

Steel Grade	Comparable Standard	AISI / JIS	Delivery Hardness	Typical Analysis of Major Chemical Analysis										Characteristics	Austenizing Temperature/	Quenching Method	Tempering Temp. and Hardness Cross Reference				Applications
				C	Si	Cr	Ni	Mn	Mo	V	W	180	225				300	570			
Aubert & Duval																					
MEK4	DIN 1.8523		Prehardened to HB 360 - 400	0.4	-	3.0	-	-	1.0	0.2	-	-	High hardness and toughness. With nitriding process, surface hardness can be attained to 900 HV			Prehardened Condition				Plastics mold with the requirement of high hardness, toughness and wear resistance. Surface hardness can be increased to 800 HV by nitriding	
X13T6W (236H)	420 Mod., ESR		Prehardened to HB 290 - 330										High purity and polishability. Wear resistance and corrosion resistance are better than normal AISI 420 stainless steel			Prehardened Condition				High quality mold inserts with mirror surface finish and good corrosion resistance, anti-corrosive cooling channel, best suitable for plastic molding of PVC, PP, EP,PC, PMMA, machine parts for food processing machinery.	
X13T6W (236)	420 Mod., ESR		Annealed to HB 240 max.	0.4	-	14.5	-	-	0.3	-	-	High purity and polishability. Wear resistance and corrosion resistance are better than normal AISI 420 stainless steel. Hardness can be obtained up to 50 - 52 HRC with proper heat treatment in order to obtain better polishability, wear resistance and/or c			Please refer to the corresponding product catalog for the details of heat treatment parameters						
ADC3	H11 Mod. (High Purity Process) / 1.234		Annealed to HB 235 max.	0.35	-	5.0	-	-	1.3	0.4	-	strict and tight control on chemical composition and metallurgical gain structure, excellent toughness, excellent resistance to heat checking			Please refer to the corresponding product catalog for the details of heat treatment parameters				Suitable for large AL die casting molds, Mg die casting molds with excellent fatigue life.		
SMV3W	H11 ESR / 1.2343 ESR		Annealed to HB 235 max.	0.4	1.0	5.0	-	0.4	1.3	0.5	-	strict and tight control on chemical composition and metrology gain structure, homogeneous quality and stability, high material cleanliness, compare AISI H13, better toughness, good resistance to heat fatigue.			Please refer to the corresponding product catalog for the details of heat treatment parameters				Suitable for small to medium AL die casting mold, Zn die casting mold; and hard injection molds for PA,POM,PS, PE, EP plastics including grass fibres		
ASSAB Steel																					
IMPAX 718S	P20 Modified		Prehardened to HB 290 - 330	0.38	0.3	2.0	1.0	1.4	0.2	-	-	Pre-hardened type, high purity with isotropic microstructure contains 1.0% Ni			Prehardened Condition				High quality mold inserts, best suitable for plastic molding of PA,POM, PS, PE, PP, ABS.		
IMPAX 718H			Prehardened to HB 330 - 380																		
EM38	---		Prehardened to HB 350 - 410	Patent Pending								Good polishability, texturing, EDMing and machinability. Homogenous hardness			Prehardened Condition				Suitable for plastics injection mold, extrusion die and rubber mold		
STAVAX S136	420, ESR		Annealed to HB 250 (approx.)	0.38	0.8	13.6	-	0.5	-	0.3	-	High purity, high polishability to mirror finish, with good corrosion resistance and low distortion after heat treatment.	1025	Oil/Air	54	53	-	-	High quality mold inserts with mirror surface finish and good corrosion resistance, anti-corrosive cooling channel, best suitable for plastic molding of PVC, PP, EP,PC, PMMA, machine parts for food processing machinery.		
STAVAX S136H			Prehardened to HB 290 - 330												Prehardened Condition						
STAVAX S136 SUP	420, ESR		Annealed to HB 250 Max.	0.24	-	13.3	1.4	0.5	0.35	0.35	-	Corrosion resistance and toughness are better than S136	1020	Air	-	50	49	-	Suitable for big plastic mold with high precision requirement		
STAVAX S136H SUP			Prehardened to HB 290 - 330									Corrosion resistance and toughness are better than S136H			Prehardened Condition						
POLMAX	420 (ESR+VAR), Optical Grade		Annealed to HB 200 (approx.)	0.38	0.9	13.6	-	0.5	-	0.3	-	Ultra-high purity and extremely low segregation by double remelting process (ESR+VAR). Excellent polishability to attain optical requirement. Good corrosion resistance and low distortion after heat treatment	1025	Oil/Air	54	53	-	-	High quality molds for Lens, Optical Products, compact discs and medical applications		
CORRAX S336	Special Precipitation Hardening Stainless Steel		Solution treated to 32 HRC (approx.)	0.03	0.3	12.0	9.2	0.3	1.4	-	-	Excellent corrosion resistance, extremely good dimensional stability during ageing, good weldability	Flexible hardness, 32 - 50 HRC, achieved by an ageing treatment in the temperature range 425 - 600				Injection molds for corrosive plastics, rubber, medical and food industry and plastic parts with complicated design.				
ELMAX	Special Powder Metal		Annealed to HB 240 (approx.)	1.7	0.8	18.0	-	0.3	1.0	3.0	-	High wear resistance. High corrosion resistance. High compressive strength. Less distortion after heat treatment.	1080	Oil/Air	58	57	57	-	Suitable for plastic molds with the requirement of both high corrosion resistance and wear resistance. Suitable for plastic molds for engineer plastics with additives such as glass fibers and/or fire retardant. molds for electronic encapsulation. Componen		
168 (Ramax S/Ramax 2)	420+S		Prehardened to HB 330 - 360	0.38	0.35	16.7	-	1.35	-	-	-	High machinability. High corrosion resistance	Prehardened Condition				High strength plastic mold and compacting die, suitable for molding of fibre-reinforce plastics.				
ORVAR 8407	H13, MICRODIZED + ESR		Annealed to HB 185 (approx.)	0.38	1.0	5.3	-	0.4	1.3	0.9	-	Hot work tool steel with high toughness and good high temperature strength	1020	Oil/Air	-	52	52	52	Die casting, extrusion, cold hobbing, mold for PA, POM,PS, PE, EP plastics		
CALMAX 635	High wear resistance multi-functional tool steel		Annealed to HB 200 (approx.)	0.6	0.35	4.5	-	0.8	0.5	0.2	-	Extremely high toughness and high wear resistance, good hardenability and weldability, good flame and induction hardenability to HRC56-60, with harden layer up to 5mm thickness.	960	Air	60	58	55	-	High strength plastic mold and compacting die, suitable for molding of fibre-reinforce plastics.		
VANADIS 10	High performance powder metallurgical cold work tool steel		Annealed to HB 280 - 310	2.9	1.0	8.0	-	0.5	1.5	9.8	-	Extremely high wear resistance, sufficient toughness with very high compressive strength and high dimensional stability during heat treatment.	1040	Air	-	/	64	-	High speed stamping of E.I. core and lead frame.		
DAIDO Steel																					
PX88	P20 Modified		Prehardened to HB 280 - 310	Patent Pending								Good weldability, special alloying composition to reduce sensitivity due to weld crack.			Prehardened Condition				Medium production run plastic mold with good surface finishing.		
PX5	P20 Modified		Prehardened to HB 280 - 310	Patent Pending								Good weldability, special alloying composition to reduce sensitivity due to weld crack, good machinability			Prehardened Condition				Medium production run plastic mold		
NAK55	P21+S Mod., ESR		Prehardened to HB 370 - 400	0.15	0.3	-	3.0	1.5	0.3	-	-	Pre-hardened type with high hardness, good machinability and weldability			Prehardened Condition				High precision plastic molds and rubber molds.		
NAK80	P21 Mod., ESR		Prehardened to HB 370 - 400	Improved Composition from NAK55								Pre-hardened type with high hardness, good polishability,excellent photo-etchingability, good EDM machining and weldability			Prehardened Condition				molds require high wear resistance and excellent surface finishing.		
S-Star	SUS 420 J2 Mod., ESR		Prehardened to HB 300 - 330	0.38	0.9	13.5	-	0.1	0.3	-	-	High mirror surface polishability with corrosion resistance.			Prehardened Condition				High precision plastic molds with high mirror surface finishing.		
S-Star (A)	SUS 420 J2 Mod., ESR		Annealed to HB 229 max.	0.38	0.9	13.5	-	0.1	0.3	-	-	High mirror surface polishability with corrosion resistance. Hardness can be obtained up to 50 - 52 HRC with proper heat treatment in order to obtain better polishability, wear resistance and/or corrosion resistance			Please refer to the corresponding product catalog for the details of heat treatment parameters				High precision plastic molds with high mirror surface finishing.		
DH31-S	SKD61 Modified		Annealed to HB 235 (max.)	Patent Pending								Good through-hardening properties especially for large molds, excellent resistance to thermal shock and to thermal fatigue, good resistance to heat erosion.			Please refer to the corresponding product catalog for the details of heat treatment parameters				AL, Mg Die casting molds, Parts for die casting molds, AL die extrusion molds, Hard plastics molds.		
DHA1	SKD61		Annealed to HB 229 (max.)	0.38	0.9	5.0	-	0.4	1.3	1.0	-	Good through-hardening properties, good resistance to thermal shock and thermal fatigue, good resistance to heat erosion.	1030	Oil/Air	52	51	50	52	Zn, small size AL die casting molds, Parts for die casting molds, AL die extrusion molds, Hard plastics molds.		
GOA	SKS3 Modified		Annealed to HB 217 (approx.)	0.86	0.3	0.5	0.25	1.2	0.13	-	0.5	High hardenability and wear resistance cold work tool steel	830	Oil	62	60	58	-	Punches for cold forming and blanking, shearing blades for metal sheet.		
DC11	SKD11		Annealed to HB 255 (approx.)	1.6	0.4	13.0	0.5	0.6	1.2	0.5	0.5	Excellent wear resistance with high chromium cold work tool steel	1025	Air	62	60	59	-	Suitable for cold extrusion, cold drawn dies, punching and blanking dies for stainless steel or metal sheets with high hardness.		

DC53	SKD11 Modified	Annealed to HB 255 (approx.)	Patent Pending								High toughness chromium cold work tool steel, high temperature tempering after the heat treatment can reach the high hardness of 62 HRC, especial good for much EDM wire cut works to reduce the breakage.	Please refer to the corresponding product catalog for the details of heat treatment parameters						suitable for stamping die, cold forming, deep drawing, thread rolling, punches for high speed blanking, stainless steels materials.	
Finkl																			
P20 HH	P20 Modified	Prehardened to HB 330 - 370	0.33	0.3	1.85	0.6	0.9	0.5	-	-	With special chemical composition adjustment and good forging process/forging ratio, mechanical properties are better than normal AISI P20 tool steels.	Prehardened Condition						High quality mold inserts, best suitable for plastic molding of PA,POM, PS, PE, PP, ABS.	
P20 LQ	P20 Mod. (Optical Quality)	Prehardened to HB 330 - 370	0.33	0.45	1.80	0.45	0.8	0.5	-	-	High purity and less segregation are obtained by double vacuum melting processes (VAD + VAR) in order to obtain good polishability	Prehardened Condition						Suitable for plastic mold with optical requirement without requiring to handle corrosive plastics	
Lung Kee Special Steel																			
LKM 638	P20	Prehardened to HB 270 - 300	Patent Pending								High machinability	Prehardened Condition						High quality mold base or large core parts.	
LKM 2311	P20	Prehardened to HB 280 - 325	0.37	-	1.9	-	1.45	0.2	-	-	Pre-hardened type tool steel for plastic mold.	Prehardened Condition						mold for high quality plastic with long run production.	
LKM 2312	P20 + S	Prehardened to HB 280 - 325	0.37	-	1.9	-	1.45	0.2	-	-	Excellent machinability, most suitable for high speed volume machining.	Prehardened Condition						Plastic mold for general use and core parts	
LKM 738	P20 + Ni	Prehardened to HB 290 - 330	0.37	-	2.0	1.0	1.1	0.4	-	-	High quality pre-hardened type tool steel, uniform in hardness and high machinability	Prehardened Condition						mold with high toughness and good finishing.	
LKM 738H		Prehardened to HB 330 - 370										Prehardened Condition							
LKM838H	P20 Mod.	Prehardened to HB 330-360	Patent Pending								With special adjustment to the chemical composition, LKM838H's thermal conductivity,machinability, polishability and weldability are better than normal AISI P20 tool steels.	Prehardened Condition						suitable for plastic molding of PA,POM, PS, PE, PP, ABS with the requirement of high hardness, polishability and wear resistance.	
LKM818H	P20 Modified	Prehardened to HB 330-370	0.38	0.3	2.0	1.0	1.4	0.2	-	-	Pre-hardened type, high purity with isotropic microstructure contains	Prehardened Condition						High quality mold inserts, suitable for plastic molding of PA,POM, PS, PE, PP, ABS.	
LKM 2711	P20, Premium	Prehardened to 335 - 380	0.55	-	0.7	1.7	0.8	0.25	-	-	High hardness and high toughness	Prehardened Condition						Suitable for medium plastic molds requiring high hardness with good toughness	
LKM420	420	Annealed to HB 240 max.	0.38	-	13.0	-	0.5	-	-	-	Good anti-rusting property. Hardness can be increased up to HRC 50 - 52 for plastic mold application	Please refer to the corresponding product catalog for the details of heat treatment parameters						Plastic mold with requirement of anti-rusting	
LKM420H	420	Prehardened to HB 280 - 330	0.38	-	13.0	-	0.5	-	-	-	Good anti-rusting property.	Prehardened Condition						Plastic mold with requirement of anti-rusting and mouldbase with corrosion resistance requirement	
LKM 2083	420	Annealed to HB 240 max.	0.43	-	13.0	-	0.3	Some	-	-	Hardness can be obtained up to 50 - 52 HRC with proper heat treatment in order to obtain better polishability, wear resistance and/or corrosion resistance	1020	Oil/Air	56	56	55	52	Corrosion resistance plastic molds.	
LKM 2083H		Prehardened to HB 280 - 320										Prehardened Condition							
LKM 2316A	SUS 420 J2	Annealed to HB 230 max.	0.4	-	16.0	Some	0.5	1.0	-	-	Hardness can be obtained up to 47 HRC with proper heat treatment in order to obtain the better wear resistance and corrosion resistance than pre-hardened condition	1020	Oil/Air	47	46	45	-	High corrosion resistance plastic molds.	
LKM 2316		Prehardened to HB 265 - 320										Prehardened Condition							
LKM 2316ESR	SUS 420 J2, ESR	Prehardened to HB 265 - 320	0.4	-	16.0	Some	0.6	1.2	-	-	High cleanliness, high corrosion resistance	Prehardened Condition						High corrosion resistance molds with good polishability.	
LKM H13	H13	Annealed to HB 225 (Max)	0.38	1	5.0	-	0.4	1.3	1.0	-	Good toughness	1030	Oil/Air	-	51	51	52	Suitable for hard plastic molds, sliders, zinc die casting dies.	
LKM 2343	H11	Annealed to HB 225 (Max)	0.36	1	5.0	-	0.4	1.2	0.35	-	Good high temperature strength and high toughness, good resistance to heat checking	1010	Oil/Air	-	51	51	52	Suitable for die casting for aluminium and zinc alloys, hard plastics molds.	
LKM 2343 ESR	H11 ESR	Annealed to HB 225 (Max)	0.36	1	5.0	-	0.4	1.2	0.35	-	Homogenous structure and good isotropic property. Good plastic mold with high polishing requirement	1010	Oil/Air	-	51	51	52	Suitable for die casting for magnesium, aluminium and zinc alloys. Good for plastics molds with high polishing requirement.	
LKM 2344	H13	Annealed to HB 225 (Max)	0.38	1.0	5.0	-	0.4	1.3	1.0	-	Homogenous structure and good isotropic property. Good plastic mold with high polishing requirement	1030	Oil/Air	-	51	51	52	Suitable for die casting for aluminium and zinc alloys, hard plastics molds.	
LKM 2344 ESR	H13, ESR	Annealed to HB 225 (Max)										Prehardened Condition							
LKM 2344-SUPER	H13, MICRODIZED + ESR	Annealed to HB 225 (Max)										Prehardened Condition							
LKM 2510	O1	Annealed to HB 230 (approx.)	0.93	-	0.6	-	1.1	-	0.1	0.6	High hardenability and wear resistance cold work tool steel	820	Oil	62	60	56	-	Shearing blades, cold forming, blanking and punching dies.	
LKM 2379	D2	Annealed to HB 255 (approx.)	1.55	-	12.0	-	-	0.7	1.0	-	High chromium cold work tool steel with good toughness.	1020	Oil/Air	61	60	59	-	Suitable for cold extrusion and forming, cold drawn, punching and blanking of high hardness metal sheet and stainless sheet.	
LKM 2767	6F7 (High toughness multi-purpose tool steel)	Annealed to HB 262 max.	0.45	-	1.4	4.1	-	0.3	-	-	High strength and toughness, can be hardened to HRC 50-54.	840	Oil/Air	54	52	50	-	Suitable for shearing and blanking of sheet metal with 10mm thick or above	
Sinto																			
PORCERAX II PM - 35	Sintering power metallurgical porous material	Prehardened to HV 350 - 400	0.012	0.07	16.5	1.2	0.17	1.9	-	-	High quality pre-hardened type permeable porous material with high corrosion resistance, high machinability and EDM machinability (Supplied with 7 and 20 µm pore sizes)	Prehardened Condition						molds for high quality plastic or die-casting parts with thin wall or intricated structure. Remedy for quality and productivity problems due to gas trapping during injection molding.	
USA Brush Wellman Beryllium Copper Alloy																			
MOLDMAX 40	-	Solution and aged to HRC 36 - 42	Be 1.9			Co + Ni 0.25					Cu 97.85	High strength beryllium copper alloy, very high thermal conductivity, shorten molding cycle effectively.	-	-	-	-	-	-	Best suitable for mold core and insert which require rapid cooling.
EDM Copper																			
C1100P	JIS H3100	-	Cu 99.95								Extremely high purity, good electrical conductivity, high machinability, low thermal deformation	-	-	-	-	-	-	-	EDM copper electrode.
USA ALCOA Aluminium Alloy																			
6061-T6/T651/T6511	-	Age Hardening to HB 95	Chemical Analysis can be referred to relevant information								Aluminium alloy with good corrosion resistance, excellent joining characteristics and anodizing	-	-	-	-	-	-	-	Thermoforming, blow molding, ultrasonic welding and machine parts.
SWISS ALCAN high hardness Aluminium Alloy																			
CERTAL 7022-T651/T652	AlZnMgCu0.5	Age Hardening to HB 160-170	Chemical Analysis can be referred to relevant information								High Strength, high hardness, good machinability	-	-	-	-	-	-	-	Plastic injection molding, blow molding, ultrasonic welding and machine parts
China high quality plastic mold steel																			
WY718	P20+Ni	Prehardened to HB 290 - 340	0.37	-	2.0	1.0	1.1	0.4	-	-	Prehardened plastic mold steel	Prehardened Condition						mold Base and core part of plastic mold	
WY2311	P20	Prehardened to HB 290 - 340	0.37	-	1.9	0.3	1.1	0.4	-	-	Prehardened plastic mold steel	Prehardened Condition						mold Base and core part of plastic mold	
High quality plain carbon steel																			
S50C - S55C	1050 - 1055	HB 170 - 220 (approx.)	0.5	0.35	-	-	0.8	-	-	-	High machinability	800 - 860	Water	56	52	49	24	Suitable for plastic mold base and machinery parts	