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**Nazwa gatunku: 50HS/1.5026/56Si7**

**Nazwa: SPRING STEEL**

**NORM: PN/EN 10132-4:2002U**

## APPLICATION

Steel susceptible to different types of springs ( up to 6 mm ) as leaf springs, helical springs and coil springs etc.

## SEMI-FINISHED PRODUCTS

taśmy

## CHEMICAL COMPOSITION:

C	Mn	Si	P	S	Cr	Ni	Mo	W	V	Ti	Cu	Inne
0,52 - 0,60	0,60 - 0,90	1,60 - 2,00	Max 0,025	Max 0,025	0,9-1,2	Max 0,40	Max 0,10	-	-	-	-	-

## MECHANICAL PROPERTIES:

Mechanical properties after the process of annealing or annealing and rolling for the product with thickness of 0.3 mm ≤ t < 3 mm			
Property	Symbol	Unit	After heat treatment
Ultimate tensile strength	R <sub>m</sub>	MPa	≤ 600
Yield stress	R <sub>e</sub> (R <sub>p0.2</sub> )	MPa	≥ 740
Elongation	A	%	≥ 12
Percentage reduction of area	Z	%	-
Hardness	HV	HV	≤ 230
Mechanical properties after the process of cold rolling for the product thickness of 0.3 mm ≤ t < 3 mm			
Property	Symbol	Unit	Value
Tensile strength	R <sub>m</sub>	MPa	-
Hardness	HV	HV	-

Mechanical properties after the process of toughening for the product thickness of 0.3 mm ≤ t < 3 mm						
Property		Symbol		Unit		Value
Ultimate tensile strength		R <sub>m</sub>		MPa		1200 - 1700
Hardness		HV		HV		370-520
Effect of the cross-section on mechanical properties after the process of toughening						
Thickness, mm	0.3 ≤ 0.5	0.5 ≤ 0.75	0.75 ≤ 1	1 ≤ 1.5	1.5 ≤ 2	2 ≤ 3
Hardness HV	485-535	465-515	455-505	445-495	425-475	415-465

## Technological treatment processes:

Technological treatment processes			Possible application	Temperature, °C
Hot forming	Forging		-	-
	Rolling		+	(900 - 830)
Treatment	Heat treatment	Quenching	+	840-870/w,o
		Tempering	+	430 - 500
	Precipitation strengthening	Supersaturation	-	-
		Ageing	-	-
	Annealing	Normalising	+	(850 - 880)
		Soft annealing	+	(640 - 680)
Thermochemical treatment	Carburising		-	-
	Other		-	-

## INTERNATIONAL STEEL GRADES:

ISO		European Union		Russia	
~59Si7	ISO 683-14: 1992	56Si7	EN 10132-4: 2000	~ 55S2	GOST 14959 1979
US		Japan		China	
~9255	ASTM A 29-99	-	-	~55Si2Mn	GB 1222-84