Data sheet
1.4841 (X15CrNiSi25-21)
Austenitic heat-resistant stainless steel

Short description

1.4841 or AISI 314 is a heat-resistant austenitic chromium-nickel steel characterized by good resistance to oxidation at high temperatures. Furthermore, 1.4841 possesses excellent chemical resistance at temperatures up to 1100°C. This grade is used in temperature ranges where 1.4828 no longer meets the requirements.

Standards and Designations

EN	1.4841
DIN	X15CrNiSi25-21
AISI	314
UNS	S31400

Chemical Composition

	C (Carbon)	Mn (Mangan)	Si (Silicium)	P (Phosphor)	S (Sulfur)	Cr (Chrome)	Ni (Nickel)	N (Nitrogen)
min.	-	-	1,5	-	-	24,0	19,0	-
max.	0,20	2,0	2,5	0,045	0,015	26,0	22,0	0,11

General Properties

Corrosion resistance:	very good
Mechanical properties:	medium
Forgeability:	good
Welding properties:	good
Machinability:	medium

Special Features

Heat-resistant (application range 900°C – 1120°C)
Scaling-resistant up to 1150°C in air

Corrosion resistance

1.4841 has only low resistance to oxidizing and reducing sulfur-containing gases. This limits its use in such media up to 650°C. Furthermore, at temperatures above 900°C, 1.4841 exhibits only moderate resistance to carburizing gases or low-oxygen gases with nitrogen content.
(PREN = 24.0 – 29.3)

Mechanical Properties at 20°C

Hardness HB	Yield strength $Rp_{0,2}$ N / mm²	Tensile strength R_m N / mm²	Stretching A5,65	Elastic modulus kN / mm²
≤ 223	≥ 230	550 - 750	≥ 30%	196

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IBAN DE98 2806 1822 0065 3616 00
BIC GENODEF1EDE

LZO RASTEDE
IBAN DE07 2805 0100 0043 3308 93
BIC SLZODE22XXX

OLB RASTEDE
IBAN DE54 2802 0050 1443 1738 00
BIC OLBODEH2XXX

KONTAKT

Telefon +49 (0) 4402-9249-0
E-Mail info@witte-tube.com
Web www.witte-tube.com

FIRMENKENNUNG

Sitz Rastede || Tom Witte, Jörn Schieck
eingetr. im Handelsregister Oldenburg
HRB 205739 || VAT Nr. DE 277 933 982

Forgeability

Forging takes place in a temperature range of 1175°C – 1000°C with subsequent rapid air or water cooling.

Weldability

1.4841 can be welded using all common welding processes. Preheating prior to welding and post-welding heat treatment are not necessary, but this grade is prone to hot cracking. To prevent this, the maximum welding energy should be limited.

Machinability

Like 1.4828, 1.4841 is prone to carbides forming during machining. This increases wear on cutting tools, so high-quality tools should be used. Due to its tendency to work hardening and poor thermal conductivity, adequate cooling should be ensured. Cutting speeds and depths of cut should be kept low accordingly.

Application areas

Apparatus construction for high-temperature applications, automotive industry, construction industry, chemicals, petrochemicals, chain industry, furnace construction, sieves and grates, cement industry

Physical Properties at 20°C

Density kg/dm3	Electrical Resistance (ohm) mm2/m	Magnetizability	Thermal conductivity W/m K	Specific heat capacity J/kg K
7,9	0,90	not available	15	500

Thermal treatment

Hot forming	1150–800°C (cooling: air)
Solution annealing (+AT)	1050–1150°C (cooling: water or air)

Notice

The above values and information 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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