S%	Other Elements
	0.10 to 0.20	0.30 to 0.80	0.10 to 0.60	0.040	0.80 to 1.25	—	0.44 to 0.65	0.040	—

Hot Work and Heat Treatment Temperatures

Grade	Heat Treat Type	Austenitizing/Solutioning Temperature, Minimum or Range, °F [°C]^	Cooling Media	Quenching Cool Below °F [°C]	Tempering Temperature, Minimum or Range, °F [°C]
		Low Alloy Steels			
F 12, Class 1, 2	anneal	1650 [900]	furnace cool	-	-
	normalize and temper	1650 [900]	air cool	-	1150 [620]

Mechanical Properties at Room Temperature

Grade Symbol	Tensile Strength, min, ksi [Mpa]	Yield Strength, min, ksi [Mpa]	Elongation in 2 in, [50 mm] of 4D, min, %	Reduction of Area, min, %	Brinell Hardness Number, HBW
F12 Class 1	60 [415]	32 [220]	20	45	121-174
F12 Class 2	70 [485]	40 [275]	20	30	143-207