

Zapp 28HT Data Sheet

Wirelines



Zapp is certified according to ISO 9001

Zapp 28HT (High Temperature) for Wirelines

is a high-alloy austenitic stainless steel suitable for service in high temperature geothermal environments. Compared to standard Zapp 28HT for wirelines has better ductility after exposure to high temperatures. This ensures better performance and longer lifetime when operating in geothermal wells.

Standards

- UNS N08028
- EN Number 1.4563
- EN Name: X1 NiCrMoCu 31-27-4

The Wireline Grade is Characterized by

- Very good performance at elevated temperatures (geothermal wells)
- 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

* PRE, Pitting Resistance Equivalent = Cr + 3.3 Mo + 30N

Chemical Composition (Nominal) %

C	Si	Mn	P	S	Cr	Ni	Mo	Cu
≤ 0.020	0.6	2.0	≤ 0.025	≤ 0.010	27.0	31.0	3.5	1.0

Forms of Supply

Zapp 28HT slicklines are supplied cold drawn and degreased, on steel spools, in continuous lengths, without welds.

Product Program

Diameter		Breaking load		Weight	
mm	in.	N	lbf	kg/1,000 m	lb/1,000 ft
2,083	0.082	4,600	1,034	27.5	18.40
2,337	0.092	5,791	1,302	34.6	23.20
2,667	0.105	7,542	1,695	45.0	30.20
2,743	0.108	7,978	1,793	47.6	32.00
3,175	0.125	10,688	2,403	63.8	42.80
3,810	0.150	15,391	3,460	91.4	61.27
4,064	0.160	17,512	3,937	103.8	69.60

Mechanical Properties

Zapp 28HT is tested and certified in accordance with a minimum tensile strength. Proof strength is approximately 85 % of the tensile strength. Zapp 28HT is able, therefore, to resist high loads without permanent set of the wire.

Proof strength, R _{p0.2}		Tensile strength, R _m	
MPa	ksi	MPa	ksi
≥ 1,150	≥ 167	≥ 1,350	≥ 196

Corrosion Resistance

Pitting

Zapp 28HT 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.

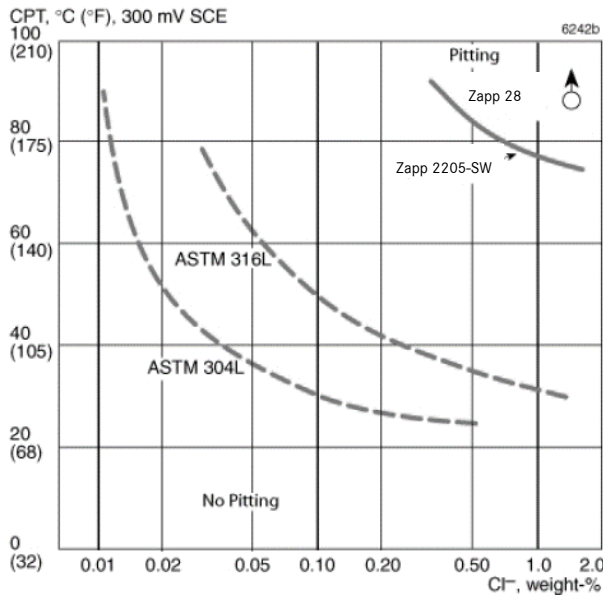


Figure 1. CPT for various alloys in neutral chloride solutions at 300 mV SCE.

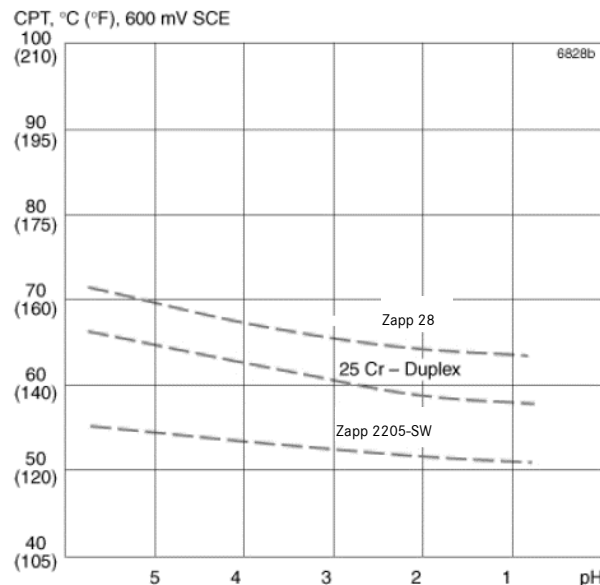


Figure 2. CPT in 3% NaCl as a function of pH at 600 mV SCE.

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.

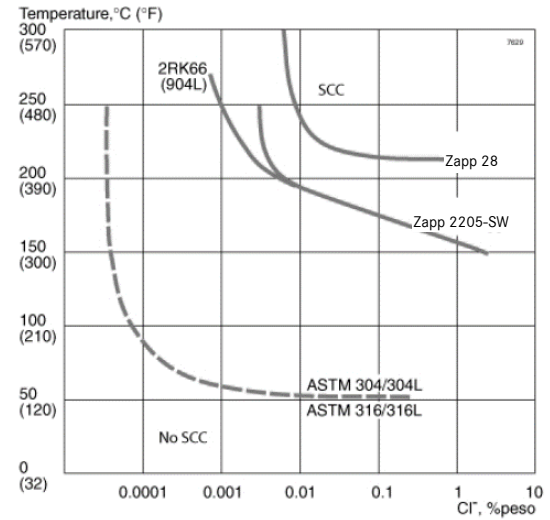


Figure 3. SCC resistance in oxygen-bearing (about 8 ppm) neutral chloride solutions. Testing time: 1,000 hours.

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 H₂S/Cl environment

Tensile specimens from cold-worked Zapp 28HT and Zapp 2205-SW 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 %.

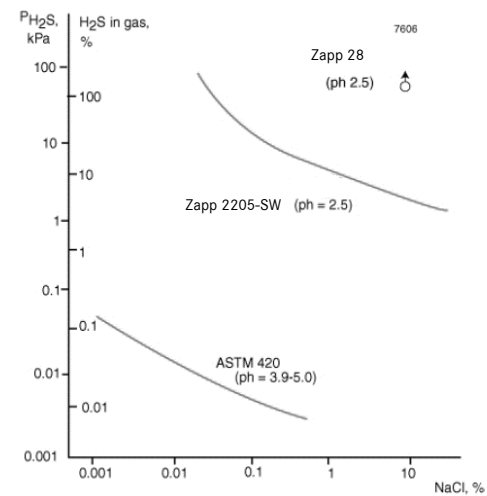


Figure 4. Constant-load SCC tests in acidified aqueous solution. Stress = 0.2% proof strength at testing temperature, 90 C (194 F). Testing time 500 hours. Zapp 28HT and Zapp 2205-SW tested in the cold worked condition. ASTM 420 quenched and tempered.

PRECISION WIRE

Zapp Precision Metals (Sweden) AB

Järnverksleden 18
811 34 Sandviken
Sweden
slickline@zapp.com
www.zapp.com

The illustrations, drawings, dimensional and weight data and other information included in this data sheet are intended only for the purposes of describing our products and represent non-binding average values. They do not constitute quality data, nor can they be used as the basis for any guarantee of quality or durability. The applications presented serve only as illustrations and can be construed neither as quality data nor as a guarantee in relation to the suitability of the material. This cannot substitute for comprehensive consultation on the selection of our products and on their use in a specific application. The brochure is not subject to change control.
Last revision: October 2024