



YOUR FUTURE IN ADDITIVE MANUFACTURING

MATERIAL DATA SHEET

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

Bionic Production GmbH
Vor dem Neuen Tore 18
21339 Lüneburg
Germany

Phone: +49 4131 230 0 230

www.bionicproduction.com
info@bionicproduction.com

MATERIAL DATA SHEET

X9CrNiSiNce 21-11-2, 1.4835, ASTM S 30815



Description

1.4835 is an austenitic stainless steel for use as a high temperature material. It is 1.4828 stainless steel with increased nitrogen content and added rare earth metals. The material has good mechanical properties and very good scaling resistance in dry air if used up to 1100 °C. The temperature's range from 600 to 900 °C should be avoided, though, because intergranular attack can occur, which has a negative impact on the notch impact strength. Due to the relatively high N and C content, durability is poor in reducing or oxidising atmospheres. This applies in particular to gases containing sulphur. In the solution annealed state, the material is not magnetic. Low magnetism, however, can be caused by the formation of deformation martensite or by welding. Typical applications for 1.4835 are the manufacturing of industrial furnaces, heat treatment plants in the metalworking industry, accessories for hardening shops, the cement industry, apparatus engineering and chains.

Physical properties

Density [g/cm ³]	7.8
Electr. resistance at 20 °C [$\Omega \cdot \text{mm}^2/\text{m}$]	0.85
Thermal conductivity at 20 °C [W/m·K]	15
Specific thermal capacity at 20 °C [J/kg · K]	500
Average thermal expansion coefficient at 20 °C [$10^{-6} \cdot \text{K}^{-1}$]	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 DATA SHEET

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



Technical data

Achievable part 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 μ m
Surface roughness	
after construction	Rz = 80 ± 20 μ m
after microblasting	Rz = 35 ± 10 μ m
Component thickness after the manufacturing process	> 99.5 %

Mechanical properties

	After heat treatment ⁴
Tensile strength [N/mm²]^{1,2,3}	650 - 850
Yield strength [N/mm²]^{1,2}	min. 310
Elongation at break [%]^{1,2}	min. 40
Module of elasticity [kN/mm²]^{1,2}	200
Hardness [HV5]^{1,3}	181

¹ At room temperature

² Testing in line with EN 10095

³ Hardness test as per EN ISO 6507-1

⁴ Solution annealing 1020 – 1120 °C in water or air

1.4835 has good weldability with common processes such as WIG, MIG, PAW or SAW. The semi-finished products should be processed while tension-free, bright finished and free from dirt. Pre-heating and post-treatment with heat are usually not required. A low cutting speed should be used for machining because of the tendency to cold hardening. The cutting depth should be selected in such a way that a prior hardening zone can be undercut.

The listed technical data and material characteristics correspond to our state of knowledge and experience at the time of publication. These values, which have been determined on our manufacturing systems, depend on the powdered material, the parameter settings and the part geometry. They therefore do not offer a sufficient basis for part configuration. This information serves only as guide values. Specimen for verification of the mechanical properties can be requested at any time. Only the most recently published version of the data sheet is valid.

