

## Technical Data Sheet

Issue: 01/2021

Product line: TL-Mark  
Material: Nirosta<sup>®</sup> steel material number 1.4571  
TEXIT-Material-Code: TMC-1032

### Material Data:

<b>Material no.</b>	1.4571	referring EN 10 088-2
<b>Designation</b>	D (DIN/EN) USA (ASTM) Japan GUS	X 6 CrNiMoTi 17-12-2 316 Ti SUS 316 Ti 10 Ch 17 N 13 M 2 T

Chemical composition (in percent by weight)						
	C	Cr	Mo	Ni	Ti	Mn
<b>At least</b>	-	16,5	2,0	10,5	5 x C	-
<b>Maximally</b>	0,08	18,5	2,5	13,5	0,70	2,0

Mechanical properties (transverse tensile specimen) at RT referring to EN 10 088-2				
Dimension range	R <sub>p 0,2</sub> (0,2%- yield strength) N/mm <sup>2</sup>	R <sub>p 1,0</sub> (1,0%- yield strength) N/mm <sup>2</sup>	R <sub>m</sub> (tensile strength) N/mm <sup>2</sup>	A <sub>80</sub> (elongation at break)%
Cold strip s ≤ 8 mm	≥ 240	≥ 270	540 up to 690	≥ 40
Hot-rolled strip s ≤ 13,5 mm	≥ 220	≥ 260		

Minimum values at higher temperatures										
Temperature °C	100	150	200	250	300	350	400	450	500	550
R <sub>p0,2</sub> (0,2% yield strength) N/mm <sup>2</sup>	185	177	167	157	145	140	135	131	129	127
R <sub>p1,0</sub> (1,0% yield strength) N/mm <sup>2</sup>	218	206	196	186	175	169	164	160	158	157

Heat treatment			
Annealing temperature °C	Duration	Cooling	Structure
1030-1110	~5/mm Thickness	water/air	Austenite possibly ferrite contents

Physical properties											
Density kg/dm <sup>3</sup>	Elastic modulus in kN/mm <sup>2</sup> at...						Thermal expansion in 10 <sup>-6</sup> , K <sup>-1</sup> between 20°C and ...				
	20°C	100°C	200°C	300°C	400°C	500°C	100°C	200°C	300°C	400°C	500°C
7,98	200	194	186	179	172	165	16,5	17,5	18,0	18,5	19,0

Thermal conductivity at 20°C W/m - K	Specific heat capacity At 20°C J/kg - K	Electrical resistance at 20°C Ω - mm <sup>2</sup> /m	Magnetizability
15	500	0,75	Non-existent <sup>1)</sup>

<sup>1)</sup> When quenched, NIROSTA® 4571 can be slightly magnetic. The magnetizability increases with increasing cold hardening.

#### Surface finish:

1 D (II a), 2 H (III a), 2 R (III d)

#### Edges finish

untrimmt, cut edges, dressed edges on request

### Processing

Nirosta® 4571 can be cold formed very well (e.g. bending, flanging, deep drawing, pressing). However, the stronger strain hardening compared to unalloyed steels requires correspondingly higher forming forces. Using certain gradations in the chemical composition within the standard analysis, special welding properties (e.g. for longitudinally welded pipes) can be achieved. In pressure vessel construction, the rules of the AD-leaflet HP 7/3 must be observed for cold forming as well as any post-heat treatment and welding.

Therefore, post-heat treatment is not required

- a) a degree of cold-forming ≤ 15% and
- b) after welding

In the case of degrees of cold deformation above 15%, post-heat treatment must be performed.

The annealing colours or scale formation that occurs during heat treatment or welding impair the corrosion resistance. They can be removed chemically (e.g. by pickling or pickling pastes) or mechanically (e.g. by grinding or blasting with glass beads or iron- and sulfur-free quartz sand).

Because of the tendency to work hardening and the poor thermal conductivity, machining should be carried out with tools made of high-quality high-speed steel (good cooling required) or, even better, with carbide tools.

NIROSTA® cannot be polished.

### Welding

**Welding tendency:**

NIROSTA® 4571 can be welded well using all methods (except gas welding)

**Additional welding filler material**

<b>Material number</b> <b>THERMANIT</b>	<b>1.4576</b> <b>A</b>	<b>1.4430</b> <b>GE</b>
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**Approvals:**

Material and additional welding filler materials are approved for pressure vessel construction

### Instructions for use

Due to the addition of titanium, the material can be welded in all dimensions without becoming susceptible to intergranular corrosion. Resistance to intergranular corrosion is maintained even in continuous operation up to 400°C.

Due to the enhanced chemical resistance resulting from the Mo content as well as the higher resistance to pitting corrosion by chloride-containing media, the steel is widely used in the chemical industry, in the petrochemical and carbon industries, in pulp production, textile finishing as well as in water and food technology.

Furthermore, NIROSTA® 4571 is approved in the construction industry for the manufacture of wall ties.

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