

## Technical data sheet for hardened and tempered spring steel wire

VG 04 - SH/2019-02 Revision A

### Scope

This technical data sheet covers hardened and tempered spring steel wires in **SiCr alloyed** steel grades with **super high tensile** strengths.

### Chemical composition (heat analysis)

	C %	Si %	Mn %	P %	S %	Cu %	Cr %	V %
min.	0,50	1,20	0,50				0,50	
max.	0,60	1,60	0,90	0,030	0,025	0,12	0,80	

### Mechanical properties

Dia. of wire			Tensile strength		Min. reduction of area
d mm	Tolerance mm		Rm MPa		Z %
>	≤	±	min.	max.	-
5,00	8,00	0,035	2.000	2.100	45
8,00	12,50	0,040	1.980	2.080	40
12,50	14,00	0,050	1.950	2.050	35
14,00	18,50		1.900	2.000	30
The out of roundness shall not be more than 50% of the total diameter tolerance.			The tensile strength within one coil can scatter by max. 50 MPa, within one delivery by max. 70 MPa.		

### Physical properties

<b>Modulus of elasticity</b>	E [GPa]	206
<b>Shear modulus</b>	τ [GPa]	79,5
<b>Yield strength 0,2%</b>	R <sub>p0,2</sub>	min. 0,9 x tensile strength of the wire

### Surface finish

<b>Permissible depth of surface defects</b>	max. 1% of the wire-Ø, max. 0,1 mm
<b>Partial decarburization</b>	max. 0,5 % of the wire-Ø

### Heat treatment - recommended values for tempering temperature

<b>After coiling the springs</b>	≈ 400°C, 30 min.
<b>After shot peening the springs</b>	≈ 250°C, 30 min.