

Sanicro 28 for wirelines

(Wire)

Sanicro 28 is a high-alloy austenitic stainless steel suitable for service in highly corrosive oil and gas environments. The grade is characterized by:

- Very good corrosion resistance in H₂S, CO₂ and chloride containing environments.
- Very good resistance to pitting owing to its high PRE* value of 38 minimum
- General corrosion comparable to or better than Alloy 825
- Tensile strength equivalent to ASTM 316
- Very good performance in elevated temperatures (geothermal wells)
- Entirely non-magnetic properties

* PRE, Pitting Resistance Equivalent = %Cr + 3.3 x %Mo + 16 x %N

STANDARDS

- UNS N08028
- EN number 1.4563
- EN name X 1 NiCrMoCu 31-27-4

CHEMICAL COMPOSITION (NOMINAL) %

C	Si	Mn	P	S	Cr	Ni	Mo	Cu
max			max	max				
0.020	0.6	2.0	0.025	0.015	27	31	3.5	1.0

CORROSION RESISTANCE

Pitting

Sanicro 28 has very good resistance to pitting because of high contents of chromium and molybdenum. Critical pitting temperatures (CPT) as a function of the chloride content and pH are presented in Figures 1 and 2.

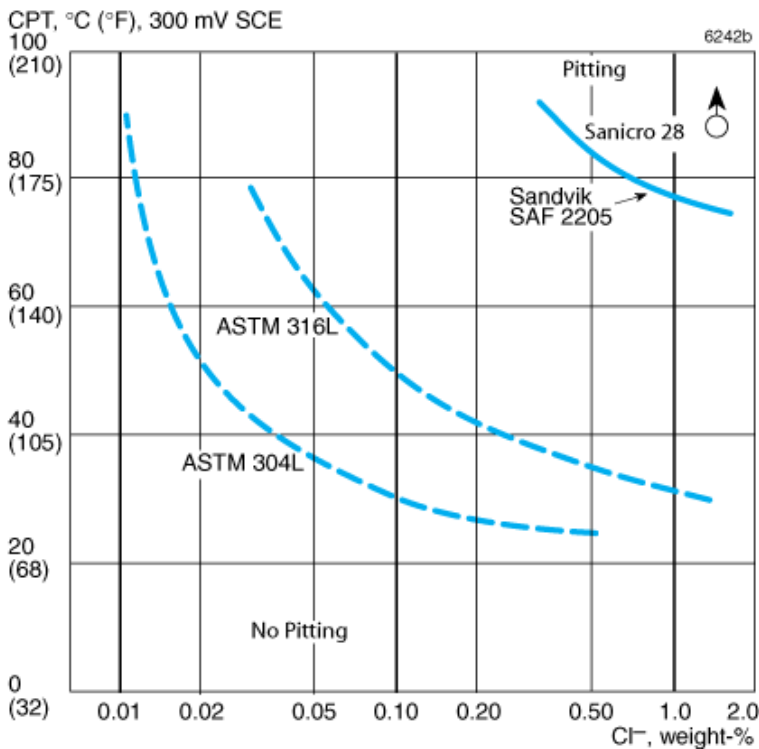


Figure 1. CPT for various alloys in neutral chloride solutions at 300 mV SCE.

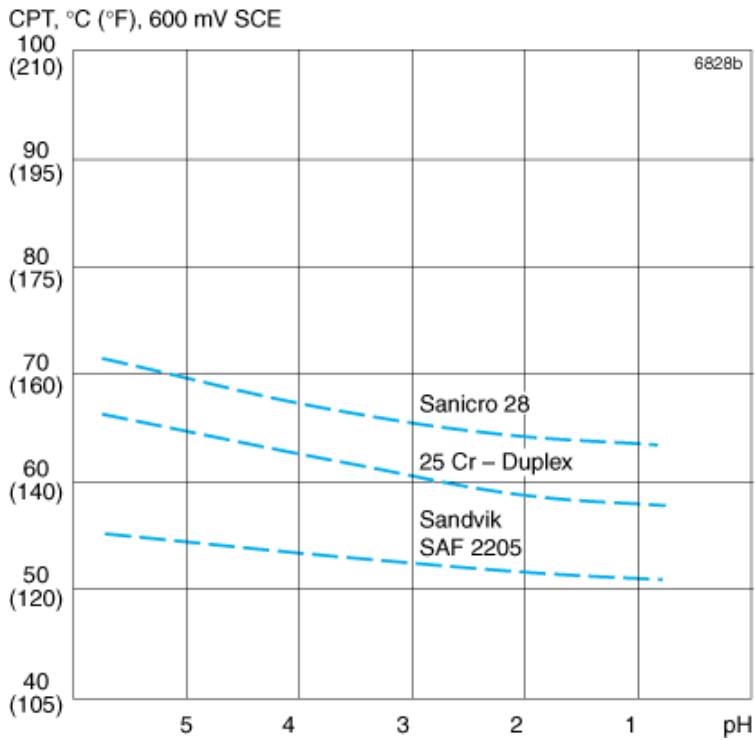


Figure 2. CPT in 3 % NaCl as a function of pH at 600 mV SCE.

Stress corrosion cracking (SCC) in chloride environments

The combination of stresses up to the proof strength and chlorides leads to a risk of stress corrosion cracking. In austenitic steels the increased nickel content together with an increased stability against pitting corrosion will lead to an increased resistance against stress corrosion cracking.

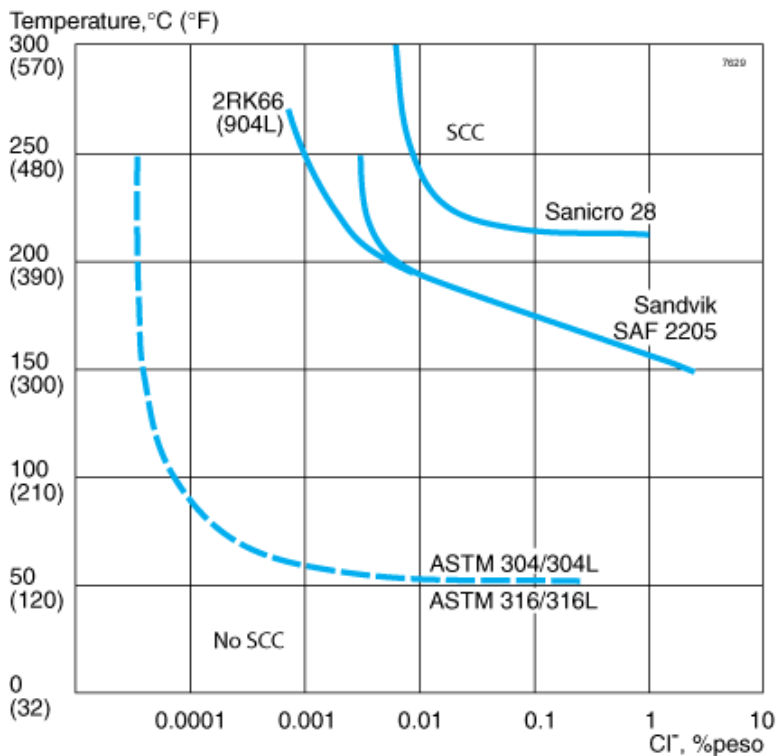


Figure 3. SCC resistance in oxygen-bearing (about 8 ppm) neutral chloride solutions. Testing time: 1 000 hours.

Applied strength equal to proof strength at testing time. The curve for AISI 304/304L and 316/316L is based on experimental data and practical experience. The data for the other grades are based on test results of tube material.

Stress corrosion cracking (SCC) in in H₂S/Cl⁻ environment

Tensile specimens from cold-worked Sanicro 28 and Sandvik SAF 2205 were tested in the NACE TM-01-77 type of environment, modified in that the temperature was increased to 90°C (194°F). At this temperature, 100% H₂S at atmospheric pressure corresponds to 100 kPa (14.5 psi) NaCl varied up to 10%.

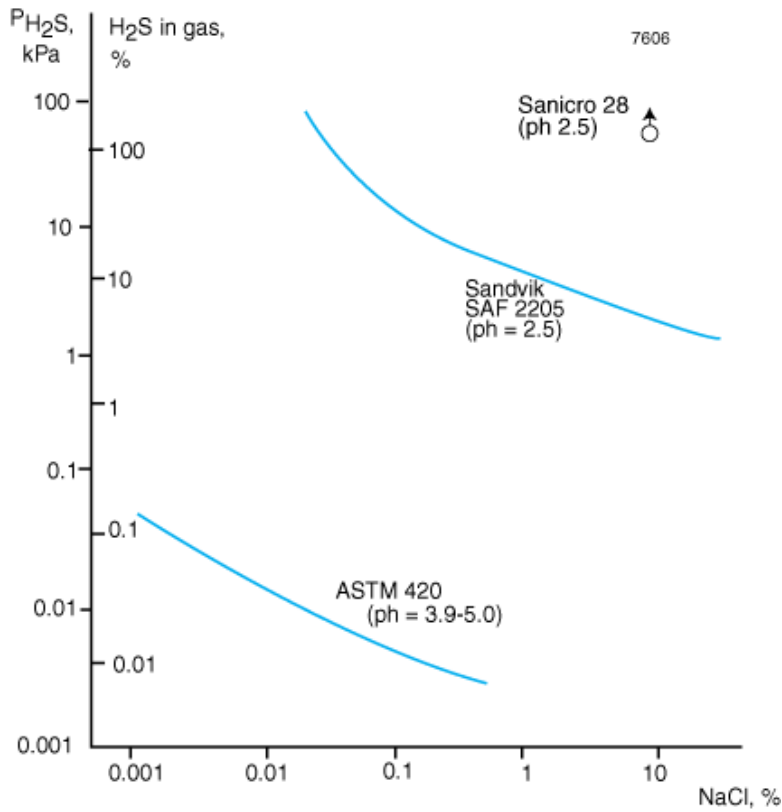


Figure 4. Constant-load SCC tests in acidified aqueous solution. Stress = 0.2% proof strength at testing temperature, 90°C (194°F). Testing time 500 hours. Sanicro 28 and Sandvik SAF 2205 tested in the cold worked condition. AISI 420 quenched and tempered.

FORMS OF SUPPLY

Sanicro 28 precision wire is supplied cold drawn and degreased, on steel spools, in continuous lengths, without welds.

PRODUCT PROGRAM

Diameter	Breaking load	Weight			
		N	lbf	kg/1 000 m	lb/1 000 ft
mm	in.				
2.083	0.082	5109	1149	27.5	18.4
2.337	0.092	6431	1446	34.6	23.2
2.667	0.105	8377	1883	45.0	30.2
2.743	0.108	8862	1992	47.6	32.0
3.175	0.125	11872	2669	63.8	42.8
3.810	0.150	17096	3843	91.4	61.27
4.064	0.160	19451	4373	103.8	69.60

MECHANICAL PROPERTIES

Sanicro 28 is tested and certified in accordance with a minimum nominal tensile strength. Proof strength is approximately 90 % of the tensile strength. Sanicro 28 is able, therefore, to resist high loads without permanent set of the wire.

Proof strength		Tensile strength	
MPa	ksi	MPa	ksi
min	min	min	min
1350	200	1500	220

DISCLAIMER:

Recommendations are for guidance only, and the suitability of a material for a specific application can be confirmed only when we know the actual service conditions. Continuous development may necessitate changes in technical data without notice. This datasheet is only valid for Sandvik materials.