MATERIAL DATASHEET

X9CrNiSiNCe 21-11-2, 1.4835, ASTM S 30815

Bionic Production GmbH
Vor dem Neuen Tore 18
21339 Lueneburg
Germany

phone: +49 (0) 4131 230 0 230

www.bionicproduction.com
info@bionicproduction.com

Description

1.4835 is an austenitic stainless steel for use as high-temperature material. It is a 1.4828 stainless steel with increased nitrogen content and rare earth admixtures. The material exhibits good mechanical properties and very good scale resistance in dry air when used up to 1100 °C. However, the temperature range from 600 °C to 900 °C should be avoided as grain disintegration may occur, which negatively affects the notched impact values at room temperature. Due to the relatively high content of N and C, resistance in reducing or oxidizing atmospheres is poor. This is particularly the case in sulfur-containing gases.
In the solution-annealed condition, the material is not magnetic. However, low magnetism can occur due to the formation of deformation martensite or welding. Typical applications of 1.4835 are industrial furnace construction, heat treatment equipment in the metal industry, accessories for hardening shops, the cement industry, apparatus engineering and chains.

Physical Properties

Density [g/cm³]	7.8
Electr. resistance at 20 °C [Ω·mm²/m]	0.85
Thermal conductivity at 20 °C [W/m·K]	15
Spec. heat capacity at 20 °C [J/kg · K]	500
Average coefficient of thermal expansion at 20 °C [10-6 · K-1]	16.5

Chemical Composition

Element	**Min.**	**Max.**
C	0.05	0.12
Si	1.40	2.5
Mn	-	1.00
Cr	20.0	22.0
Ni	10.0	12.0
N	0.12	0.2
Ce	0.03	0.08
Cu		

MATERIAL DATASHEET

X9CrNiSiNCe 21-11-2, 1.4835, ASTM S 30815

Technical Data

Achievable component accuracy	
small parts	approx. ± 0.1 mm
large parts	approx. ± 0.2 mm
Smallest wall thickness	approx. 0.3 - 0.4 mm
Smallest diameter	approx. 0.7 mm
Layer thickness	40 µm
Surface roughness	
after the build-up	Rz = 80µm ± 20 µm
after micro blasting	Rz = 35µm ± 10 µm
Component density after manufacturing	> 99.5 %

Mechanical Properties

	after heat treatment[4]
Tensile strength [N/mm²][1,2,3]	650 - 850
Yield point [N/mm²][1,2]	min. 310
Elongation at break [%][1,2]	min. 40
E-module [kN/mm²][1,2]	200
Hardness [HV5] [1,3]	181

[1] at room temperature

[2] tensile test according to DIN EN 10095

[3] hardness test according to DIN EN ISO 6507-1

[4] stress relief heat treatment 1,020 – 1,120 °C in water or air

1.4835 is well weldable by common methods such as WIG, MIG, PAW or SAW. The semi-finished products should be processed in torsion free, metallically blank and dirt-free conditions. Usually, preheating and a subsequent heat treatment are not necessary. During machining, a low cutting speed should be selected, because of the tendency to work hardening. The depth of the cut should be selected so that a previous consolidation zone can be undercut.

The stated technical data and material characteristics correspond to our knowledge and experience at the time of publication. These values, determined on our production systems, depend on the powder material, the parameter settings and the component geometry. They therefore do not provide sufficient basis for the component design. These data serve only as guide values. To check the mechanical properties, test specimens can be requested at any time.
Only the latest published version of the datasheet is valid.