WITTE TUBE
The Substance of Steel.

Data Sheet
1.4958 (X5NiCrAlTi31-20)
Austenitic high-temperature iron-nickel-chromium alloy

Short description

1.4958 or Alloy 800H is an austenitic, high-temperature iron-nickel-chromium alloy with good creep rupture strength at temperatures above 600°C. This material also exhibits good resistance in oxidizing, carburizing, and nitriding atmospheres while maintaining good workability. The chemical analysis of 1.4958 / Alloy 800H is almost identical to that of 1.4876 / Alloy 800. However, the creep rupture strength of 1.4958 / Alloy 800H is significantly increased at temperatures above 600°C through special solution annealing. Accordingly, the solution-annealed version 1.4958 / Alloy 800H should be used for temperatures above 600°C, and 1.4876 / Alloy 800 should be used for temperatures below 600°C.

Standards and Designations

EN	1.4958
DIN	X5NiCrAlTi31-20
AISI	Alloy 800H
UNS	N08810

Chemical Composition acc. to EN10216-5

	Ni (Nickel)	**Cr** (Chrome)	**Fe** (Iron)	**C** (Carbon)	**Mn** (Mangan)	**Si** (Silicium)
min.	30,0	19,0	Rest	0,03	-	-
max.	32,5	22,0	Rest	0,08	≤1,5	≤0,7

	Al (Aluminium)	**Cu** (Copper)	**P** (Phosphor)	**S** (Sulfur)	**Ti** (Titanium)	**(Al+Ti)** (Aluminium + Titanium)
min.	0,2	-	-	-	0,2	-
max.	0,5	0,5	0,015	0,01	0,5	0,7

General Properties

corrosion resistance	excellent
mechanical properties	good
weldability	good

Special Features

Heat-resistant to carburization and oxidation
Good creep rupture strength at temperatures above 600°C
Metallurgical stability in continuous service at elevated temperatures

Corrosion resistance

Due to its high nickel and chromium content, 1.4958 possesses excellent resistance to oxidation. Furthermore, this material is resistant to carburization, nitriding, and oxidation in sulfur-containing media. Alloy 800H also exhibits outstanding resistance to hydrogen embrittlement.

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BIC GENODEF1EDE

LZO RASTEDE
IBAN DE07 2805 0100 0043 3308 93
BIC SLZODE22XXX

OLB RASTEDE
IBAN DE54 2802 0050 1443 1738 00
BIC OLBODEH2XXX

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Mechanical Properties at 20°C acc. to EN10216-5

Yield strength $R_{p0,2}$ N / mm²	Tensile strength R_m N / mm²	Stretching A5,65	Elastic modulus kN / mm²
≥ 170	500-750	≥ 30%	194

Weldability

1.4958 is easily weldable using conventional welding processes. These include TIG, TIG hot wire, plasma, MMA, MIG/MAG, and submerged arc welding. The workpiece should be welded in a stress-free, bright-metal, and dirt-free state. Low heat input, targeted heat control, and rapid heat dissipation are recommended. The bead welding technique should be used. The temperature of the interpasses should not exceed 120°C. Tarnish should be removed immediately after welding, while the workpiece is still warm, using a stainless steel brush.

Machinability

Machining should be carried out in the solution-annealed condition. Alloy 800H is prone to work hardening. Therefore, a low cutting speed and low feed rate should be selected. The tool should be in constant contact. A sufficient depth of cut should be selected to undercut the previously formed work-hardened zone. To ensure a stable machining process, optimal heat dissipation should be achieved through the use of large quantities of suitable, water-based cutting fluids.

Application areas

Apparatus construction for high-temperature applications, chemicals, petrochemicals, furnace construction, power plant construction, hydrogen industry

Physical Properties at 20°C acc. to EN10216-5

Density at 20°C kg/dm³	Electrical Resistance at 20°C (ohm) mm²/m	Melting range	Thermal conductivi ty at 20°C W/m K	Specific heat capacity at 20°C J/kg K
8,0	1,01	1350-1400°C	12,4	443

Forgeability

1.4958 is very easy to cold form, but intermediate annealing is recommended for severe cold forming.

Notice

The values and information listed above regarding the properties and/or usability of the material are for informational purposes only. This information is based on the manufacturer's experience.
All information is provided without guarantee. Subject to printing errors, mistakes, and changes.

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