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Nazwa gatunku: 50HF/1.8159/51CrV4

Nazwa: SPRING STEEL

NORM: PN-EN 10132-4

APPLICATION

Steel susceptible to parts for general mechanical engineering, axles, shafts, automotive and gear parts, crankshafts, connecting-rods of engines; surface hardened for parts with high strength cores

TECHNOLOGICAL INFORMATION

After soft annealing steel becomes machinable (by improved shearability) and adjusted for the mechanical cutting.

CHEMICAL COMPOSITION:

C	Mn	Si	P	S	Cr	Ni	Mo	V	W	Ti	Cu	Inne
0,47 - 0,55	0,70 - 1,10	Max 0,40	Max 0,025	Max 0,025	0,90 - 1,20	-	-	0,10 - 0,25	-	-	-	-

MECHANICAL PROPERTIES:

Mechanical properties of a product with the diameter $d \leq 16$ mm			
Property	Symbol	Unit	After heat treatment
Ultimate tensile strength	R_m	MPa	1100-1300
Yield stress	$R_e (R_{p0,2})$	MPa	≥ 900
Elongation	A	%	≥ 9
Reduction of area	Z	%	≥ 40
Impact energy	KV	J	≥ 30
Effect of the cross-section on mechanical properties			
Diameter d, mm	16 - 40	40 - 100	100 - 160
Thickness of the flat bar t, mm	8 - 20	20 - 60	60 - 100
			160 - 250
			100 - 160

R_m , MPa	1000 - 1200	900 - 1100	850 - 1000	800 - 950
R_e ($R_{p0.2}$), MPa	≥ 800	≥ 700	≥ 650	≥ 600
A, %	≥ 10	≥ 12	≥ 13	≥ 13
Z, %	≥ 45	≥ 50	≥ 50	≥ 50
KV, J	≥ 30	≥ 30	≥ 30	≥ 30

Technological treatment processes:

Technological treatment processes		Possible application	Temperature, °C	
Hot forming	Forging	+	(1050 - 850)	
	Rolling	+	(1180 - 850)	
Treatment	Heat treatment	Quenching	820-870/w,o	
		Tempering	540 - 680	
	Precipitation hardening	Supersaturation	-	
		Ageing	-	
	Annealing	Normalising	+	(850 - 880)
		Soft annealing	+	(640 - 680)
Thermochemical treatment	Carburising	-	-	
	Other	-	-	

INTERNATIONAL STEEL GRADES:

ISO		European Union		Russia	
51CrV4	ISO 683-1 1987	51CrV4	EN 10083-1 1996	~ 50ChFA	GOST 14959 1979
US		Japan		China	
~6150H	ASTM A 304-95	SUP 10	JIS G 4801 1984	50CrVA	GB 8162-87