NOTZ METALL SERVICE CENTER
NOTZ group advanced metal solutions

1.4404
1.4432
1.4435

		En-Norm	AFNOR	AISI	DIN
Description	**Stainless and acid-resistant steel strip in accordance with EN 10088-2**	F1058	5833, 5834	5832-7	R30003, R30008

Chemical analysis

Material	C	Si max.	Mn max.	P max.	S max.	Cr	Ni	Mo	N max. %	PREN
1.4404	0.03	1.0	2.0	0.045	0.015	16.5 - 18.5	10.0 - 13.0	2.0 - 2.5	0.11	25
1.4432	0.03	1.0	2.0	0.045	0.015	16.5 - 18.5	10.5 - 13.0	2.5 - 3.0	0.11	25
1.4435	0.03	1.0	2.0	0.045	0	17.0 - 19.0	12.5 - 15.0	2.5 - 3.0	0.11	26
1.4435 BN2	0.03	1.0	2.0	0.045	0.015	17.0 - 18.0	12.5 - 14.0	2.5 - 3.0	0.11	26

Chemical analysis according to the European standard EN in mass percentages. / *Other

Main technical properties and features

These three materials are the best-known representatives of the group of stainless austenitic acid-resistant steels. The material 1.4404 (V4A) is often used in the presence of media with a low chloride content. In contrast to 1.4301/07 (V2A), it has increased resistance to chlorides and strong inorganic acids due to its approx. 2% molybdenum content. Typical areas of application include all areas that frequently come into contact with salt water, such as fittings in shipbuilding. It is also used for chimney linings, components in indoor swimming pools (not brine baths) and many other applications in the general and chemical industries.

Pitting **R**esistance **E**quivalent **N**umber (PREN) / Pitting Resistance Index / Effective Sum

The PREN index is a measure of the corrosion resistance of a stainless steel or nickel-based alloy. In general, the higher the PREN value, the more corrosion-resistant the steel.
The PREN value is calculated according to the following formula: PREN = 1 x %Cr + 3.3 x %Mo + 16 x %N
Please note that different multipliers are given in the literature for calculating the formula. According to this formula, steels with a PREN index above 33 are considered to be resistant to seawater.

Weldability
Weldability is good using all electrical processes; gas fusion welding should not be used as this can lead to carburisation of the alloy.

Workability
As with all austenitic stainless steels, cold forming is very easy. Depending on the work hardening, the steel can become magnetic. However, the considerably stronger work hardening compared to unalloyed steels requires correspondingly higher forming forces and possible subsequent heat treatment (soft annealing).
The annealing colours or scaling that occur during hot forming or welding impair the corrosion resistance. They must be removed by pickling (e.g. pickling pastes) or grinding or sandblasting (iron-free).
Machining must be carried out with tools made of high-quality high-speed steel (good cooling required) or, even better, with carbide tools due to the tendency to work hardening and poor thermal conductivity.

Sulphur-free austenitic stainless steels are generally easy to polish.

Mechanical Properties

Finish	Tensile strength	Hardness	0.2% yield point	Elongation at break
	MPa (N/mm2)	HV values approx.	MPa (N/mm2)	A %
annealed	550 - 700	160 - 230	min. 235	min. 40%
1/4 hard	770 - 920	220 - 290	min. 400	min. 15%
1/2 hard	870 - 1'020	265 - 320	min. 500	min. 7%
3/4 hard	1'000 - 1'150	300 - 360	min. 750	min. 4%

* higher tensil strength on request

The conversion is always subject to inaccuracies and only provides approximate values. In case of doubt, the test method specified in the product specification applies; tensile strength is to be preferred.

Physical properties at room temperature according to EN 10088-1

Density	8.0 kg / dm^3
Specific heat	500 J / (Kg*K)
Thermal conductivity	15 W / (m*K)
Specific electrical resistance	0,75 (Ohm*mm^2) / m
Mean coefficient of thermal expansion between 20° and 100°C	16.0 (10-6 * K-1)
E-modulus in GPa	200

Magnetisability: not present in annealed condition, but increases with increasing cold forming.

Polishability: good

Structure: austenitic

Solution annealing: 1'000°C -1'080°C / quenching in air or water. Hardening by heat treatment is not possible.

Limit temperature: when tested in accordance with DIN 50 914, no intergranular corrosion occurs when used up to 400°C and for a service life of up to 100'000 hours.

Surface Finish

Description	Acc. EN 10088-2	DIN	ASTM
hot strip rolled, annealed, pickled, scale-free	1D	c2(IIa)	1
cold rolled, bright annealed, "bright annealed"	2R	m (IIId)	BA
Cold-rolled, annealed, pickled, lightly re-rolled	2B	n (IIIc)	2B
Cold-rolled, annealed, pickled, matt	2D	h (IIIb)	2D
work-hardened to a higher strength level, "temper rolled", bright	2H	f (IIIa)	TR
Cold rolled, annealed, ground, grain size to be defined	2G	o (IV)	3
Cold rolled, annealed, brushed, smoother than ground	2J	q	6
Cold rolled, annealed, fine ground, satin polished, for special requirements, roughness value Ra max. 0.5 my (e.g.OUTOKUMPU 4N)	2K	p (V)	4
cold-rolled, heat-treated, not descaled	2E		

Diameter

Steel strip:

thickness
0.10 – 5.00 mm

Delivery form:

- in coils
- wound on spools
- in straightened strips

- with cut edges
- with deburred edges
- with rounded edges
- with specially manufactured edges

Steel strip in sheets

Diameter (mm)	Sheets weight (kg)
0,10 x 300 x 2000	0.48
0,15 x 300 x 2000	0.72
0,20 x 300 x 2000	0.96
0,30 x 300 x 2000	1.44

Sheets from stock:
Metal sheets 0.50 - 40 mm
in standard formats

Other strip dimensions can be produced in our Service Centre.

thickness tolerances

Cold rolled wide strip DIN EN ISO 9445-2		Precision rolled strip DIN EN ISO 9445-1	
Nominal thickness	Tolerance	Nominal thickness	Tolerance
[mm]	[mm]	[mm]	[mm]
0.30 - 0.499	+/- 0.030		
0.50 - 0.699	+/- 0.040		
0.70 - 1.099	+/- 0.050	0.10 - 0.149	+/- 0.10
1.10 - 1.499	+/- 0.060	0.15 - 0.199	+/- 0.012
1.50 - 1.999	+/- 0.075	0.20 - 0.249	+/- 0.012
2.00 - 2.499	+/- 0.100	0.25 - 0.399	+/- 0.015
2.50 - 2.999	+/- 0.120	0.40 - 0.499	+/- 0.018
3.00 - 3.999	+/- 0.140	0.50 - 0.599	+/- 0.020
4.00 - 6.499	+/- 0.150		

Width tolerances:
according to DIN EN ISO 9445-1

Special tolerances:
Tighter or special thickness and width tolerances as well as special strength values can be produced in our service centre according to your specifications and on request.

These values were determined from laboratory tests and data from the literature. They are intended solely as an aid. Use of the information is at your own risk. No liability is accepted.

Note

All information provided in this data sheet is based on the best knowledge and the latest state of the art, but without guarantee. The use of materials should always be discussed with our sales specialists or our materials laboratory on a product- and application-specific basis.

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