

<b>Quality</b>	F11								
<b>According to Standard</b>	ASTM A 182/A 182M - 10a								
<b>Number</b>	-								
<b>Comparable Standards</b>	EN	W.N.	BS						
	1.7335	13CrMo4-4	-						
<b>Chemical Analysis - Class 1</b>	C %	Mn %	Si %	P%	Cr %	Ni %	Mo %	S%	<b>Other Elements</b>
	0.05 to 0.15	0.30 to 0.60	0.50 to 1.00	0.030	1.00 to 1.50	-	0.44 to 0.65	0.030	-
<b>Class 2, 3</b>	C %	Mn %	Si %	P%	Cr %	Ni %	Mo %	S%	<b>Other Elements</b>
	0.10 to 0.20	0.30 to 0.80	0.50 to 1.00	0.040	1.00 to 1.50	-	0.44 to 0.65	0.040	-
<b>Hot Work and Heat Treatment Temperatures</b>									
<b>Grade</b>	<b>Heat Treat Type</b>	<b>Austenitizing/Solutioning Temperature, Minimum or Range, °F [°C]^A</b>			<b>Cooling Media</b>	<b>Quenching Cool Below °F [°C]</b>	<b>Tempering Temperature, Minimum or Range, °F [°C]</b>		
<b>Low Alloy Steels</b>									
F 11, Class 1, 2, 3	anneal	1650 [900]			furnace cool	-	-		
	normalize and temper	1650 [900]			air cool	-	1150 [620]		
<b>Mechanical Properties at Room Temperature</b>									
<b>Grade Symbol</b>	<b>Tensile Strength, min, ksi [Mpa]</b>	<b>Yield Strength, min, ksi [Mpa]</b>		<b>Elongation in 2 in, [50 mm] of 4D, min, %</b>		<b>Reduction of Area, min, %</b>	<b>Brinell Hardness Number, HBW</b>		
F11 Class 1	60 [415]	30 [205]		20		45	121-174		
F11 Class 2	70 [485]	40 [275]		20		30	143-207		
F11 Class 3	75 [515]	45 [310]		20		30	156-207		