Material Data sheet Issue: July 2023

Heat-resistant austenitic steel W.-Nr. 1.4828

1. Application examples

Due to the alloy with approx. 19-21% chromium and 11-13% nickel, this material has very good heat resistance.

The material 1.4828 is **not** permitted as a spring material in the DIN EN 10 151 standard.

In the case of high corrosion resistance requirements (e.g. in waste gas treatment from waste incineration plants), super alloys such as Alloy 625 (material no. 2.4856) should be used.

2. Material codes

German Norm:	1.4828, X 15CrNiSi 20-12
AISI:	309
UNS:	S30900
English Norm:	similar to 309 S24-
French Norm:	similar to AFNOR Z17 CNS 20-12
Japanese Norm:	similar to SUH 309

3. Alloy Composition *

C: max. 0,20%
Si: max. 1,50-2,50%
Mn: max. 2,0%
P: max. 0,045%
S: max. 0,015%
Cr: 19-21%
Ni: 11-13%
Mo: -%

* the exact composition of each batch can be documented by a test certificate 2.2 or 3.1 according to DIN 10 204

4. Delivery condition

Condition:	austenitic, not hardenable
Surface:	2R, roughness Ra max. 0,3 µm (depending on the roughness of the working roll)

Ultimate tensile strength: 540-750 N/mm²

Further mechanical data: see chapter 7 and 8.

5. Sizes

thicknesses:	0,15-0,30 mm
raw material width:	ca. 300-330 mm
edges:	cut
Lengths:	individual lengths from 5 to 10 000 mm or as Coil

The following sizes are available from stock (without obligation):

thickness	***width***	***Annotation***
0,15 0,20 0,25 0,30	ca. 300mm ca. 300mm ca. 330mm ca. 300mm	

without obligation, Issue: July 2023

6. Tolerances

thickness tolerace:	DIN EN 9445 Table 1
width tolerance:	nach DIN EN 9445
straightness:	normal
flatness:	wave height max. 1,0 mm

7. Further mechanical data

Yield strength Rp0,2 :	> 230 N/mm²
Dehnung A 50:	> 30%

The highest application temperature is around 1000° Celsius, depending on the load.
Please note that Young's modulus values drop as temperature increases.

8. Physical properties

Density:	7,9 g/cm³
Thermal conductivity:	15-27,5 W/(m °C) depending on the temperature
Heat capacity:	500 J/(kg °C) medium value between 50 – 100 °C
Thermal expansion:	17,5 x 10 -6 (between 20 - 400 °C)
Electric resistance:	0,85 Ohm x mm²/m

Modus of elasticity: 196 GPa bei 20 °C

Relative permeability μr: 1,02 bei 200 H (please see chapter 13 for more details)

9. Blanking

We recommend a punch-to-die clearance of 4-10 % of the strip thickness.
The corner radius should be at least 0.25 mm and the punching die should be at least twice the strip thickness.
The pieces should then be tumbled to receive a good edge roundness.

10. Laser cutting

This alloy can be laser cut without problems.

11. Photo etching

This alloy is very easy to etch.

12. Bending
The alloy 1.4828 can be bent and deep drawn easily in the annealed condition.

13. Flat grinding
The alloy 1.4828 has in the annealed condition an austenitic structure and is not magnetic and can not be hold by magnetic clamping devices of flat grinding machines.

14. Welding
The alloy 1.4828 can be easily welded like all austenitic steels.

15. Corrosion resistance
This alloy is in the group 4 in the Nirosta-table of corrosion resistance of stainless steels (see www.nirosta.de/Publikationen). This alloy is more resistant than the alloys 1.4310 (in group 5), and the grades 1.4031Mo and 1.4034 (both in group 1), but less corrosion resistant than 1.4404.

Nirosta is a registered trade mark of ThyssenKrupp AG.

Please check there and by tests if the alloy 1.4828 is resistant enough for your application.

Important Annotation
The specifications which are given in this technical information sheet about the condition and application of the alloys are only for reference and are no confirmation about certain performances and characteristics.
The information correspond to our own experiences and experiences of our suppliers.
We can not guarantee for the results during processing and utilisation.