



Premium

# Hot-work tool steels



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In addition to standardized hot-work tool steels, which are produced at Kind&Co in excellent quality and offered as "good standard" (blue background), we offer our own premium materials (yellow/orange background). These materials are specially developed materials which are offered exclusively by Kind&Co and which essentially extend the delivery spectrum. In many areas of industry today, standard steels cannot fully meet the demands placed on them. In order to continue to produce efficiently and successfully, Kind&Co premium steels are used in many different applications and convince with their various property concepts. With Kind&Co premium steels, the service life and performance of tools can be efficiently increased.

This brochure presents various material solutions from Kind&Co, arranged according to the following fields of application:

- Die casting
- Extrusion
- Die forging
- Hot-stamping
- Plastic moulds
- Glass moulds

## Kind&Co

For over 130 years, we have been producing high-quality tool steel exclusively at our site in Bielstein. Kind&Co is still a family owned business today. We stand for sophisticated material solutions, highest quality, reliable service and competent advice - tailored to the respective application. We have particularly strong application expertise in the areas of die casting, extrusion and die forging.

## Steel, mechanical processing and heat treatment from a single source

Our range of services extends from melting and forging to the pre-machining of tools to hardening dimensions - with simultaneous hardening service in our modern vacuum hardening shop.

In addition to our own mechanical workshops, the fully integrated service of our subsidiary KC GS Tooling GmbH at the Wiehl location enables us to offer high-quality machining options with a focus on deep-hole drilling and milling (also according to drawings), e.g. for die casting mould inserts. The service of KC GS Tooling GmbH can also be used independently to the steel order.

For more than 40 years, Kind&Co has been known as a specialist supplier of heat treatment processes. With five vacuum furnaces and up to 6.5 tons charging weight we are able to meet even the highest customer requirements. Even with large cross-sections and unit weights, we can ensure excellent material properties. We are internationally known as one of the leading service providers in heat treatment.

You get all the processes mentioned above from a single source and at a single location, saving you time.



## Die casting

Brand name	Mat.-Nr.	AISI	Application	Toughness	Thermal shock resistance	Comments
CS1*	Premium	-	Applications with highest surface requirements and narrow shape tolerances			Combination of high hardness (up to max. 58 HRC) and good toughness at the same time
HP1*	Premium	-	Die casting inserts with highest mechanical and thermal loads			
TQ1*	Premium	-	High-performance die casting inserts, especially for large-format moulds and structural components			
HTR*	Premium	-	Local areas and small-format die casting die inserts that are exposed to high thermal loads, max. hardness 42 HRC			Premium steel with excellent thermal conductivity
HMoD*	1.2889	H19A	Dies for heavy metal casting, highly stressed cores and inserts in the sprue area			Excellent hot strength and high hot wear resistance
RM10Co*	1.2888	-	Filling sets, brass die casting			Extremely high tempering resistance
RPU**	1.2367	-	Small and medium-sized die casting die inserts			
USD**	1.2344	H13	Widely applicable hot-work tool steel for thermally highly stressed dies			
USN**	1.2343	H11	Universally applicable hot-work tool steel with balanced properties			

\*only available in ESR-quality \*\*also available in ESR-quality



## Extrusion

Brand name	Mat.-Nr.	AISI	Application	Toughness	High-temperature strength	Hot wear resistance	Comments
CS1*	Premium	-	Extrusion dies with specific compressive stress > 1000 MPa, very highly stressed stems, dummy blocks and inner liners				Combination of high hardness (up to max. 58 HRC) and good toughness at the same time
HP1*	Premium	-	Highly stressed extrusion stems and dies with high toughness requirements				
TQ1*	Premium	-	Highly stressed intermediate and inner liners and stems, mandrels and extrusion dies				
Q10	Premium	-	Tools for extrusion with very long tool life for highly stressed inner liners and smaller stems				
HTR*	Premium	-	Air-cooled intermediate liners in copper/brass alloys extrusion, extrusion dies and mandrels				
GSF	Premium	-	Tie rods, press columns, mandrel holders and piston rods				
HMoD**	1.2889	H19A	Extrusion dies and die holders for the processing of copper/brass alloys				
HWD	1.2678	H19	Extrusion dies and die holders for the processing of copper/brass alloys				
RM10Co**	1.2888	-	Extrusion dies, die holders and inner liners for processing copper/brass alloys				
RPCo	1.2885	H10A	Tool head for indirect stems for copper/brass alloys				
RPU**	1.2367	-	Intermediate and inner liners for high loads, extrusion stems, mandrels, dies, dummy blocks and die holders				
USD**	1.2344	H13	Containers, intermediate and inner liners, press stems, mandrels and dies				
USN**	1.2343	H11	Highly stressed container mantles, intermediate and inner liners, mandrels and dies				

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## High temperature austenitic steels

Brand name	Mat.-Nr.	AISI	Characteristics	Application
AWS	1.2731	-	Austenitic hot-work tool steel	Extrusion dies for processing copper alloys
HWF	1.2779	A286	Austenitic precipitation hardenable steel	Thermally highly stressed inner liners for the processing of copper/brass alloys
MA-Rekord	1.2758	-	Austenitic hot-work tool steel	Extrusion dies for processing of copper/brass alloys

## Nickel-base alloys

Brand name	Mat.-Nr.	AISI	Characteristics	Application
SA50Ni	2.4973	R41	Precipitation-hardenable nickel-base alloy with very high high-temperature strength	Dies, die holders and mandrel tips for processing of copper/brass alloys
SA718	2.4668	UNS 7718	Precipitation-hardenable nickel-base alloy with high high-temperature strength	Inner liners, dies, die holders and mandrel tips for processing of copper/brass alloys



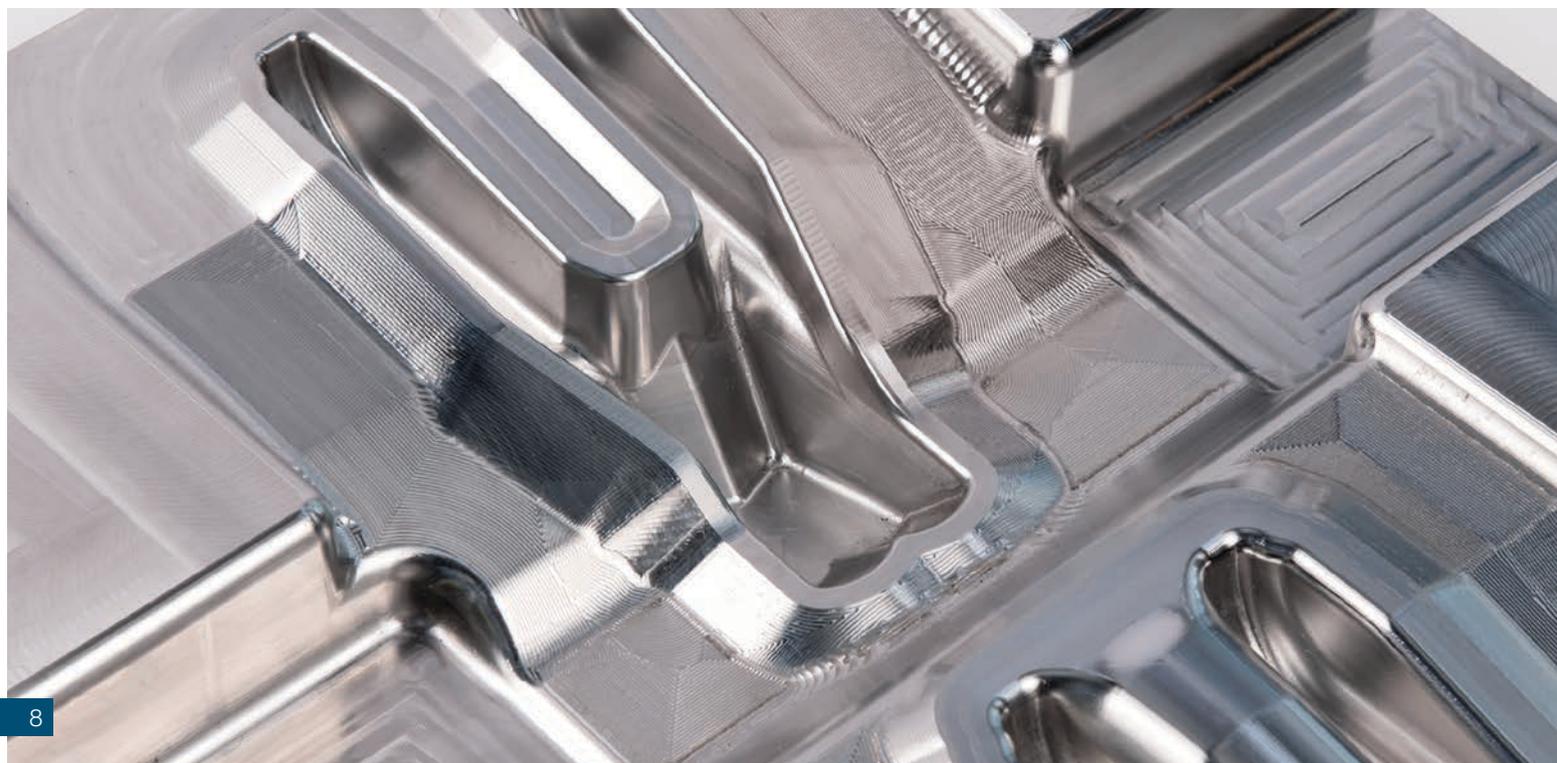
## Die forging

Brand name	Mat.-Nr.	AISI	Application	Toughness	High-temperature strength	Hot wear resistance	Comments
Cr7V-L	Premium	-	High performance forging dies with high wear requirements				Ideal for large series
CS1*	Premium	-	Dies subjected to a combination of intensive wear with simultaneous risk of cracking - as in semi-hot forging and other demanding applications				Combination of high hardness (up to max. 58 HRC) and good toughness at the same time
FTCo*	Premium	-	Dies and mandrels for high-speed forging machines, ejectors and semi-hot forging tools and near net shape forging tools				
GSF	Premium	-	Highly stressed hammer dies, build-up welded press dies, large hammer dies and finishing dies for hydraulic presses, rams and tool holders				Significant increase in performance compared to 1.2714 in case of cracking
HP1*	Premium	-	Forging of light metals, especially for deep cavities, e.g. chassis parts				Particularly suitable for forging aluminium
HSF	Premium	-	Tools for mandrels, liners and medium-sized or larger stems in high-speed forging machines, round dies with high requirements for hot wear resistance combined with very good toughness, large product series and high tolerance requirements				
HTR*	Premium	-	Dies requiring very high tempering resistance, forging of brass				
LMF	Premium	-	Aluminium forging, forging dies subjected to cracking, finishing dies				Alternative to 1.2343, 1.2343 ESR
Q10	Premium	-	Dies subjected to high impact stress, dies with complex geometry, exposed to high thermal stress with high hot wear				
TQ1*	Premium	-	Medium and large press dies with deep cavity and intensively cooled multi-stage dies				

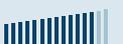
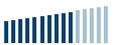
\*only available in ESR-quality

## Die forging

Brand name	Mat.-Nr.	AISI	Application	Toughness	High-temperature strength	Hot wear resistance	Comments
PWM	1.2714	~L6	Hammer dies and press saddles				
PWU	1.2744	-	Hammer dies, jaws on forging machines, moulding press dies				More efficient alternative to PWM
RP	1.2365	H10	Small press dies, mandrels and dies for high-speed forging machines				
RPCo	1.2885	H10A	Moulding press dies, especially mandrel inserts for copper and copper alloys				
RPU	1.2367	-	Dies or die inserts under forging presses for steel forming				
USD	1.2344	H13	Widely applicable hot-work tool steel for press dies and inserts for steel and light metals				
USN	1.2343	H11	Universal hot-work tool steel for press dies and inserts for steel and light metals				



## Hot-stamping

Brand name	Mat.-Nr.	AISI	Application	Toughness	Thermal conductivity	Hot wear resistance	Comments
Cr7V-L	Premium	-	Long-established steel for high tool performance with low tool care requirements				
UH1*	Premium	-	High-performance steel for hot-stamping tools with particularly high wear resistance, large product series				High working hardness up to max. 58 HRC with good toughness at the same time
HMoD*	1.2889	-	Hot-work tool steel for inserts subjected to particularly high temperature with simultaneous high wear - Tailored Tempering				
RM10Co*	1.2888	-	Local inserts with highest temperature requirements in the Tailored Tempering process				
RPU	1.2367	-					
USD	1.2344	H13					

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## Plastic moulds

Corrosion-resistant steels							
Brand name	Mat.-Nr.	AISI	Application	Corrosion resistance	Polishability	Thermal conductivity	Comments
CMR**	1.2316	-	Moulds for precision plastic parts for use under corrosive conditions				
RF*	1.2083	420	Moulds for precision plastic parts for use under corrosive conditions, with high demands on surface quality				

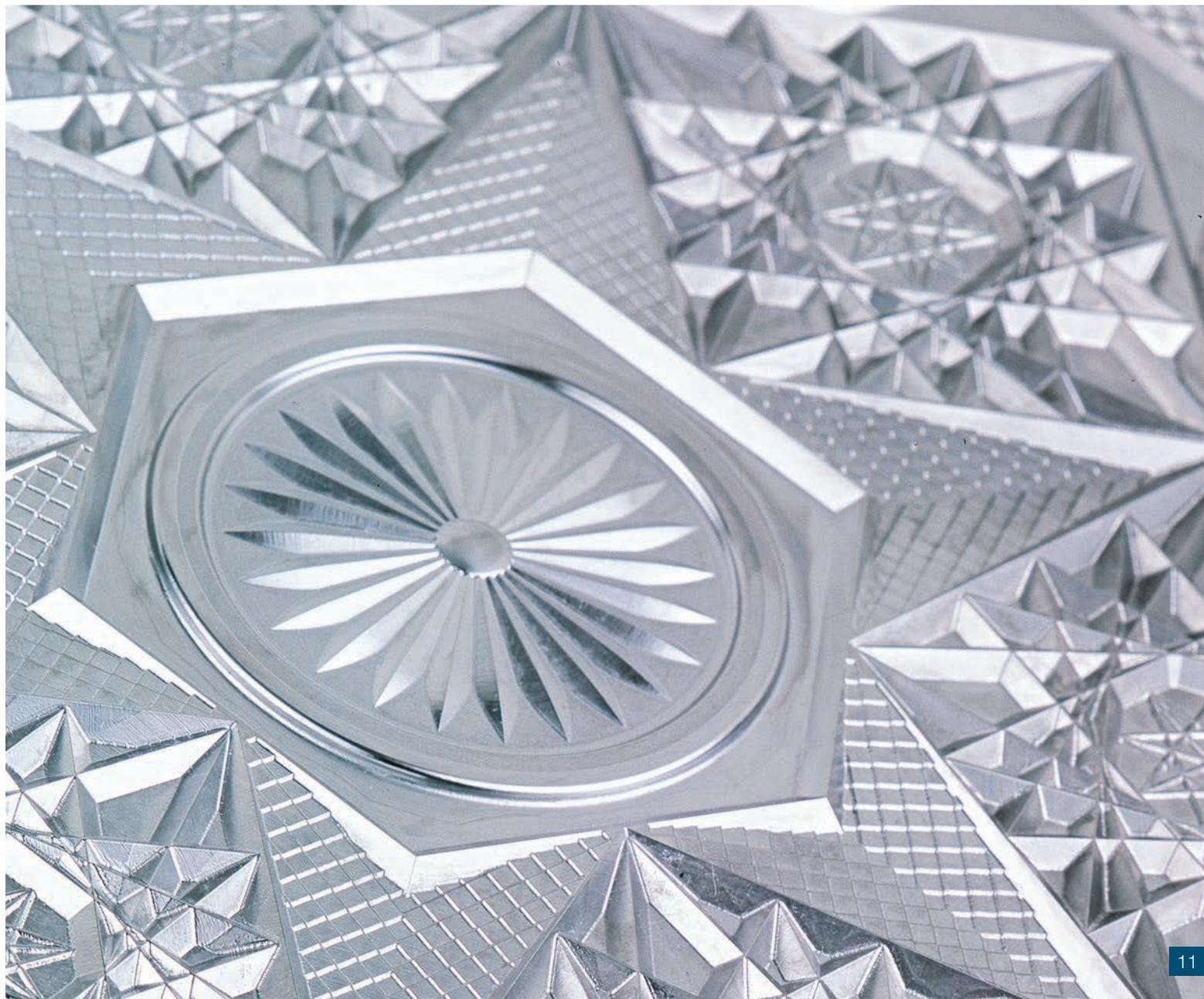
Through-hardenable steels							
Brand name	Mat.-Nr.	AISI	Application	Wear resistance	Polishability	Thermal conductivity	Comments
CS1*	Premium	-	Texturized and polished mould inserts and mould plates for processing plastics with a high glass fibre content or moulds with highest surface requirements				
GSF*	Premium	-	High-quality mould inserts for medium-sized product series				
TQ1*	Premium	-	Moulds of all sizes for precision plastic parts, suitable for large production series, suitable for mirror polishing				
N400	1.2767	-	Variety of highly stressed moulds, injection moulds for transparent plastics				
USD**	1.2344	H13	Moulds of all sizes for precision plastic parts, suitable for large production series - for mirror polishing we recommend the ESR-quality				
USN**	1.2343	H11	Moulds of all sizes for precision plastic parts, suitable for large production batches - for mirror polishing we recommend the ESR-quality				

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## Glass moulds

Brand name	Mat.-Nr.	AISI	Application	Scaling resistance	Polishability	High-temperature strength	Comments
FAM**	1.2787	431	Glass moulds for high demands on glass quality, suitable for tempered and technical glass and large production series				
ZF2*	1.2782	314	Glass moulds for highest glass quality, suitable for glass with crystal lustre and tempered glass and very large production series				

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## Production processes

Melting

Forging

Heat treatment

Mechanical processing

Vacuum hardening

Surface treatment

## Products

Hot-work tool steels

Cold-work tool steels

Die forging steels

Plastic mould steels

## Industries

Die casting

Extrusion

Die forging

Pipe technology

Plastics technology

Hot-stamping

Special applications

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