

<b>GENERAL INFORMATION</b>	This steel grade was developed to complement standard mold steel to eliminate problems such as hardness drop-off towards the middle of the mold, machining problem and inadequate etch-grainability with large sizes of more than 400mm in cross section. A significant step taken towards dealing with these problems is to increase hardenability by alloying approximately 1% nickel.								
<b>APPLICATION</b>	It features excellent hardening penetration, good workability, polishing and photoengraving properties. This steel is used for plastic moulds of medium and big size. It can be subject to a nitriding treatment to improve its wear resistance. Injection and thermoplastic extrusion moulds, rubber moulds, mould carrier frames, containers.								
<b>COMPARABLE STANDARDS</b>	<b>AISI/SAE</b>	<b>DIN</b>	<b>W.Nr.</b>	<b>AFNOR</b>	<b>JIS</b>	<b>GB</b>			
	P20+Ni	40CrMnNiMo8-6-4	1.2738	40CMND8	-	3Cr2MnNiMo			
<b>CHEMICAL ANALYSIS (%)</b>	<b>C</b> 0.35~0.45	<b>Mn</b> 1.30~ 1.60	<b>Si</b> 0.20~0.40	<b>Cr</b> 1.80~2.10	<b>Mo</b> 0.15~0.25				
	<b>Ni</b> 0.90~1.20	<b>P / S</b> ≤0.030							
<b>MECHANICAL PROPERTIES</b>	<b>Hardness</b>	<b>Y.S.(0.2%)</b>		<b>UTS</b>		<b>Elongation</b>	<b>RoA</b>	<b>Elastic Modulus</b>	
	HB	MPa	KSI	MPa	KSI	%	Z%	GPA	KSI
	300	826	120	993	145	17	59	205	29745
<b>HEAT TREATMENT</b>									
<b>Annealing:</b>									
- heat to 710~740°C,with hold at minimum rate for 3 hours;									
- slow furnace cooling to 600°C									
<b>Stress relieving:</b>									
to be carried out after machining and before the final heat treatment.									
- Heating to 530~580°C for 2 hours.									
<b>Hardening:</b>									
- preheating to 500~550°C;									
- austenitizing at 840~880°C;									
- oil or thermal bath cooling at 200~230°C,then oil cooling according to the steel shape and size.									
Quenched hardness 52~54 HRC.									
<b>Tempering:</b>									
to be carried out after the hardening and when the steel is at 60~80°C,at 500~600°C according to the required hardness and with permanence for at least 2 hours; cooling in air.									

**Quenching and Tempering Curve (only for reference):**