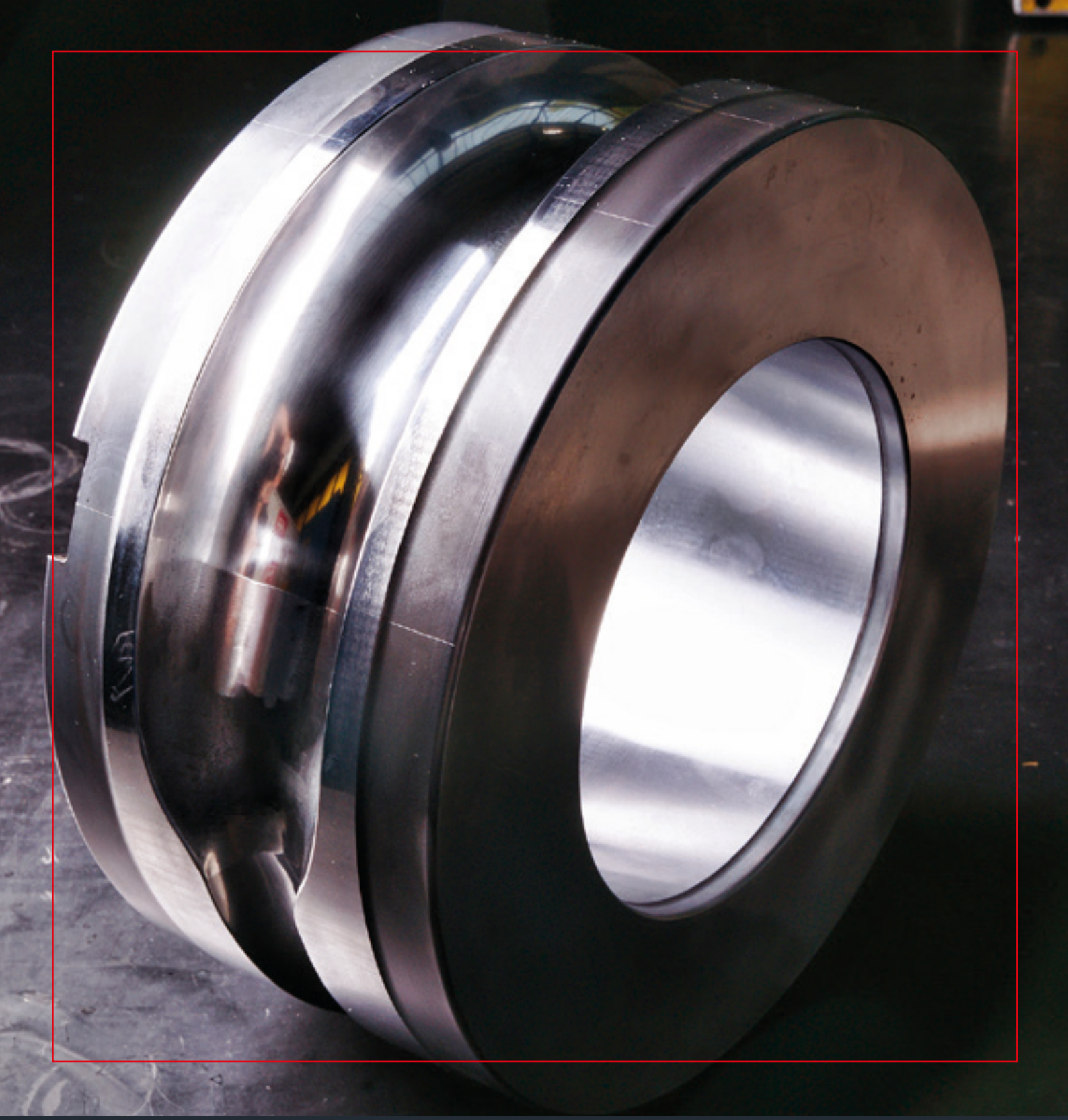


High-performance tool steels for demanding forming applications

ROLLER DIES AND TOOLING

Edelstahlwerk Kind & Co.
GMH GRUPPE
Pure Performance

TUBE TECHNOLOGY

Performance Starts With the Right Material

Forming tools have to meet very different requirements depending on the application. The right tool steel, optimized production processes and improved chemical composition can positively influence the properties of the tool.

Kind & Co. supports you from material selection and engineering consultation through to ready-to-use forming tools for:

- push bench rolls, piercing rolls, piercing mandrels and piercing dies
- copper rod rolls
- conform wheels
- cold pilger dies and cold pilger mandrels
- straightening rolls
- drawing rolls and drawing mandrels

From material selection to the ready-to-use forming tool, our focus is your application.

Kind & Co.

TOOL STEEL EXPERTISE SINCE 1888
Tool steel has been our business since 1888. At our Bielstein site in Germany, we exclusively produce high-quality tool steel. But our work does not stop with the material. We provide sophisticated material solutions, reliable service and expert consulting based on the requirements of each application.

Our application expertise is particularly strong in die casting, extrusion and die forging. Kind & Co. remains a family-owned business today, with the same focus on quality, expertise and reliable service.

PIPE TECHNOLOGY

High-Performance Materials for Pipe Production

Welded and seamless pipes, profiles and wires require forming tools that can withstand demanding operating conditions. Kind & Co. provides forming tools for

- push bench systems for the production of seamless tubes
- plants for the production of copper wire
- cold pilger rolling mills for the reduction of seamless tubes
- straightening machines for tubes and rods
- plants for the production of seamless gas cylinders
- pipe welding plants

Materials Designed to Perform

Our forming tools are made from forged hot-work tool steels with outstanding toughness, high-temperature strength and wear resistance.

For higher-performance requirements, Kind & Co. has developed premium steel grades that have proven effective in increasing service life compared with standard grades. TQ1, HP1 and CS1 are successfully used in metal forming plants worldwide.

Engineering Support when you need it

Our application engineers can help you select the right solution for your forming process and advise you on how to further improve its performance.

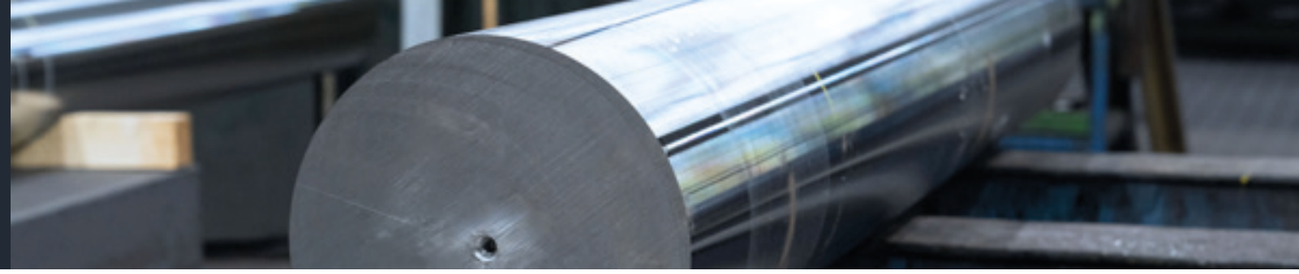
Talk to us about your forming process.

Main materials used for tooling in pipe technology & Material properties

Brand name		Toughness	Temperature resistance	Abrasive wear resistance	Thermo-shock resistance
CH16V	Cold-work Tool Steel	●○○○○○		●●●●●○	
N400	Cold-work Tool Steel	●●●○○○		●●○○○○	
PM823	Cold-work Tool Steel	●●○○○○		●●●●○○	
USD	Hot-work Tool Steel	●●●○○○	●●●●○○	●●●●○○	●●●○○○
USD-H	Hot-work Tool Steel	●●●●●○	●●●●○○	●●○○○○	●●●○○○
USN	Hot-work Tool Steel	●●●●○○	●●●○○○	●●●○○○	●●●○○○
RP	Hot-work Tool Steel	●●●○○○	●●●●○○	●●●○○○	●●●○○○
CR7V-L	Hot-work Tool Steel	●●●○○○	●●●●○○	●●●●○○	●●●○○○
UH1	Hot-work Tool Steel	●●●○○○	●●●●○○	●●●●○○	●●●○○○
CS1	Hot-work Tool Steel	●●●●●○	●●●●○○	●●●●○○	●●●○○○
GSF	Hot-work Tool Steel	●●●○○○	●●○○○○	●●○○○○	●●●○○○
HP1	Hot-work Tool Steel	●●●●●○	●●●○○○	●●●○○○	●●●○○○
HS1	Hot-work Tool Steel	●●○○○○	●●○○○○	●●●●○○	●●●○○○
TQ1/Q10	Hot-work Tool Steel	●●●●●●	●●●●○○	●●●●●○	●●●○○○
SA718	Hot-work Tool Steel	●●●●○○	●●●●●●	●●●●●○	●●●○○○

● Good Standard
● Premium
● Nickel-Based

Selection of the most important tool steel recommendations with installation hardness for each product for pipe technology



Designation	Required properties	Material Hardness	Material Hardness	Material Hardness	Material Hardness	Material Hardness	Material Hardness
Copper rod rolls	Toughness Temperature resistance	RP-ESU 46 - 48 HRc Stand 0 - 3	TQ1 46 - 48 HRc Stand 0 - 3	TQ1 50 - 52 HRc Stand 4 - 15	CS1 52 - 54 HRc Stand 4 - 7	HP1 50 - 52 HRc Stand 8 - 15	
Conform wheels	Toughness Temperature resistance	TQ1 47 - 49 HRc	TQ1 50 - 52 HRc	SA 718 1250 - 1400 MPa	CS1 53 - 55 HRc		
Piercing mandrels	Wear resistance	PWM 1180 - 1320 MPa	CR7V-L 1250 – 1400 MPa				
Piercing dies	Thermo-shock resistance	RP 44 - 46 HRc	CR7V-L 50-52 HRc				
Cold pilger mandrels	Toughness Wear resistance	N400 52 - 54 HRc	USD 50 - 52 HRc	CS1 52 - 54 HRc	TQ1 51 - 53 HRc		
Cold pilger dies	Toughness Wear resistance	USD 52 - 54 HRc	TQ1 52 - 54 HRc	CS1 54 - 57 HRc	CR7V-L Pre-hardened 30 30 - 33 HRc 56 - 59 HRc Flame-Hardened	CH16V Pre-hardened 30 30 - 33 HRc 60 - 62 HRc Flame-Hardened	CH16V Pre-hardened 30 30 - 33 HRc 58 - 60 HRc Flame-Hardened
Straightening rolls	Toughness Wear resistance	CH16V 60 - 62 HRc Axle 32 - 44 HRc	CH16V 60 - 62 HRc 2 parts	CR7V-L 55 - 58 HRc Flame-Hardened	HS1 56 - 58 HRc Shaft 32 - 44 HRc		
Piercing rolls	Toughness Thermo-shock resistance	USN 39 - 41 HRc	USD 39 - 41 HRc	HP1 39 - 41 HRc			
Push bench rolls	Wear resistance Thermo-shock resistance	RP 44 - 46,5 HRc	USD-H ESU 51 - 53 HRc	CH16V 54 - 56 HRc			
Drawing mandrels	Toughness Wear resistance	RP 1050 - 1150 MPa	Q10 1130 - 1300 MPa	HP1 36 - 42 HRc			
Drawing rolls	Toughness Wear resistance	CR7V-L 57 - 60 HRc Flame-Hardened		CR7V-L 57 - 60 HRc Flame-Hardened			

- Good Standard
- Premium
- Nickel-Based

Kind & Co. Edelstahlwerk GmbH
Bielsteiner Str. 124-130
51674 Wiehl - Bielstein | Germany
www.gmh-gruppe.de

Edelstahlwerk Kind & Co.
GMH GRUPPE
Pure Performance