

**Valve Spring Wire Roeslau
„R20 VD SC S“ SiCrV - alloyed
shaved
oil tempered**



Application:

Oil tempered SiCrV-alloyed Valve spring steel wire shaved for the manufacture of high stressed springs.

Range of diameters:

The wire is manufactured from **2,20 mm – 6,00 mm** in round cross section.

Chemical composition (%):

C	Si	Mn	Cr	P max.	S max.	V
0,50 - 0,70	1,20 - 1,65	0,40 - 0,90	0,50 - 1,00	0,020	0,020	0,10 - 0,25

Raw material:

Super – Clean – melted, specially treated wire rod acc.to Roeslau prescription.

Mechanical properties:

The deviation of tensile strength within one coil is 50 N/mm² max. – The tensile strength is related to the real cross section.

Nominal wire diameter from mm	Limit deviations mm ±	Tensile strength Rm N/mm ² from	Tensile strength Rm N/mm ² to	Reduction in area Z %	No. of torsions min. LO 300 mm
2,200	0,020	2.110	2.210	45	5
2,501	0,020	2.060	2.160	45	5
3,201	0,025	2.010	2.110	45	4
4,001	0,025	1.960	2.060	40	4
5,001	0,025	1.910	2.010	40	3
5,301	0,030	1.910	2.010	40	3
5,601	0,035	1.910	2.010	40	3

- 1) The surface of fracture of the sample tested on torsion must be perpendicular to the axis.
 1) On the fracture or on the surface of the sample not a single crack may be visible.
 2) The ovality, i.e. the difference between the minimum and maximum wire diameter measured in the same plane, shall not exceed 50 % of the range given by the limit deviations.

1)

Yield point (0,2 % limit) = min. 0,9 x tensile strength of the wire.

1)

Modulus of elasticity about 206 kN/mm²

1)

Modulus of rigidity about 79,5 kN/mm²

1)

1)

1)

1)

1)

Surface quality:

The surface condition of „Roeslau R20 VD SCS“ is tested by means of an inspection of both coil ends. The test pieces are checked for surface defects after deep etching and microscopically for decarburization.

When testing the coil ends the maximum depth of surface defects and decarburization is 0,5 % of the wire diameter. Connected carbon-free areas are not permissible.

In the range of sizes 2,50 – 4,99 mm the oil tempered wire is continuously tested for a permissible depth of defects of 40 µm acc. to two different methods.

Defects > 40 µm are marked in colour.

In the range of sizes 5,00 – 5,99 mm the oil tempered wire is continuously tested for a permissible depth of defects of 50 µm acc. to two different methods.

Defects > 50 µm are marked in colour.

Diameter 6,00 mm is continuously tested for a permissible depth of defects of 60 µm acc. to two different methods. Defects > 60 µm are marked in colour.

Depending on the type and shape, a surface defect deeper than the above defect limits could also not be detected. See also the position paper of the IVSWMA.*

Non-metallic inclusions:

Number of inclusions in the edge zone (measured on end samples of the wire rod).

Inclusion size	5 - 10	> 10 – 15	> 15 ¹⁾ µm
Max. Number/1000 mm ²	50	7	0

¹⁾ According to the specifications of the IVSWMA*, the occasional occurrence of inclusions larger than 15 µm is thus not excluded.

Form supplied and condition supplied:

This material is usually supplied in catchweight coils or on carriers.

Detailed coil diameters and coil weights are indicated in a separate sheet.

The packing is made according to the customer's request.

Recommendation for processing:

Immediately upon coiling the springs must be tempered at abt. 420° C for 30 minutes at least. After shot peening the springs must be tempered at abt. 250° C for 30 minutes.

In order to achieve an optimal fatigue resistance, the size of the shots and the time of shot peening must be adjusted in such a manner that the inner sides, too, are covered completely. The size of the shots must be adapted to the wire size, the pitch of the spring and the equipment used.

During loading, storing or processing the wire shall be suitably protected against corrosion and mechanical damage.

*IVSWMA: International Valve Spring Wire Manufacturers Association