

material characteristics	material number / grade	SWG 738HH						
	short designation	25MnCrNiMoV6-6-4						
	comparable grade	AISI P20+Ni, 1.2738, 1.2738mod						
	chemical composition - reference analysis [%]	C	Si	Mn	Cr	Mo	Ni	others
		0.27	0.30	1.55	1.35	alloyed	1.00	alloyed
	production technology	EAF/LF/VD, forging, Q+T						
	service hardness / strength <small>converted acc. to DIN EN ISO 18265 table B2</small>			HB	HRC	N/mm ²		variation upon request
				308 - 359	32 - 38	978 - 1140		
	delivery condition	Q+T		308 - 341	32 - 36	978 - 1085		
				324 - 359	34 - 38	1029 - 1140		
maximum dimension	diameter			thickness				
	-			≤ 1200 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 Methode A				
	K4 ≤ 20			A ≤ 1,5; B, C, D ≤ 2				

technological properties		0	1	2	3	4	5	comment	
	toughness		■	■	■				in relation to service hardness 34-38 HRC
	hot strength at working temp.		■	■	■				
	wear resistance		■	■	■				
	corrosion resistance	■							
	machinability		■	■	■				Q+T
	polishability		■	■					ISO/SPI: N2/A-2 (34-38 HRC); better than 2738
	weldability		■	■	■	■			CET = 0.57 % acc. DIN EN 1011-2
	texturability		■	■	■				
	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 ⁻¹ · K ⁻¹]	20 °C	200 °C	300 °C	500 °C
		34.3	36.8	36.6	36.5
	coefficient of thermal expansion between 20 °C and ... [10 ⁻⁶ · K ⁻¹]	100 °C	200 °C	300 °C	500 °C
		11.8	12.5	13.1	14.8
	elastic modulus [kN/mm ²]	20 °C	200 °C	300 °C	500 °C
		212	207	192	175

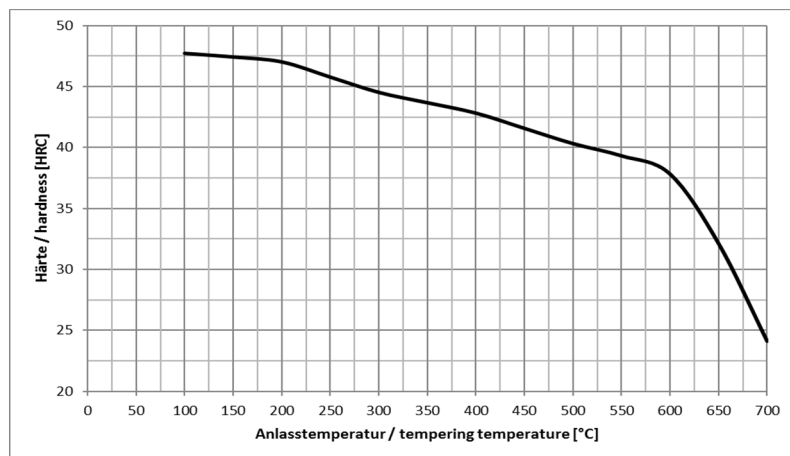
application	technology	mold making, injection molding
	tools	plastic molds, large molds, large mold frames, die-holder
	process temperature	< 250 °C
	tool size	medium- and large-sized molds
	final products	car bumpers, large interior parts, plastic housings
	features	alternative to 2738 for large molds, for high surface requirements: XPM and XPM ESR

SWG processing instructions	welding, texturing
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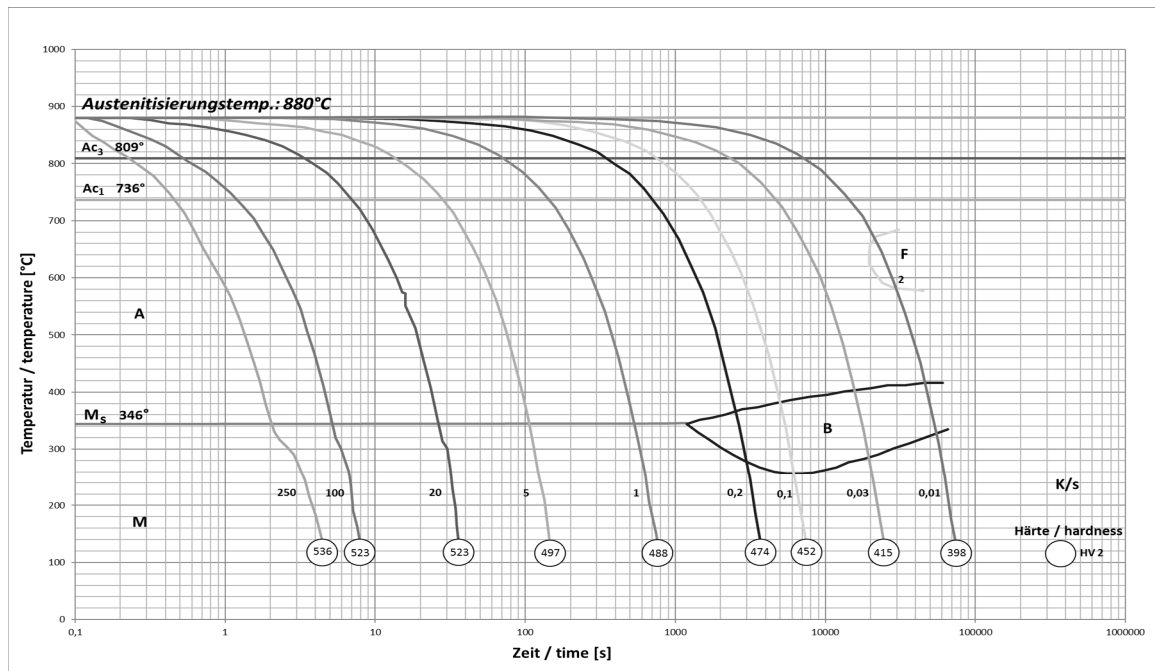
heat treatment		T min [°C]	T max [°C]	medium / comment
	annealing	710	740	air
	hardening	870	920	oil, polymer
	tempering	500	650	air
	stress relieving	450	530	min. 30 °C below tempering temp.
	pre-heating before welding	300	330	
	nitriding	450	530	min. 30 °C below tempering temperature
	PVD-treating	450	530	

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

Tempering diagram: Average values on samples dia 25 mm x length 50 mm; hardened at 880 °C in oil



CCT-diagram



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