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TECHNICAL DATA SHEET

NICKEL ALLOY ALLOY 690 (UNS N06690)

Application

Alloy 690 is a high-chromium nickel alloy having excellent resistance to many corrosive aqueous media and hightemperature atmospheres. The alloy's high chromium content gives it excellent resistance to caturisation, metal dusting, oxidation and sulfidation at high temperature. In addition to its corrosion resistance, alloy 690 has high strength, good metallurgical stability, and favorable fabrication characteristics.

Available tube product forms

STRAIGHT | SEAMLESS

Typical manufacturing specifications

ASTM B167

Also individual customer specifications.

Industries predominantly using this grade

Oil and gas, Chemical processes,

Nuclear and power etc.

Technical Data

Chemical composition(% by weight)

Element	Ni	Cr	Fe	Mn	C	Cu	Si	S	-	-	-	-
Minimun	58.0	27.0	7.0	-	-	-	-	-	-	-	-	-
Maximum	-	31.0	11.0	0.5	0.05	0.5	0.5	0.015	-	-	-	-

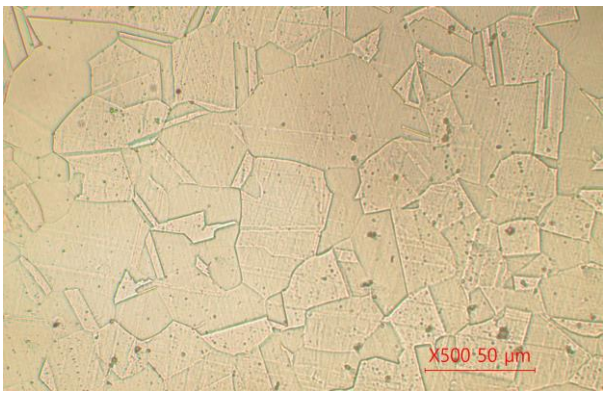
Mechanical Properties

	Tubing, Annealed (OD 5 in. under)		Tubing, Annealed (Over OD 5 in.)	
Tensile Rm	85	ksi (min.)	85	ksi (min.)
Tensile Rm	586	MPa (min.)	586	MPa (min.)
Yield (R.p. 0.2%)	35	ksi (min.)	30	ksi (min.)
Yield (R.p. 0.2%)	240	MPa (min.)	205	MPa (min.)
Elongation	30	% (min.)	35	% (min.)

Physical Properties(Room Temperature)

Specific Heat (0-100°C)	450	J.kg-1.°K-1
Thermal Conductivity	13.5	W.m -1.°K-1
Thermal Expansion	14	mm/m/°C
Modulus Elasticity	211	GPa
Electrical Resistivity	1.26	μohm·cm
Density	8.2	g/cm3

Microstructure



Maximum allowable pressure (Unit : BAR)

		Wall thickness (mm)						
		0.89	1.24	1.65	2.11	2.77	3.96	4.78
Outside diameter (mm)	6.35	451	656	898	1161	-	-	-
	9.53	290	416	573	754	1013	-	-
	12.7	214	304	415	546	742	-	-
	19.05	-	198	267	349	470	-	-
	25.4	-	147	197	256	343	509	630
	31.8	-	116	156	202	269	396	488
	38.1	-	-	129	167	222	325	399
	50.8	-	-	96	124	164	239	292

* We follow customer requested dimensions.

* Select tubes according to design pressure