

2RK66 Spring Wire Datasheet

Wire



Zapp is certified according to ISO 9001

2RK66 spring wire

is a high-alloy austenitic stainless steel of '904L' type for use in severe corrosive environments, including environments with high chloride content and acids. The grade is recommended for springs which will operate in extremely corrosive conditions.

Service temperature: -200 to 300 °C (-330 to 570 °F)

Standards

- ASTM: 904L
- UNS: N08904
- W.Nr.: 1.4539
- SS: 14 25 62
- BS: 904S14

Corresponding standards

DIN	W.-Nr. 1.4539
BS 2056	904S14
SS	14 25 62
NFA 35 - 585	X1CrNiMoCu 25-20-5

For 2RK66 is the standard EN 10270-3 valid excluding chemical composition and mechanical properties.

Chemical composition (nominal) %

C	Si	Mn	P	S	Cr	Ni	Mo	Others
≤ 0.020	0.4	1.8	≤ 0.015	≤ 0.015	20.0	25.0	4.5	Cu = 1.5

Delivery Forms

- Standard delivery forms are:
- Coils with weight up to 150 kg
- Spools of various types with wire weight up to 1,000 kg
- Compact coils with weight up to 1,200 kg
- Straightened lengths up to 4 m

Mechanical properties

Tensile strength, MPa (ksi) in delivered condition

Wire diameter		Nominal, R _m	
mm	in.	MPa	ksi
0.05 - 0.20	0.0002 - 0.0079	1,600 - 1,840	232 - 267
> 0.20 - 0.30	> 0.0079 - 0.012	1,550 - 1,780	225 - 258
> 0.30 - 0.40	> 0.012 - 0.016	1,550 - 1,780	225 - 258
> 0.40 - 0.50	> 0.016 - 0.020	1,500 - 1,730	218 - 251
> 0.50 - 0.65	> 0.020 - 0.026	1,450 - 1,670	210 - 242
> 0.65 - 0.80	> 0.026 - 0.031	1,450 - 1,670	210 - 242
> 0.80 - 1.00	> 0.031 - 0.039	1,400 - 1,610	203 - 233
> 1.00 - 1.25	> 0.039 - 0.049	1,350 - 1,550	196 - 225
> 1.25 - 1.50	> 0.049 - 0.059	1,350 - 1,550	196 - 225
> 1.50 - 1.75	> 0.059 - 0.069	1,300 - 1,500	189 - 218
> 1.75 - 2.00	> 0.069 - 0.079	1,300 - 1,500	189 - 218
> 2.00 - 2.50	> 0.079 - 0.098	1,300 - 1,500	189 - 218
> 2.50 - 3.00	> 0.098 - 0.118	1,300 - 1,500	189 - 218
> 3.00 - 3.50	> 0.118 - 0.138	1,300 - 1,500	189 - 218
> 3.50 - 4.25	> 0.138 - 0.167	1,250 - 1,440	181 - 209
> 4.25 - 5.00	> 0.167 - 0.197	1,250 - 1,440	181 - 209
> 5.00 - 6.00	> 0.197 - 0.236	1,250 - 1,440	181 - 209
> 6.00 - 7.00	> 0.236 - 0.276	1,200 - 1,380	174 - 200
> 7.00 - 8.50	> 0.276 - 0.335	1,150 - 1,320	167 - 191
Other strength levels			
Flat wire		550 - 1,800	80 - 261

By tempering the tensile strength can be increased by 100 MPa (15 ksi). Please click on heat treatment for further information. The tensile strength variation between spools/coils within the same production lot is maximum ±50 MPa (7 ksi). The tensile strength values are guaranteed and are measured directly after production. At storing the strength will increase somewhat due to ageing. Depending on storing condition the ageing can increase the strength with 0 - 50 MPa (0 - 7 ksi).

Shear modulus, MPa (ksi)

As delivered	approx. 69,000 (10,005)
Tempered	max. 71,000 (10,295)

Modulus of elasticity, MPa (ksi)

As delivered	approx. 180,000 (26,100)
Tempered	max. 185,000 (26,825)

The strength will decrease by 3 – 4 % per 100 °C (184 °F) increase of service temperature.

Straightened lengths

After straightening the strength is approx. 7 % lower.

Physical properties

Density, g/cm³ (lb/in³): 8.0 (0.29)

Specific heat capacity

500 J/kg °C	in the temperature range 50 – 100 °C
0.12 Btu/lb °F	in the temperature range 120 – 200 °F

Thermal conductivity

Temperature, °C	W/m °C	Temperature, °F	Btu/ft h °F
20	12.0	68	7.0
100	14.0	210	8.0
200	16.0	390	9.0
300	18.0	570	10.5

Resistivity

Temperature, °C	μΩm	Temperature, °F	μΩin.
20	0.94	68	37.0
100	0.99	210	38.8
200	1.07	390	42.2
300	1.13	570	44.6

Thermal expansion ¹⁾

Temperature, °C	per °C	Temperature, °F	per °F
30 – 100	15.5	68 – 210	8.5
30 – 200	16.0	68 – 390	9.0
30 – 300	16.5	68 – 570	9.0

¹⁾ Mean values in temperature ranges (x10⁻⁶)

Permeability

μmax: 1.004

Surface finishes and size range

Surface finish	Size range, mm
Coated	0.40-4.00
Bright	0.15-0.80
Mechanically polished	0.40-4.00
Flat wire	
Width	0.50 - 7.00
Thickness	0.05- 4.00
W/t	< 25

Further information

When lubricated execution store dry in order to avoid humidity take up of the lubricant.

Zapp Precision Metals (Sweden) AB
PRECISION WIRE
Järnverksleden 18
81 134 Sandviken
Sweden
Phone +46 26 191800
precisionmetals-sweden@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: December 2019