

# SIPREME<sup>™</sup> 800H

## SUPERALLOY

**SIPREME 800H** is a nickel-iron-chromium superalloy that provides high strength and excellent resistance to oxidation and carburization at high temperatures. It has good resistance to many nitriding atmospheres. High creep resistance is attained through control over crystal grains via high-temperature heat treatment, together with fine control over carbon, titanium, and aluminium content.

### APPLICATIONS

- Industrial heating industry – radiant tubes, return bends, muffles, retorts and fixtures for heat-treating furnaces
- Petrochemical industry – furnace tubes
- Hydrocarbon processing industry – catalyst tubing, convection tubing, outlet manifolds and quenching system piping
- Power generation industry – steam super-heaters, high-temperature heat exchangers, piping systems and pressure vessels

### SPECIFICATIONS

Standard	Type	UNS
ASTM A240	800H	N08810
ASME A240	800H	N08810
ASTM B409		N08810
ASME SB409		N08810

Standard	WNR	Designation
EN 10095	1.4876	X10NiCrAlTi32-21
VD TÜV 412	1.4876	X10NiCrAlTi32-20
VD TÜV 434	1.4876	X10NiCrAlTi32-20 H
EN 10028-7	1.4958 1.4959	X5NiCrAlTi31-20(+RA) X8NiCrAlTi32-21
EN 10302	1.4958 1.4959	X5NiCrAlTi31-20 X8NiCrAlTi32-21

### CHEMICAL COMPOSITION [wt. %]

	C	Mn	P	S	Si	Cr	Ni	Al	Ti	Co
<b>Min.</b>	0.06	-	-	-	-	19.00	30.00	0.25	0.25	-
<b>Max.</b>	0.08	1.50	0.015	0.010	0.70	22.00	32.50	0.50	0.50	0.50

Al + Ti: ≤ 0.70 Ni + Co: 30.00–32.50

### PHYSICAL PROPERTIES

Average values

Density [g/cm <sup>3</sup> ]	Specific heat [J/kgK]	Thermal conductivity [W/mK]	Electrical resistivity [Ωmm <sup>2</sup> /m]	Modulus of elasticity [GPa]	Magnetization
7.44	460	12	0.99	196.5	No

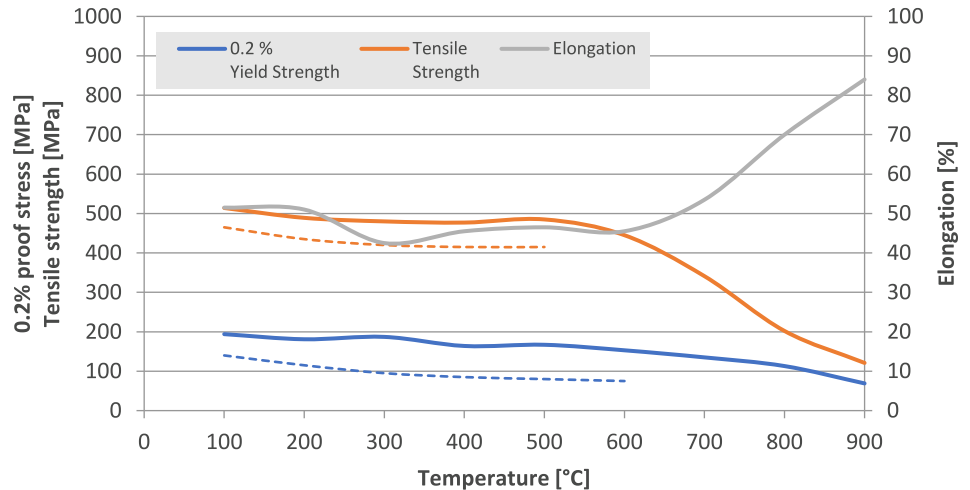
### MECHANICAL PROPERTIES

0.2 % Yield strength min. [MPa]	Tensile strength min. [MPa]	Elongation min. [%]	Hardness max. [HB]	Impact Charpy V, 20 °C* [J]
170	500	30	192	250

\* typical value

## HIGH-TEMPERATURE STRENGTH

High temperature tensile test results – typical values



## MICROSTRUCTURE

SIPREME 800H has an austenitic microstructure. The average grain size is no. 4 or coarser, in accordance with ASTM E112 and DIN EN ISO 643.

## CORROSION RESISTANCE

SIPREME 800H offers good corrosion resistance in oxidizing corrosive environments, such as nitric acid or sulfuric acid. Likewise, it performs well in sodium salt and other molten salt environments, with stress corrosion cracking resistance surpassing standard austenitic stainless steels.

Grade	Tested per the following corrosion standards
SIPREME 800H	EN ISO 3651-2 Method A, ASTM A262-10 Practice E

## HOT FORMING

The hot forming temperature range is between 870 °C and 1200 °C (1600–2200 °F). No work should be done between 540 °C and 760 °C (1000–1400 °F) – carbide precipitation temperature range. The rate of cooling following hot forming is not usually critical for this alloy with respect to thermal cracking.

## HEAT TREATMENT

This grade is designed for high-temperature service. Optimum creep resistance at elevated temperatures is obtained by heating to a temperature to cause grain growth. The temperature normally used is 1150–1200 °C (2100–2200 °F). Depending on the size and furnace characteristics, the time at temperature is adjusted to achieve a grain size of ASTM no. 4 or coarser. After solution treatment, rapid (water) cooling is applied.

## SURFACE FINISH

Plates are supplied in pickled condition (bright surface) – 1D / No. 1 Finish.

## DIMENSIONS

SIPREME 800H	Thickness [mm]	Max. width [mm]	Max. length [mm]	Max. weight [kg]
Quarto plates	8.0–12.7 (0.32–0.50 in.)	2000 (78.74 in.)	12000 (472.44 in.)	9600 (21164 lbs)
Quarto plates	12.7–80.0 (0.50–3.15 in.)	2500 (98.42 in.)	12000 (472.44 in.)	9600 (21164 lbs)

The dimensional range corresponds to the following standards: ASTM B 906, ASME SB 906, ASME SA 480, ASTM A480, EN ISO 18286 B

The information and data in this product data sheet are intended for informative purpose only and may be revised at any time without notice. Presented typical properties of the materials are described only to help readers make their own evaluations and decisions. They are not guaranteed.