

material characteristics	material number / grade	SWG 2711						
	DIN standard	54NiCrMoV6						
	comparable grade	-						
	chemical composition - reference analysis [%]	C	Si	Mn	Cr	Mo	Ni	V
		0.55	0.25	0.70	0.70	0.30	1.70	0.10
	production technology	EAF/LF/VD, forging, Q+T						
	service hardness / strength <small>converted acc. to DIN EN ISO 18265 table G.2</small>	HB		HRC		N/mm <sup>2</sup>		
		295 - 401		30.4 - 41.6		935 - 1305		
	delivery condition	Q+T	295 - 401	30.4 - 41.6	935 - 1305			variation upon request
	maximum dimension	diameter			thickness			
≤ 600 mm			≤ 400 mm					
US-specification	EN 10228-3			SEP 1921				
	table 3 - type 1 - qual. class 3			group 3 - class D,d				
cleanliness	DIN 50602			ASTM E45 method A				
	K4 ≤ 30			A ≤ 1,5; B, C, D ≤ 2				

technological properties		0	1	2	3	4	5	comment	
	toughness		■	■	■				in relation to service hardness 370 - 401 HB
	hot strength at working temp.		■	■	■				
	wear resistance		■	■	■	■			
	corrosion resistance	■							
	machinability		■	■					Q+T
	polishability		■	■					ISO/SPI: N2/A-2; 370 - 401 HB
	weldability		■	■					CET = 0.73 % acc. DIN EN 1011-2
	texturability		■	■					for high texturing reliability: XPM
	nitridability		■	■					nitriding hardness 550 - 700 HV1
chrome-platability		■	■						

rating properties: 0 = not suitable; 1 = low; 2 = middle; 3 = good; 4 = very good; 5 = perfectly suitable

physical properties	thermal conductivity [W · m <sup>-1</sup> · K <sup>-1</sup> ]	20 °C	200 °C	300 °C	500 °C
		37.5	39.7	39.0	36.1
	coefficient of thermal expansion between 20 °C and ... [10 <sup>-6</sup> · K <sup>-1</sup> ]	100 °C	200 °C	300 °C	500 °C
		11.8	12.7	13.3	14.3
elastic modulus [kN/mm <sup>2</sup> ]	20 °C	200 °C	300 °C	500 °C	
	212	199	192	175	

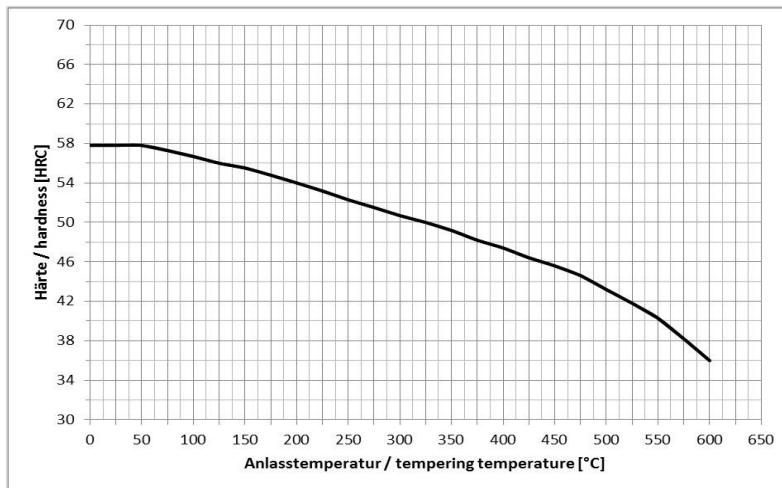
application	technology	mold making, injection molding, press-molding
	tools	plastic molds, die-holder
	process temperature	< 250 °C
	tool size	medium-sized molds
	final products	injection plastic parts, press-forming plastic parts
	features	pre-hardened, high hard, for high surface requirements: XPM and XPM ESR

SWG processing instructions	welding, texturing
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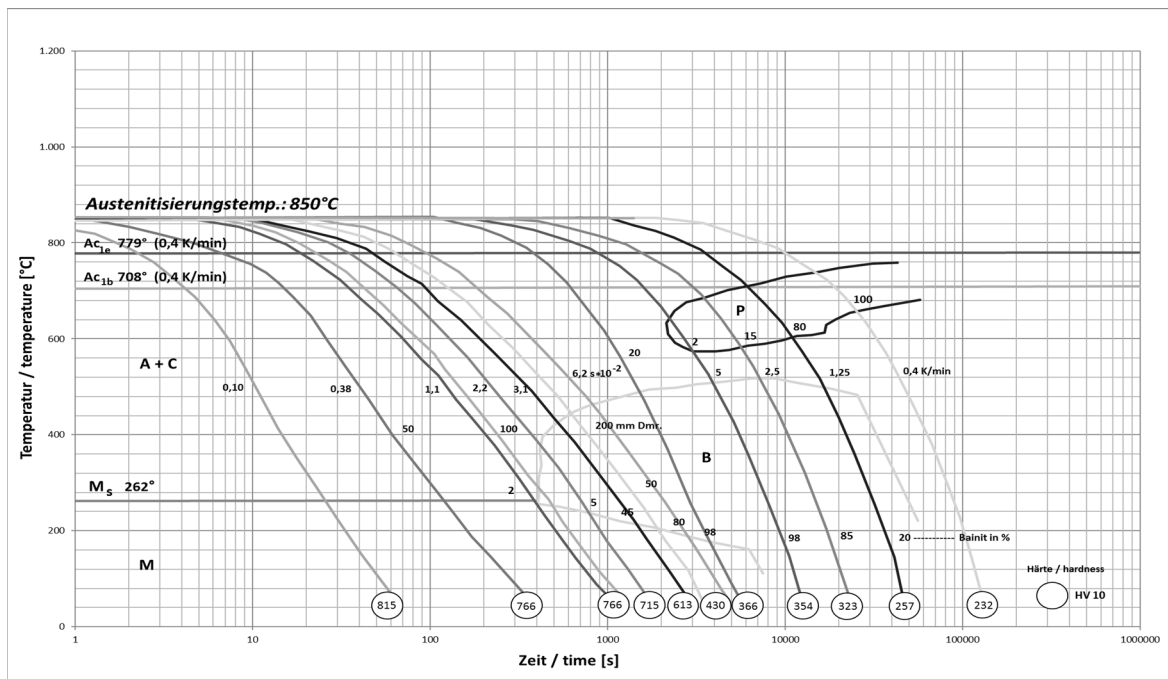
heat treatment		T min [°C]	T max [°C]	medium / comment
	annealing	720	750	air
	hardening	840	870	oil, polymer
	tempering	550	680	air
	stress relieving	500	550	min. 30 °C below tempering temp.
	pre-heating before welding	300	320	
	nitriding	400	500	min. 30 °C below tempering temp.
	PVD-treating	400	500	

diagrams/ structure	CCT-diagram	yes
	tempering diagram	yes
	advice on heat treatment	pre-hardened
	microstructure	martensitic/bainitic

**Tempering diagram:** Average values on samples dia 25 mm x length 50 mm; hardened at 850 °C in oil



**CCT-diagram**



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