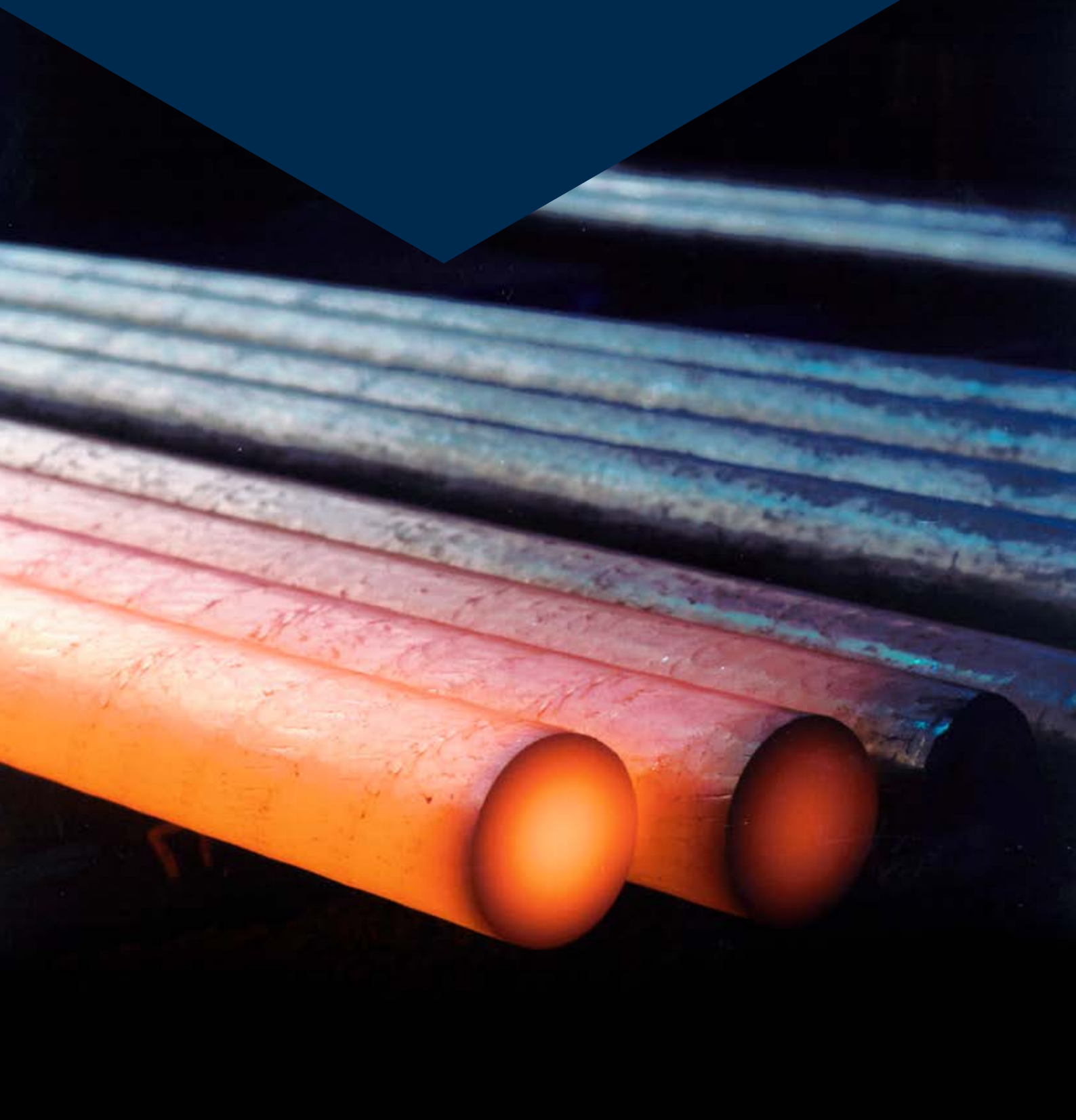


Firmodur[®] 1600

High-Performance Steel



Breaking rock and reinforced concrete with

7 tonnes of weight and
500 strikes per minute.



The result is steel that satisfies the highest demands

Deutschen Edelstahlwerke

Deutsche Edelstahlwerke has already been developing, producing and selling high-quality speciality steels for more than 160 years. Aware that every new technological development changes and increases the demands made on our steel, we draw motivation both from the requirements of our customers as well as major global challenges. Constant economic, technological and ecological progress leads to new, innovative, efficient and bespoke solutions that cross sector boundaries. Our materials make a fundamental contribution to such new developments in almost every field. Providing special steel solutions is our objective – and one we share with the entire Swiss Steel Group.

Top Performance

Rock Breakers
 Combining rock-breaking strength with superior toughness that prevents tool

breakage, Firmodur® 1600 is perfect for manufacturing hydraulic hammers.

Optimised Wear Resistance

Drilling Tools
 Whether they are used in the mining, oil and gas production or even construction industry, drilling tools made of Firmodur® 1600 reliably cut through all ground layers and are resistant against heavy-duty wear and tear, impact and torsion.

Long-term Stress

Mining
 All components used for mining purposes, customised to withstand both long-term stress and extreme short-term loads. Together with our customers, we play close attention to ensuring our products come with an extended service life and, most importantly, superior wear resistance and fatigue strength.



- » **Excellent strength-to-toughness ratio following hardening and tempering**
- » **Outstanding fine-grain stability**
- » **Extreme wear resistance**

Hardness > **45** HRC

Yield point > **1,100** N/mm²

Tensile strength > **1,400** N/mm²

Steel as you like it: Firmodur[®] 1600

Cost-efficient Alloying Concept: C, Mn, Cr, Ni, Cu, Nb, Ti

Made by Deutsche Edelstahlwerke using a highly cost-effective alloying concept that offers a targeted approach for manufacturing steel with the precise properties our customers need, Firmodur[®] 1600 is a cut above conventional heat-treated steels. And its low carbon content makes for excellent yield point, tensile strength and notch bar impact values.

Homogeneous, through and through: Lamellar-martensitic microstructure with residual austenitic films

A look at the microstructure of Firmodur[®] 1600 shows its homogeneous martensitic matrix, in which fine and evenly dispersed carbides and up to 5% of finest-grain

residual austenite particles are embedded. This special microstructure is responsible for the numerous positive properties of Firmodur[®] 1600.

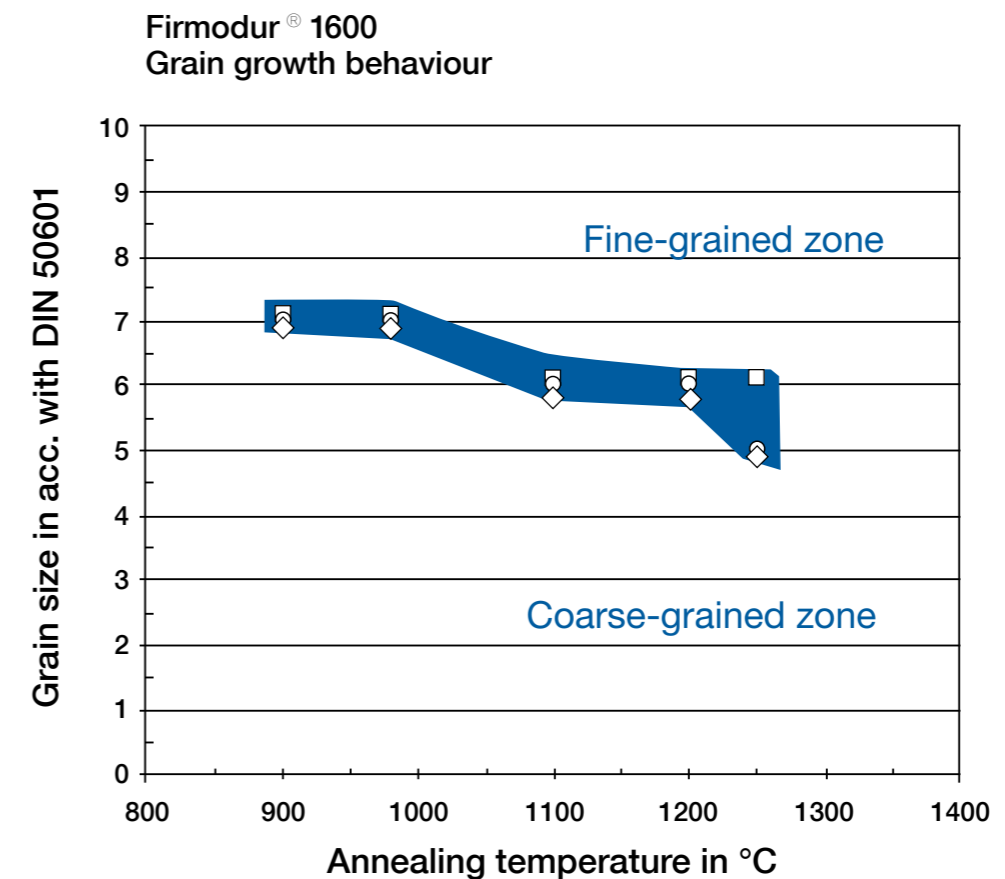
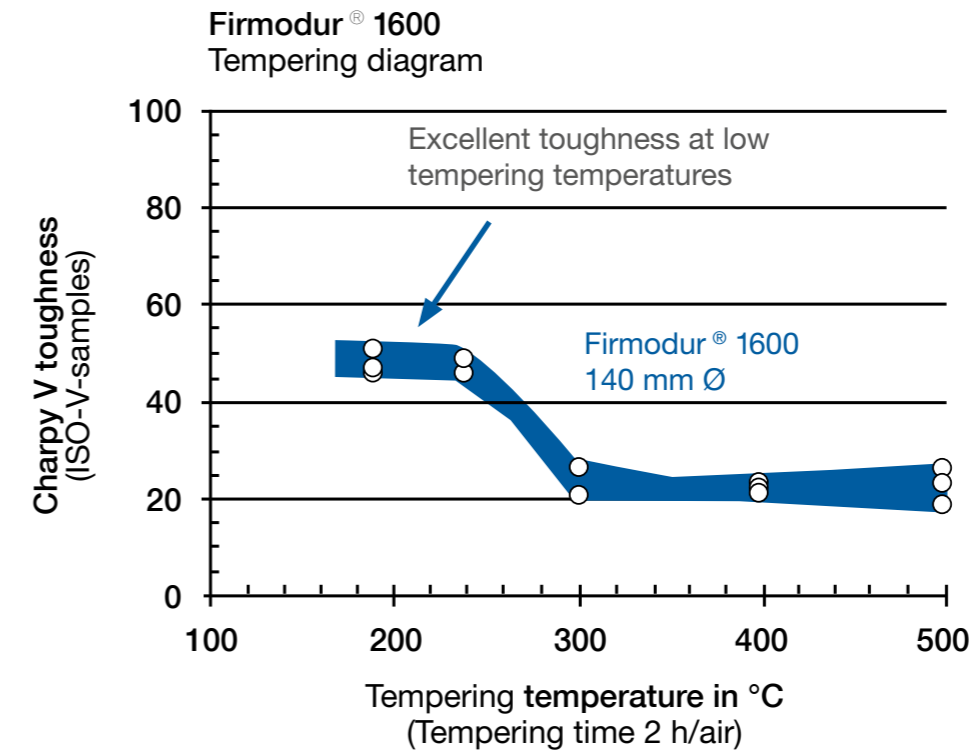
Hardening, Tempering, Processing: Customised to suit your requirements

The various properties of steel need to be adapted to suit the needs of different components. Thanks to its chemical composition and tailored heat treatments – at low tempering temperatures – Firmodur[®] 1600 can be customised to perfectly meet your specific steel requirements. As a result, you benefit from a balanced strength-to-toughness ratio and excellent processing options at the same time.

The table contains an overview of Firmodur® 1600's outstanding properties:

Firmodur® 1600

Firmodur® 1600					
Material No.	1.8706				
Short Name	25CrMnCu8-6				
Delivery Formats	Semi-finished products, rolled	50 – 320 mm, square			
	Wire rod, rolled	5.5 – 30 mm			
	Steel bars, rolled	22 – 250 mm, round			
	Semi-finished products and steel bars, forged	65 – 750 mm, round			
		265 – 650 mm, square flat: on request			
	Bright steel	peeled, 8 – 400 mm, round			
ground, 10 – 100 mm, round					
drawn, 5 – 12 mm, round					
Chemical composition in %	C	Mn	Cr	Ni, Cu, Nb, Ti	
	0,25	1,60	2,0	+	
Mechanical Properties	Example: 155 mm in diameter				
	At room temperature		Sample position: 12.5 mm beneath the surface		
			Annealed	As rolled	Hardened and tempered
	Hardness		< 270 HB	> 35 HRC	> 45 HRC
	0.2% Yield point	N/mm ²			> 1100
	Tensile strength	N/mm ²			> 1400
	Elongation at fracture	%			> 12
	Contraction at fracture	%			> 55
	Notch bar impact	J			
	at 20 °C				> 47
at -40 °C				> 33	
Further Properties	Good weldability Excellent wear resistance Superior corrosion resistance in comparison to conventional high-strength engineering steels				
Heat Treatment	Austenitisation	900 - 980 °C			
	Cooling	Water or oil			
	Tempering	180 - 220 °C			
Microstructure, Grain Size	Martensite and < 5% austenite, fine-grain stability* up to 1250 °C * Reference row 5 and finer in acc. with DIN 50601				
Applications	Demolition hammers	Chain elements	Fastening elements		
	Chisels	Piston rods	Bucket teeth		
	Shear blades	Cutting bits	Components subjected to wear		



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General note (liability) All statements regarding the properties or utilisation of the materials or products mentioned are for the purposes of description, only. Guarantees regarding the existence of certain properties or a certain utilisation are only valid if agreed upon in writing.

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