

Technical data sheet for hardened and tempered spring steel wire

VG 09 - SH/2019-02 Revision A

Scope

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

Chemical composition (heat analysis)

	C %	Si %	Mn %	P %	S %	Cu %	Cr %	V %
min.	0,60	1,45	0,35				0,50	0,10
max.	0,70	1,60	0,65	0,015	0,015	0,08	0,70	0,20

Mechanical properties

Dia. of wire			Tensile strength		Min. reduction of area
d mm	Tolerance mm		Rm MPa		Z %
>	≤	±	min.	max.	-
1,00	2,00	0,025	2.300	2.400	45
2,00	4,00		2.250	2.350	
4,00	6,00	0,035	2.200	2.300	40
6,00	8,00		2.150	2.250	
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

Modulus of elasticity	E [GPa]	206
Shear modulus	τ [GPa]	79,5
Yield strength 0,2%	$R_{p0,2}$	min. 0,9 x tensile strength of the wire

Surface finish

Permissible depth of surface defects	max. 1% of the wire- \emptyset
Partial decarburization	max. 0,5 % of the wire- \emptyset

Heat treatment - recommended values for tempering temperature

After coiling the springs	≈ 400°C, 30 min.
After shot peening the springs	≈ 250°C, 30 min.