Incoloy 330

Incoloy 330 is an austenitic alloy with good high-temperature strength and corrosion resistance. It has a solid solution composition and is not hardenable by heat treatment. Its high nickel and chromium provide good resistance to oxidation and carburization. Its oxidation resistance is enhanced by the silicon content. It is characterized by:

- good oxidation and scale resistance
- excellent resistance to carburization and to alternating carburizing and oxidizing atmospheres
- good mechanical properties with high strength at elevated temperatures

Chemical Composition, %

element	Cr	Ni	Fe	Cu	C	Mn	Si	P	S	Pb	Sn
min.	17.0	34.0	bal.				0.75				
max.	20.0	37.0		1.0	0.08	2.0	1.50	0.03	0.03	0.005	0.025

Chemical Composition according to ASTM. Some compositional limits of other specifications may vary slightly.

Designation and standards

National Standards	Material designation	Chemical composition	Forgings	Rod and bar	Plate and sheet	Strip	Wire	Seamless tube
ASTM ASME	UNS N08330		AMS5716	B511 SB511 AMS5716	B536 SB536 AMS5592	B536 SB536	AMS5716	B535 SB535
DIN	1.4886 X10NiCrSi35-19	DIN 10095 DIN 10088-1						

Density 8.00g/cm^3

Corrosion resistance

- good resistance to oxidation up to 1000℃, particularly under cyclic conditions of heating and cooling
- excellent resistance to carburization

Applications

Typical applications are:

- fans operation at high temperatures in carburizing furnaces – resisting carburisation
- boxes and baskets used in carburizing – resisting carburization and showing weight saving when compared with cast boxes
- hangers, hooks and conveyor chains used to carry vitreous-enamelled components during firing – resisting oxide spalling so that oxide does not fall on the enamel
- combustion tubes – resisting oxidation to carburization and alternating oxidizing and carburizing conditions
- jigs and fixtures used in furnace brazing and wire mesh belts to carry components in heat-treatment processes
- thermocouple sheaths – resisting carburization and nitriding
- flare-stack tips – resisting alternating conditions
- components handling cracked ammonia