



Alloy 945

1. Brief introduction:

Incoloy **alloy 945** (UNS **N09945**) is a corrosion resistant, high strength, age hardenable nickel iron-chromium alloy. Its nickel content provides resistance to stress corrosion cracking. Its combination of nickel, molybdenum and copper gives it outstanding resistance to attack by reducing media, while its high chromium content provides resistance to oxidizing environments. Molybdenum and niobium provide resistance to localized attack such as pitting and crevice corrosion. Niobium, titanium and aluminum react upon heat treatment to precipitate gamma prime and gamma double prime phases that give the alloy its high strength. With this highly desirable combination of properties, alloy 945 is suitable for many demanding applications in oil and gas service. With resistance to sulfide-induced stress corrosion cracking and corrosion in hydrogen sulfide, alloy 945 is ideal for fabrication of down-hole and surface well equipment including tubular products, valves, hangers, landing nipples, tool joints and packers. When cold worked and aged, the alloy provides the properties required for fasteners, pump shafting and high strength piping.

2. Main specifications:

Other: incoloy 945X.

3. Chemical Properties:

The material shall conform to the requirements of chemical composition for the ALLOY 945X.

Grade	chemical composition,%					
	Mn	Si	P	S	Fe	Ni
	Max					
ALLOY 945X	1	0.5	0.03	0.01	Remainder	50~55
Cr	Nb(Cb)	Mo	Ti	Al	C	Cu
19.5~23	3.5~4.5	3~4	0.5~2.5	0.01~0.7	0.005~0.04	1.5~3

4. Heat Treatment:

Solution annealed at 982°C-1065°C, soaking for minimum 1 ½ hours to maximum 4 hours & Air cooling or water quenched up to room temperature. Then followed by 1st Age Hardening temperature of 677°C-732°C, ageing for 4 hours to 9 hours, then Furnace cool to temperature range of 2nd Age Hardening temperature 599°C-643°C, total ageing for minimum 12 hrs and then followed by Air cooling or water quenching up to room temperature.



5. Mechanical Properties:

Test method shall be according to latest version of ASTM A370 at room temperature.

Particulars	QTC CrossSection Thicknesin. (cm)	Min	Max	Unit
Ultimate Tensile strength	≤ 10 (25.4)	1138	...	M Pa
Yield Strength, (0.2%offset)		965	1138	M Pa
Elongation in 4D		18	...	%
Reduction in area		25	...	%
Ultimate Tensile strength	> 10 (25.4)	1138	...	M Pa
Yield Strength, (0.2% offset)		965	1138	M Pa
Elongation in 4D		18	...	%
Reduction in area		20	...	%
Hardness	---	332	399	HRB

6. Identification and Traceability:

Traceability requirement of Heat No. and Batch No. will be identified on parts.

Material furnished in accordance with this specification shall be accompanied by a material test certification.

7. Alloy945 Source URL:

<https://www.hitealloy.com/product/alloy-945.html>