Plastic mould steels

Classification	Brand	Applications	Chemical composition in weight-%								Designations		Working hardness	Machinability	Polishability	Texturing properties	Corrosion resistance	Homogeneity	Through hardenability
			C	Si	Mn	S	Cr	Mo	Ni	Additions	DIN EN ISO 4957	AISI							
Not Corrosion resistant, non-sulphurised	**Formadur 2311**	Plastic moulds, mould frames for plastic moulds and die casting moulds	0,40	0,30	1,50	-	1,90	0,20	-	-	40CrMnMo7	P20	280 - 325 HB*	••	•	••	○	••	•
	Formadur 2738	Large plastic moulds, mould frames for plastic moulds and die casting moulds	0,40	0,30	1,50	-	1,90	0,20	1,00	-	40CrMnNi-Mo8-6-4	P20+Ni	280 - 325 HB*	•	•	••	○	•	••
Not Corrosion resistant, sulphurised	**Formadur 2312**	Mould frames for plastic and die casting moulds, press brake dies, plastic moulds without special requirements on surface quality	0,40	0,30	1,50	0,05	1,90	0,20	-	-	40CrMnMoS8-6	P20+S	280 - 325 HB*	••••	○	○	○	○	•
Corrosion resistant, non-sulphurised	**Formadur 2083**	Moulds and inserts for processing corrosive acting plastics	0,40	0,35	0,90	-	13,50	-	-	-	X40Cr14	420	48 - 52 HRC	••	••		••	••	•••
	Formadur 2083 Superclean	Moulds and inserts for processing corrosive acting plastics	0,40	0,35	0,90	-	13,50	-	-	-	X40Cr14	420	48 - 52 HRC	••	•••		••	•••	•••
	Formadur 2190 Superclean	Moulds and inserts for processing corrosive acting plastics	0,37	0,90	0,50	-	13,60	-	-	0,30 V	-	-	48 - 52 HRC	••	•••		••	•••	•••
	Formadur 2316	Moulds for processing plastics with higher demands on corrosion resistance, tools for plastic extrusion	0,36	0,40	0,90	-	16,00	1,20	-	-	X38CrMo16	420mod	265 - 310 HB*	•	•		•••	•	••••
	Formadur 2316 Superclean	As Formadur 2316 with highest demands on polishability	0,36	0,40	0,90	-	16,00	1,20	-	-	X38CrMo16	420mod	265 - 310 HB*	•	••		•••	••	••••
	Formadur PH X Superclean	High polished tools and moulds for processing of high corrosive plastics, tools for plastic extrusion	0,05	0,30	0,30	-	15,00	-	4,50	3,5 Cu+Nb	-	-	38 - 42 HRC	•	••••		••••	••••	••••
Corrosion resistant, sulphurised	**Formadur 2085**	Mould frames, plastic moulds without special demands on surface quality	0,33	0,30	1,20	0,05	16,00	-	0,50	-	(X33CrS16)	420FM	280 - 325 HB*	•••	○	○	•		•••
	Corroplast	Base plates, mould bases and plastic moulds without special requirements on polishability, as well as being resistant to condensation and cooling water (All-Stainless-Concept), excellent machinability	0,05	0,40	1,30	0,15	12,50	-	-	+	-	-	290 - 332 HB*	•••	○	○	•	•	•••

*pre-hardened, Superclean = ESR
This is an excerpt from our portfolio that also contains other grades. All grades are available in remelted condition.
Reference numbers / designations in brackets are not standardized in EN ISO 4957.

Hot work tool steels

Brand	Applications	Chemical composition in weight-%								Designations		Working hardness	High-temperature strength	Toughness	Thermal shock resistance	Temperature wear resistance	Thermal conductivity	Polishability
		C	Si	Mn	Cr	Mo	V	Ni	Additions	DIN EN ISO 4957	AISI							
Thermodur 2329	Forging dies, extrusion press tools, compression moulding dies	0,45	0,70	0,80	1,80	0,30	0,20	0,60	-	(46CrSiMoV7)	-	46 - 52 HRC	○	●◖	○	○	●●●	
Thermodur 2714	Standard steel for forging dies, press dies, auxiliary tools for extrusion, die holders, armoured trim dies, hot shear blades	0,56	0,25	0,75	1,10	0,50	0,10	1,70	-	55NiCrMoV7	L6	355 - 410 HB*	●	●●	●	●	●●●	●●
Thermodur 2343 EFS	Universally usable e.g. die casting dies and moulds for light metal processing, mandrel bars, forging dies and inserts, shrink rings, hot shear blades, ejector pins and tools for plastic processing	0,38	1,00	0,40	5,30	1,30	0,40	-	-	X37CrMoV5-1	H11	42 - 52 HRC	●●	●●●	●●	●●	●●	●●◖
Thermodur 2343 EFS Superclean	As Thermodur 2343 EFS for your most challenging requirements	0,38	1,00	0,40	5,30	1,30	0,40	-	-	X37CrMoV5-1	H11	42 - 52 HRC	●●	●●●◖	●●◖	●●	●●	●●●◖
Thermodur 2344 EFS	Universally usable e.g. die casting dies and moulds for light metal processing, mandrel bars, forging dies and inserts, hot shear blades, ejector pins and extrusion tools	0,40	1,00	0,40	5,30	1,40	1,00	-	-	X40CrMoV5-1	H13	42 - 52 HRC	●●◖	●●◖	●●	●●◖	●●	●●
Thermodur 2344 EFS Superclean	As Thermodur 2344 EFS for your most challenging requirements	0,40	1,00	0,40	5,30	1,40	1,00	-	-	X40CrMoV5-1	H13	42 - 52 HRC	●●◖	●●●	●●◖	●●◖	●●	●●●
Thermodur 2365 EFS	High speed forging machines, dies and inserts, extrusion dies for steel and heavy metal processing, heavy metal die casting tools, piercer plugs, steel for high alternating thermal stress	0,32	0,25	0,30	3,00	2,80	0,50	-	-	32CrMoV12-28	H10	40 - 50 HRC	●●●	●◖	●●●	●●◖	●●◖	
Thermodur 2367 EFS	Die casting dies and extrusion dies for light and heavy metal processing, dies and inserts, high speed forging machines	0,37	0,30	0,40	5,00	3,00	0,60	-	-	X38CrMoV5-3	-	42 - 52 HRC	●●●	●●◖	●●●	●●●	●●◖	
Thermodur 2367 EFS Superclean	As Thermodur 2367 EFS for your most challenging requirements	0,37	0,30	0,40	5,00	3,00	0,60	-	-	X38CrMoV5-3	-	42 - 52 HRC	●●●	●●●	●●●◖	●●●	●●◖	
Thermodur 2999 EFS Superclean	For use at highest temperatures, highly wear-exposed die inserts, high speed forging machines, die casting dies for heavy metal processing	0,45	0,30	0,30	3,00	5,00	1,00	-	-	-	-	42 - 52 HRC	●●●●	●◖	●●●●	●●●●	●●●	
Thermodur E 38 K Superclean	Universally usable for highly stressed tools and highest temperatures, die casting dies for light metal processing (especially for complex tools), extrusion dies for light and heavy metal processing (especially for complexly formed profiles), dies and inserts	0,35	0,30	0,30	5,00	1,35	0,45	-	-	-	-	42 - 52 HRC	●●	●●●●	●●●	●●	●●	●●●●
Thermodur E 40 K Superclean	Universally usable for highly stressed tools and highest temperatures, die casting dies for light metal processing (especially for complex tools), extrusion dies for light and heavy metal processing (especially for complexly formed profiles), dies and inserts	0,35	0,30	0,30	5,00	1,85	0,70	-	-	-	-	42 - 52 HRC	●●●	●●●◖	●●●●	●●●	●●◖	●●●◖
Thermodur 2383 Supercool	Special steel for highest thermal conductivity requirements for HPDC/LPDC/plastic injection/press hardening	0,45	-	0,90	-	1,50	1,25	0,90	-	-	-	40 - 52 HRC	●●●	●	●●●●	●●●◖	●●●●	

*pre-hardened, Superclean = ESR
This is an excerpt from our portfolio that also contains other grades. All grades are available in remelted condition.
Reference numbers / designations in brackets are not standardized in EN ISO 4957.

Hot work tool steels

Classification	Brand	Applications	Chemical composition in weight-%								Designations		Working hardness	Machinability	Through-Hardenability	Wear Resistance	Hardness at High Temp	Toughness	Polishability
			C	Si	Mn	Cr	Mo	V	Ni	Additions	DIN EN ISO 4957	AISI							
	FX	Strong die steel with balanced wear resistance and fracture toughness for most closed-die forging applications	0,50	-	0,85	1,15	0,50	-	0,90	V 0,07	1.2714MOD	-	277-477	•••	•••	••	••	•••	
	CX	Designed for maximum fracture toughness for forging applications in low, room and slightly elevated temperature ranges.	0,34	-	0,50	1,15	0,75	-	2,85	V 0,10	-	-	277-429	••	••	•	•	••••	
	WF	Alloy composition designed for improved fracture toughness and greater heat-checking resistance as well as enhanced wear and temper resistance. A high DI value combined with effective water quenching produces better core hardness and improved microstructure for stronger dies.	0,37	0,45	0,65	2,50	1,00	-	0,80	V 0,10	-	-	311-477	••	••••	•••	••	••	
	PressX	Precipitation hardening die steel designed specifically to resist thermal shock and to provide excellent wear resistance at elevated temperatures.	0,20	-	0,70	0,15	3,35	-	-	V 0,08	-	-	352-388	••	••	••••	••••	•	
Die Cast and Hot work tool steel	**SUPERDIE**	Tough, long lasting Cr-Mo-V steel with excellent high temperature physical properties. Designed for applications that require greater toughness and heat-checking resistance. Remelted to meet NADCA Grade C, but can also be utilized in hot abbrasive wear closed die forging applications.	0,35	-	0,45	5,05	2,40	-	-	V 0,55	-	-	388-514		•••	••••	••••	•••	

*pre-hardened, Superclean = ESR
This is an excerpt from our portfolio that also contains other grades. All grades are available in remelted condition.
Reference numbers / designations in brackets are not standardized in EN ISO 4957.

Cold work tool steels

Brand	Applications	Chemical composition in weight-%								Designations		Working hardness	Wear resistance	Hardness after quenching	Through hardenability	Toughness	Nitridability
		C	Si	Mn	Cr	Mo	V	Ni	Additions	DIN EN ISO 4957	AISI						
Cryodur 2210	Piercing dies, guide rods, twist drills, ejector pins and wood chisels	1,20	0,20	0,35	0,70	-	0,10	-	-	(115CrV3)	L2	58 - 62 HRC	●●●	●●●●	○	●●●●	
Cryodur 2242	Special steel for hand chisels of all types, including flat, cross-cut and pointed chisels for the treatment of hard materials; also for screwdrivers and other hand tools	0,59	0,30	0,90	1,00	-	0,10	-	-	(59CrV4)	-	50 - 58 HRC	●●◖	●●●	●●	●●◖	
Cryodur 2249	Pneumatic chipping hammers, punching tools, riveting hammers, punches and woodworking tools	0,45	1,35	0,65	1,35	-	0,10	-	-	(45SiCrV6)	-	50 - 57 HRC	●●◖	●●◖	●●	●●●	
Cryodur 2357	Punching tools, moulds, scrap shears, piercing dies, hobs, coining dies, plastic moulds, tableting tools	0,50	0,30	0,70	3,35	1,60	0,25	-	-	(50CrMoV13-14)	S7	54 - 58 HRC	●●◖	●●●	●●◖	●●●	●●●
Cryodur 2363	Cutting tools, rolls, shear blades, cold pilger mandrels, cold stamping tools, plastic moulds	1,00	0,30	0,50	5,00	0,95	0,20	-	-	X100CrMoV5	A2	56 - 62 HRC	●●●	●●●◖	●●●	●●	●●●
Cryodur 2379	Threading rolls and dies, cold extrusion tools, trimming, cutting and stamping tools, precision cutting tools, cold pilger mandrels, rotary shear blades, deep-drawing tools, highly wear-resistant plastic moulds	1,55	0,30	0,35	12,00	0,75	0,90	-	-	X153CrMoV12	D2	56 - 62 HRC	●●●◖	●●●●	●●●◖	●◖	●●●◖
Cryodur 2436	Blanking dies for cutting transformer and dynamo sheets, paper and plastics, deep-drawing tools, drawing dies and mandrels, shear blades	2,10	0,35	0,35	12,00	-	-	-	0,70 W	X210CrW12	D6	58 - 62 HRC	●●●●	●●●●	●●●	●	
Cryodur 2510	Blanking and stamping dies for cutting sheets, threading tools, drills, broaches, gauges, measuring tools, plastic moulds, shear blades, guide rails	0,95	0,20	1,10	0,60	-	0,10	-	0,60 W	(100MnCrW4)	O1	54 - 61 HRC	●●●	●●●●	●●	●●	
Cryodur 2550	Blanking dies for cutting sheets, trimming and splitting dies, cold piercing punches, tableting tools, shear blades, chipping knifes, pneumatic chisels, coining tools, cold shear blades, ejectors	0,60	0,60	0,35	1,10	-	0,20	-	2,00 W	60WCrV8	~S1	54 - 58 HRC	●●◖	●●●	●●	●●◖	
Cryodur 2709	Casings for cold extrusion tools, die casting dies, plastic moulds	< 0,02	-	-	-	5,00	-	18,00	10,00 Co + 1,00 Ti	(X3NiCoMo-Ti18-9-5)		51 - 55 HRC	●	● ●	●●●●	●●●●	
Cryodur 2746	Special steel for cold-shear blades, particularly for cutting scrap, drawing jaws, coining and bending tools	0,45	0,25	0,70	1,50	0,80	0,50	4,00	-	(45NiCrMoV16-6)	(45NiCr-MoV16-6)	50 - 54 HRC	●●◖	●●	●●●	●●●◖	
Cryodur 2767	Cutlery dies, cutting tools for thick materials, billet-shear blades, drawing jaws, massive embossing and bending tools, plastic moulds, reinforcements	0,45	0,25	0,35	1,40	0,20	-	4,00	-	45NiCrMo16	6F3	48 - 54 HRC	●●	●◖	●●●	●●●●	
Cryodur 2826	Special steel for spring collets	0,63	0,80	1,10	0,30	-	-	-	-	(60MnSiCr4)	S6	51 - 59 HRC	●●◖	●●●	●●	●●◖	
Cryodur 2842	Universally usable, cutting and stamping tools, thread-cutting tools, reamers, gauges, measuring tools, plastic moulds, shear blades, guide rails, ejector pins	0,90	0,20	2,00	0,40	-	0,10	-	-	90MnCrV8	O2	56 - 60 HRC	●●●	●●●●	●●	●●	
Cryodur 2990	Cutting and punching tools including precision cutting tools, threading dies and rolls, rotary shear blades, cold pilger mandrels, strike plates, plastic moulds, cold-forming and deep-drawing dies, woodworking tools, cold rolls	1,00	0,90	0,35	8,00	1,10	1,60	-	-	-	-	57 - 63 HRC	●●●◖	●●●●	●●●●	●●	●●●●

This is an excerpt from our portfolio that also contains other grades. All grades are available in remelted condition
Reference numbers / designations in brackets are not standardized in EN ISO 4957.

Special applications

Classification	Brand	Applications	Chemical composition in weight-%												Wear resistance	Hardness at higher temperature	Through harden-ability	Toughness
			C	Si	Mn	S	Cr	Mo	V	W	Fe	Co	Ni	Additions				
Metal Matirx Composite	**WFN**	All cold work in forming and cutting technology. Especially for tools and wear parts, which require high tempering resistance up to 450°C and good corrosion resistance.Application as tube drawing dies, cold rollers, valve parts, extrusion dies etc.	0,75				13,50	3,00			bal			33% Titanium carbides	●●●●●	●●	●●●●●	●
	Nikro128	Good application possibilities in the processing of abrasive plastics as pelletizing knives, die plates, injection nozzles, pressing tools as well as screws and bushes. Wear-resistant Rings in centrifugal pumps, filling heads and ring knives in canning machines.					13,50	5,00			bal	9,00	4,00	30% Titanium carbides	●●●●	●●●	●●●●●	●
	Cromoni	Applications that require the highest corrosion and oxidation resistance, complete non-magnetizability and high wear protection, e.g. dies for copper extrusion.					20,00	15,50					bal	22% Titanium carbides	●●●●	●●●●	●●●●●	●
	Multidur CoTiC	Metal forming in the high-temperature range (e.g. bending, cutting and punching tools, forging dies or extrusion dies) dies or extrusion dies) Plastics processing (highly stressed components of the plasticizing unit such as non-return valves)	1,00	1,00	0,80	-	28,00			4,50	1,00	bal	1,00	10% Titanium carbides	●●●●	●●●●●	●●●●●	●●
Additive Manufacturing	**Printdur 4404**	Additive manufacturing of components that require high corrosion resistance and toughness e.g. in the chemical industry		1,00	1,00		17,00	2,00			bal		13,00		●	●●		●●●●●
	Printdur HSA	Additive manufacturing of components that require high corrosion resistance, good hardness and must be free of nickel, e.g. in medical technology or the food industry	1,00		21,00		18,00	2,00			bal				●●	●●		●●●●
	Printdur HCT	Tool steel for additive manufacturing with a high hardness (57 HRC) and good corrosion resistance	0,40		3,00		13,00	1,00			bal		bal		●●●●	●●●●	●●●●●	●●
Build-Up Welding	**Celsit V**	Hardfacing alloy for high-temperature applications, corrosion and wear protection	1,10	1,20	0,50		28,00			4,50	1,00	bal	1,00		●●●●	●●●●●		●●●
	Nibasit 625	Hardfacing alloy for high-temperature applications, corrosion protection		0,50	0,50		22,00	9,00			4,00		bal		●●●●	●●●●		●●●●
	FeCrV 15	Hardfacing alloy for corrosion and high wear protection	4,30	1,10	1,10		13,00	1,20	15,00		bal				●●●●●	●●		●●

[1] These powder metallurgical tool steels are produced to order and are currently not stocked. Additional powder metallurgical tool steels available upon request.
This is an excerpt from our portfolio that also contains other grades. All grades are available in remelted condition.
Reference numbers / designations in brackets are not standardized in EN ISO 4957.

Die Casting (Inserts)

Brand	Applications	Chemical composition in weight-%								Designations		Working hardness	High-temperature strength	Toughness	Thermal shock resistance	Temperature wear resistance	Thermal conductivity	Polishability
		C	Si	Mn	Cr	Mo	V	Ni	Additions	DIN EN ISO 4957	AISI							
Thermodur 2343 EFS Superclean	Universally usable e.g. die casting dies and moulds for light metal processing, mandrel bars, forging dies and inserts, shrink rings, hot shear blades, ejector pins and tools for plastic processing	0,38	1,00	0,40	5,30	1,30	0,40	-	-	X37CrMoV5-1	H11	42 - 52 HRC	●●	●●●◖	●●◖	●●	●●	●●●◖
Thermodur 2344 EFS Superclean	Universally usable e.g. die casting dies and moulds for light metal processing, mandrel bars, forging dies and inserts, hot shear blades, ejector pins and extrusion tools	0,40	1,00	0,40	5,30	1,40	1,00	-	-	X40CrMoV5-1	H13	42 - 52 HRC	●●◖	●●●	●●◖	●●◖	●●	●●●
Thermodur 2367 EFS Superclean	Die casting dies and extrusion dies for light and heavy metal processing, dies and inserts, high speed forging machines	0,37	0,30	0,40	5,00	3,00	0,60	-	-	X38CrMoV5-3	-	42 - 52 HRC	●●●	●●●	●●●◖	●●●	●●◖	
Thermodur E 38 K Superclean	Universally usable for highly stressed tools and highest temperatures, die casting dies for light metal processing (especially for complex tools), extrusion dies for light and heavy metal processing (especially for complexly formed profiles), dies and inserts	0,35	0,30	0,30	5,00	1,35	0,45	-	-	-	-	42 - 52 HRC	●●	●●●●	●●●	●●	●●	●●●●
Thermodur E 40 K Superclean	Universally usable for highly stressed tools and highest temperatures, die casting dies for light metal processing (especially for complex tools), extrusion dies for light and heavy metal processing (especially for complexly formed profiles), dies and inserts	0,35	0,30	0,30	5,00	1,85	0,70	-	-	-	-	42 - 52 HRC	●●●	●●●◖	●●●●	●●●	●●◖	●●●◖
Thermodur 2383 Supercool	Special steel for areas and inserts with highest requirements on thermal conductivity (e.g. gate area, biscuit, chill vents)	0,45	-	0,90	-	1,50	1,25	0,90	-	-	-	40 - 52 HRC	●●●	●	●●●●	●●●◖	●●●●	
Thermodur 2999 EFS Superclean	For use at highest temperatures, highly wear-exposed die inserts, high speed forging machines, die casting dies for heavy metal processing	0,45	0,30	0,30	3,00	5,00	1,00	-	-	-	-	40 - 52 HRC	●●●●	●◖	●●●●	●●●●	●●●	

*pre-hardened, Superclean = ESR
This is an excerpt from our portfolio that also contains other grades. All grades are available in remelted condition.
Reference numbers / designations in brackets are not standardized in EN ISO 4957.

Die Casting (Frames)

Brand	Applications	Chemical composition in weight-%									Designations		Working hardness	Machin-ability	Polishability	Texturing properties	Corrosion resistance	Homoge-neity	Through harden-ability
		C	Si	Mn	S	Cr	Mo	V	Ni	Additions	DIN EN ISO 4957	AISI							
Formadur 2311	Plastic moulds, mould frames for plastic moulds and die casting moulds	0,40	0,30	1,50	-	1,90	0,20	-	-	-	40CrMnMo7	P20	280 - 325 HB*	••	•	••	○	••	•
Formadur 2738	Large plastic moulds, mould frames for plastic moulds and die casting moulds	0,40	0,30	1,50	-	1,90	0,20	-	1,00	-	40CrMnNi-Mo8-6-4	P20+Ni	280 - 325 HB*	•	•	••	○	•	••
Formadur 320	Large-format plastic injection and extrusion moulds with deep engraving and high demands on core strength, large mould frames	0,34	0,40	0,80	-	1,80	0,50	-	0,50	+	-	-	310 - 355 HB*	••	••	•••	○	•••	••••
Formadur 400	Plastic injection and extrusion moulds for all dimensions and deep engraving with high demands on polishability, wear resistance and core strength	0,36	0,40	0,90	-	1,90	0,50	-	0,50	+	-	-	355 - 400 HB*	•	•••	•••	○	•••	••••
Formadur 2312	Mould frames for plastic and die casting moulds, press brake dies, plastic moulds without special requirements on surface quality	0,40	0,30	1,50	0,05	1,90	0,20	-	-	-	40CrMnMoS8-6	P20+S	280 - 325 HB*	••••	○	○	○	○	•
Thermodur 2714	Standard steel for forging dies, press dies, auxiliary tools for extrusion, die holders, armoured trim dies, hot shear blades	0,56	0,25	0,75	-	1,10	0,50	0,10	1,70	-	55NiCrMoV7	L6	355 - 410 HB*	•	•	•	○	•	•••

*pre-hardened, Superclean = ESR
This is an excerpt from our portfolio that also contains other grades. All grades are available in remelted condition.
Reference numbers / designations in brackets are not standardized in EN ISO 4957.

Plastic Moulds

Classification	Brand	Applications	Chemical composition in weight-%								Designations		Working hardness	Machinability	Polishability	Texturing properties	Corrosion resistance	Homogeneity	Through hardenability
			C	Si	Mn	S	Cr	Mo	Ni	Additions	DIN EN ISO 4957	AISI							
Not Corrosion resistant, non-sulphurised	**Formadur 2311**	Plastic moulds, mould frames for plastic moulds and die casting moulds	0,40	0,30	1,50	-	1,90	0,20	-	-	40CrMnMo7	P20	280 - 325 HB*	••	•	••	○	••	•
	Formadur 2738	Large plastic moulds, mould frames for plastic moulds and die casting moulds	0,40	0,30	1,50	-	1,90	0,20	1,00	-	40CrMnNi-Mo8-6-4	P20+Ni	280 - 325 HB*	•	•	••	○	•	••
	Formadur 320	Large-format plastic injection and extrusion moulds with deep engraving and high demands on core strength, large mould frames	0,34	0,40	0,80	-	1,80	0,50	0,50	+	-	-	310 - 355 HB*	••	••	•••	○	•••	••••
	Formadur 320 Superclean	As Formadur 320 with highest demands on polishability	0,34	0,40	0,80	-	1,80	0,50	0,50	+	-	-	310 - 355 HB*	••	•••	••••	○	••••	••••
	Formadur 400	Plastic injection and extrusion moulds for all dimensions and deep engraving with high demands on polishability, wear resistance and core strength	0,36	0,40	0,90	-	1,90	0,50	0,50	+	-	-	355 - 400 HB*	•	•••	•••	○	•••	••••
	Formadur 400 Superclean	As Formadur 400 with highest demands on polishability	0,36	0,40	0,90	-	1,90	0,50	0,50	+	-	-	355 - 400 HB*	•	••••	••••	○	••••	••••
	Thermodur 2343 EFS	Universally usable e.g. die casting dies and moulds for light metal processing, mandrel bars, forging dies and inserts, shrink rings, hot shear blades, ejector pins and tools for plastic processing	0,38	1,00	0,40	5,30	1,30	0,40	-	-	X37CrMoV5-1	H11	42 - 52 HRC	••	•••	••	••	••	•••
	Thermodur 2343 EFS Superclean	As Thermodur 2343 EFS for your most challenging requirements	0,38	1,00	0,40	5,30	1,30	0,40	-	-	X37CrMoV5-1	H11	42 - 52 HRC	••	•••	•••	••	••	•••
	Thermodur 2344 EFS	Universally usable e.g. die casting dies and moulds for light metal processing, mandrel bars, forging dies and inserts, hot shear blades, ejector pins and extrusion tools	0,40	1,00	0,40	5,30	1,40	1,00	-	-	X40CrMoV5-1	H13	42 - 52 HRC	•••	•••	••	•••	••	••
	Thermodur 2344 EFS Superclean	As Thermodur 2344 EFS for your most challenging requirements	0,40	1,00	0,40	5,30	1,40	1,00	-	-	X40CrMoV5-1	H13	42 - 52 HRC	•••	•••	•••	•••	••	•••
	Thermodur E 38 K Superclean	Universally usable for highly stressed tools and highest temperatures, die casting dies for light metal processing (especially for complex tools), extrusion dies for light and heavy metal processing (especially for complexly formed profiles), dies and inserts	0,35	0,30	0,30	5,00	1,35	0,45	-	-	-	-	42 - 52 HRC	••	••••	•••	••	••	••••
	Thermodur E 40 K Superclean	Universally usable for highly stressed tools and highest temperatures, die casting dies for light metal processing (especially for complex tools), extrusion dies for light and heavy metal processing (especially for complexly formed profiles), dies and inserts	0,35	0,30	0,30	5,00	1,85	0,70	-	-	-	-	42 - 52 HRC	•••	•••	••••	•••	•••	•••
	Thermodur 2383 Supercool	Special steel for press hardening, also useable for small plastic injection moulds	0,45	-	0,90	-	1,50	1,25	0,90	-	-	-	40 - 52 HRC	•••	•	••••	•••	••••	

*pre-hardened, Superclean = ESR
This is an excerpt from our portfolio that also contains other grades. All grades are available in remelted condition.
Reference numbers / designations in brackets are not standardized in EN ISO 4957.

Plastic Moulds

Classification	Brand	Applications	Chemical composition in weight-%								Designations		Working hardness	Machin-ability	Polishability	Texturing properties	Corrosion resistance	Homoge-neity	Through harden-ability
			C	Si	Mn	S	Cr	Mo	Ni	Additions	DIN EN ISO 4957	AISI							
Not Corrosion resistant, non-sulphurised	**Holderbloc**	Holder steel for plastic molds, die casting dies, mold base, plates and brake dies	0,38	0,40	1,10	0,075	1,10	0,20	-	-	-	4140+S	285-321	•••	•				•
	MD	Suitable for a wide range of plastic molding applications of any size. Improved polishing and parting line stability.	0,33	0,35	0,85	-	1,85	0,50	-	-	1.2738	P20 + Ni	285-352	••	••	••		••	••
	MD Xtra	Suitable for a wide range of plastic molding applications of any size. Excellent machining and polishing. Higher through-hardenability for deep cavity. SuperHard (SH) version has high wear resistance in abrasive applications and suitable for molding parts with abrasive fillers.	0,26	0,35	1,00	-	1,45	0,55	0,60	V	1.2738 mod	P20 Mod	285-401	••	•••	•••		••	••••
	MLQ Xtra	EFVD+ESR or VAR processing to remove inclusions to provide reliable, superior polishability. Absence of harmful segregation. Super high hardness for high wear resistance, parting line stability and best polishability. Higher through hardenability.	0,26	0,35	1,00	-	1,45	0,55	0,60	V	1.2738 mod remelted	P20 Mod remelted	285-401	••	••••	••••		••••	••••
Not Corrosion resistant, sulphurised	**Formadur 2312**	Mould frames for plastic and die casting moulds, press brake dies, plastic moulds without special requirements on surface quality	0,40	0,30	1,50	0,05	1,90	0,20	-	-	40CrMnMoS8-6	P20+S	280 - 325 HB*	••••	○	○	○	○	•
	Corebloc	Alloy designed specifically for core side of mold sets of medium size with increased hardenabilty vs holderbloc and improved machinability.	0,40	0,40	1,25	0,05	1,75	0,20	-	-	1.2312	P20 Mod +S	293-321	•••	•				••
Corrosion resistant, non-sulphurised	**Formadur 2083**	Moulds and inserts for processing corrosive acting plastics	0,40	0,35	0,90	-	13,50	-	-	-	X40Cr14	420	48 - 52 HRC	••	••		••	••	•••
	Formadur 2083 Superclean	Moulds and inserts for processing corrosive acting plastics	0,40	0,35	0,90	-	13,50	-	-	-	X40Cr14	420	48 - 52 HRC	••	•••		••	•••	•••
	Formadur 2190 Superclean	Moulds and inserts for processing corrosive acting plastics	0,37	0,90	0,50	-	13,60	-	-	0,30 V	-	-	48 - 52 HRC	••	•••		••	•••	•••
	Formadur 2316	Moulds for processing plastics with higher demands on corrosion resistance, tools for plastic extrusion	0,36	0,40	0,90	-	16,00	1,20	-	-	X38CrMo16	420mod	265 - 310 HB*	•	•		•••	•	••••
	Formadur 2316 Superclean	As Formadur 2316 with highest demands on polishability	0,36	0,40	0,90	-	16,00	1,20	-	-	X38CrMo16	420mod	265 - 310 HB*	•	••		•••	••	••••
	Formadur PH X Superclean	High polished tools and moulds for processing of high corrosive plastics, tools for plastic extrusion	0,05	0,30	0,30	-	15,00	-	4,50	3,5 Cu+Nb	-	-	38 - 42 HRC	•	••••		••••	••••	••••
Corrosion resistant, sulphurised	**Formadur 2085**	Mould frames, plastic moulds without special demands on surface quality	0,33	0,30	1,20	0,05	16,00	-	0,50	-	(X33CrS16)	420FM	280 - 325 HB*	•••	○	○	•		•••
	Corroplast	Base plates, mould bases and plastic moulds without special requirements on polishability, as well as being resistant to condensation and cooling water (All-Stain-less-Concept)	0,05	0,40	1,30	0,15	12,50	-	-	+	-	-	280 - 325 HB*	•••	○	○	•	•	•••

*pre-hardened, Superclean = ESR
This is an excerpt from our portfolio that also contains other grades. All grades are available in remelted condition.
Reference numbers / designations in brackets are not standardized in EN ISO 4957.