EXERA® 7C27 MEDICAL WIRE

WIRE

DATASHEET

Exera® 7C27 is a martensitic stainless chromium steel characterized by very good hardening properties and very good cold formability. After hardening and tempering, the grade has very good corrosion resistance and toughness.

Exera® 7C27 is characterized by:

- Soft delivery condition
- Very good hardening properties
- Very good cold formability
- High corrosion resistance after hardening and tempering

STANDARDS

- ASTM: 420
- AWS: ER 420
- EN Number: 1.4028 Mod./1.4031 Mod.
- W.Nr.: 1.4007
- DIN: X35Cr14
- SS: 2304
- AFNOR: Z 30C13(13H)

Product standards

- ASTM F899
- ISO 16061

APPLICATIONS

Exera® 7C27 can be used for surgical suture needles, dental burrs, drills and tartar removers.

CHEMICAL COMPOSITION (NOMINAL) %

C	Si	Mn	P	S	Cr
0.32	0.2	0.3	≤0.025	≤0.010	13.5

FORMS OF SUPPLY

The wire is supplied coated with an anti-corrosion oil that should not be removed in storage. In cases where the first work operation is a straightening-cutting operation, the oil acts as an excellent lubricant and prevents scratching of the wire surface.

After the oil is removed, the wire should not be stored on premises with a high moisture content, since the

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material can be subject to corrosion in the unhardened state.

The wire surface is bright in diameters 0.10 - 2.50 mm (0.004 - 0.098 in.). Larger wire diameters can be manufactured on request.

Spools

Dimension		Spool no	Wire weight	
mm	in.		kg	lb
0.285 - 1,6	0.011 - 0.063	23	max 16	max 35

Coils, metric units

Dimension, mm	Inside diameter of coil, mm	Wire weight, kg
0.50 - 0.80	250	max 16
>0.80 - 1.60	300	max 20
>1.60 - 1.80	300	max 20
>1.80 - 2.50	450	approx. 60

Coils, imperial units

Dimension, in.	Inside diameter of coil, in.	Wire weight, lb
0.02- 0.031	9.8	max 35
>0.031 - 0.063	11.8	max 44
>0.063- 0.071	11.8	max 44
>0.071 - 0.098	17.7	approx. 132

In exceptional cases, spools or coils of lower weight than given in the above tables can be included in a delivery.

Tolerances

The diameter tolerance is normally D3. The wire can also be supplied with tolerance grades D1 and D2.

Metric units

Dimension, mm	Diameter tolerance, mm +/-		
	D1	D2	D3
0.10 - 0.125	0.007	0.004	0.002
>0.125 - 0.25	0.009	0.005	0.003
>0.25 - 0.50	0.011	0.007	0.004
>0.50 - 1.00	0.014	0.009	0.005
>1.00 - 1.60	0.018	0.011	0.006
>1.60 - 2.50	0.023	0.014	0.008

Imperial units

Dimension, in.	Diameter tolerance, in.		
	D1	D2	D3

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Imperial units

Dimension, in.	Diameter tolerance, in.		
	D1	D2	D3
0.004 - 0.005	0.00028	0.00016	0.00008
>0.005 - 0.010	0.00035	0.00020	0.00012
>0.010 - 0.020	0.00043	0.00028	0.00016
>0.020 - 0.039	0.00055	0.00035	0.00020
>0.039 - 0.063	0.00071	0.00043	0.00024
>0.063 - 0.098	0.00091	0.00055	0.00032

MECHANICAL PROPERTIES

The wire is supplied in tensile strengths within the range shown in the table below. The smaller the diameter, the higher the tensile strength within the stipulated range.

Tensile strength, R_m	MPa (ksi)
	730 - 900 (106 - 131)

Other tensile strengths can be supplied on request.

PHYSICAL PROPERTIES

Density: 7.7 g/cm^3, 0.28 lb/in^3

HEAT TREATMENT

Soft-annealing

When required, soft-annealing should be conducted for a period of one hour at a temperature of 650-680°C (1200-1250°F).

Hardening

Temperature, °C (°F)	1050 - 1080 (1920 - 1975)
Holding time, minutes	5 - 6

Quenching in oil or in protective gas.

To prevent oxidation, hardening should be carried out in a protective gas atmosphere using nitrogen or argon, alternatively in vacuum. The use of other gases can cause brittleness, blanks sticking together etc.

Tempering time, minutes	30
Temperature , °C (°F)	250-300 (480-570) Depending on the final hardness and ductility required

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Datasheet updated 2/2/2021 4:31:58 PM (supersedes all previous editions)