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

ALOK INGOTS
steel re engineered
AN ISO 9001:2008 CERTIFIED COMPANY

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][A]**	**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**