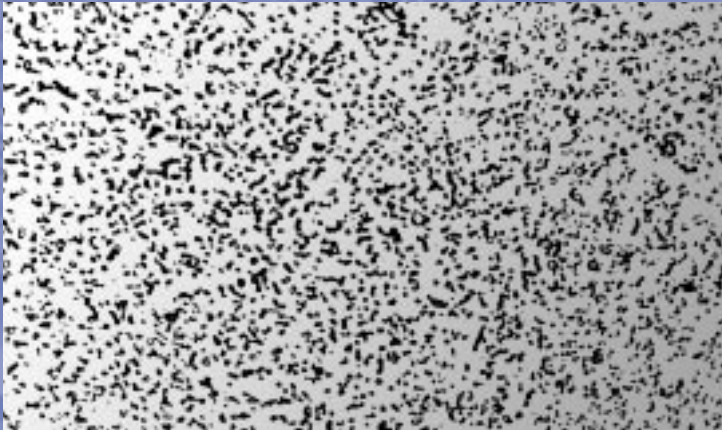


T O P Q U A L I T Y

TQ1

For maximum stress applications in
Die Casting – Extrusion – Drop Forging – Hot Forming

KIND&CO
EDELSTAHLWERK



A new Quality dimension in Hot Work Tool Steel

With brand **TQ 1** (Top Quality) KIND & CO. is introducing a new grade of Hot Working Tool Steel. Production is based on the latest standards of technology in melting, forging and heat treatment.

The targets in development were clearly determined by operating conditions based on the attributes of the well established Hot Working Tool Steels DOMINIAL USN (wst. 1.2343/H11), USD (wst. 1.2344/H13) and RPU (wst. 1.2367).

Improvement in high temperature strength and simultaneous increase in toughness.

By means of lavish melting technology we have produced a grade containing minimal trace elements, with additional specific metallurgical procedures forming the basis of optimal toughness.

The new mating of alloying elements is responsible for the high level of hot temperature strength and toughness.

The advantages are obvious. The new dimension in quality – **TQ 1** from KIND & CO. – reliably increases life of your tooling whilst decreasing your tooling costs per production unit.



These increasingly difficult operating requirements are all taken into consideration when assessing the quality and performance of a tool.

Against this background, KIND & CO. has developed a new grade of Hot Working Tool Steel to meet the requirements of the Industry.

Typical analysis %

Material	DIN	C	Si	Mn	Cr	Mo	V
USN 1.2343 (H11)	X 38 CrMoV 5-1	0,38	1,00	0,40	5,20	1,20	0,40
USD 1.2344 (H13)	X 40 CrMoV 5-1	0,40	1,00	0,40	5,20	1,30	1,00
RPU 1.2367	X 38 CrMoV 5-3	0,38	0,40	0,40	5,00	2,80	0,60
TQ 1		0,36	0,30	0,40	5,20	1,90	0,55
		lowest level of trace elements					

Technical datas

Tempering diagram

60 mm ø, 1010 °C Oil

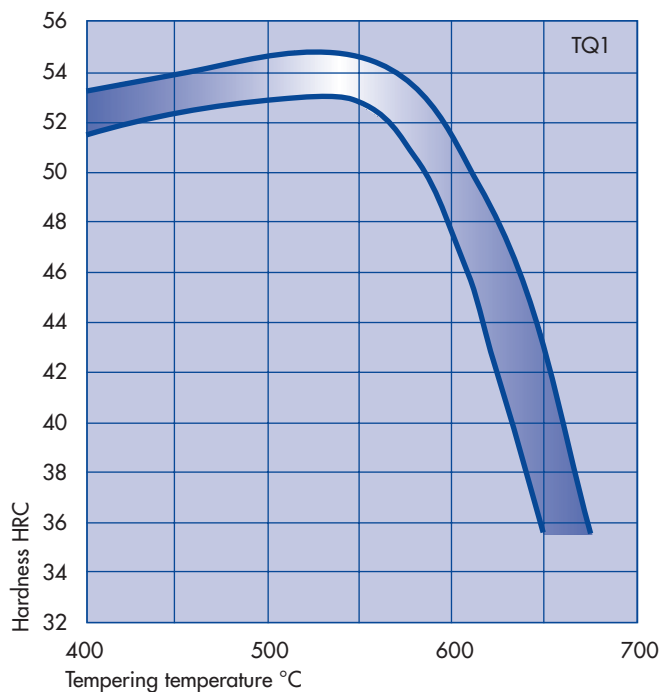
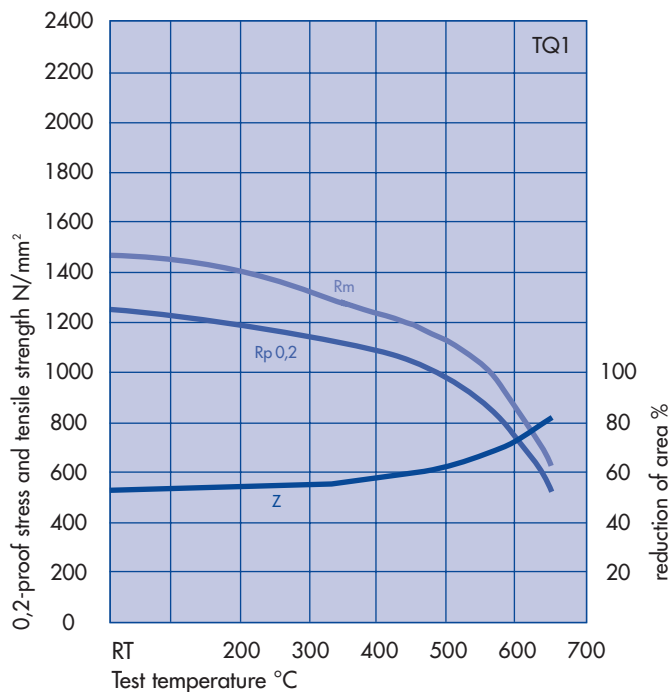


Diagram of high temperature strength

30 mm ø

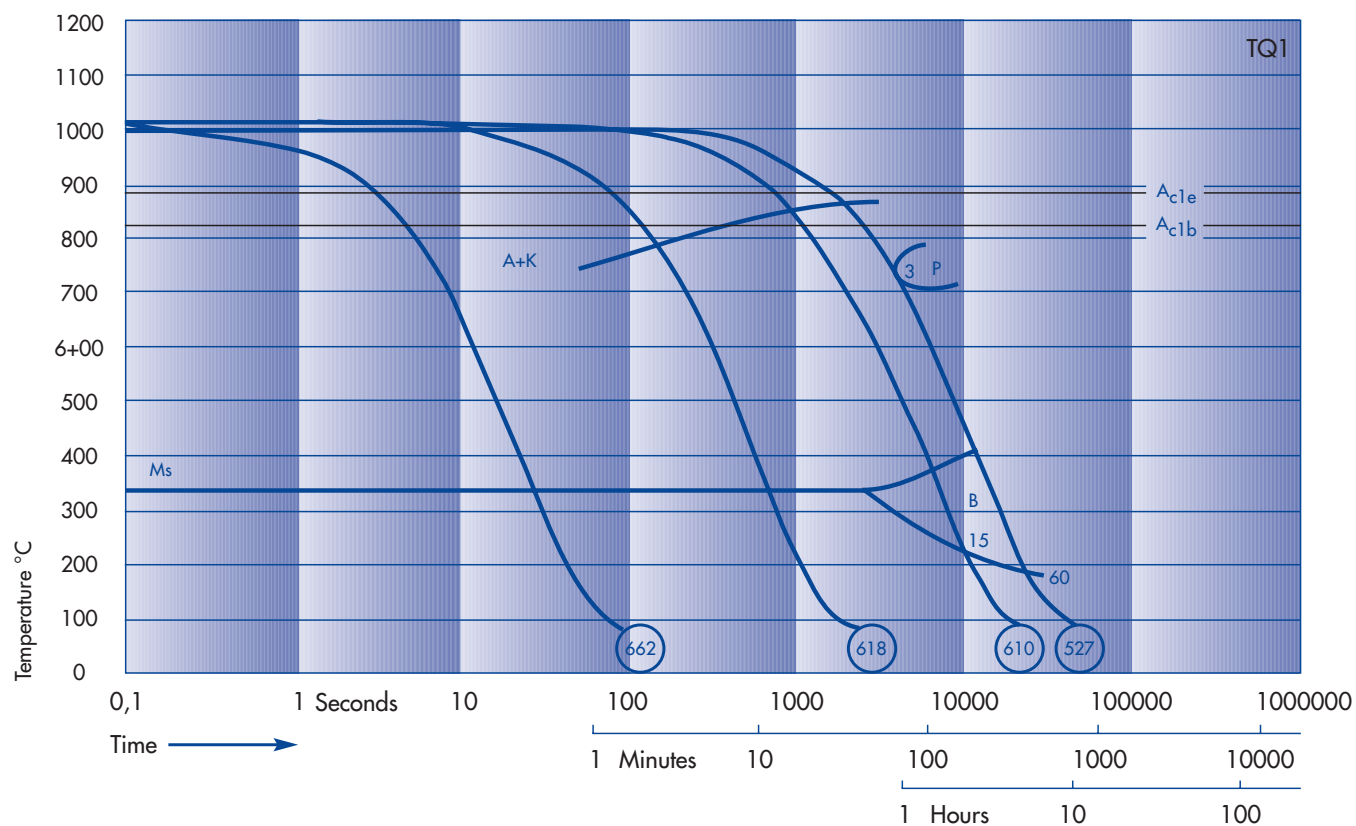


Continuous cooling transformation diagram (CCT)

Austenizing temperature: 1010 °C

expansion coefficients:

20 - 100 °C	$10,26 \times 10^{-6} m/m \times K$
20 - 200 °C	11,34
20 - 400 °C	12,55
20 - 600 °C	13,04

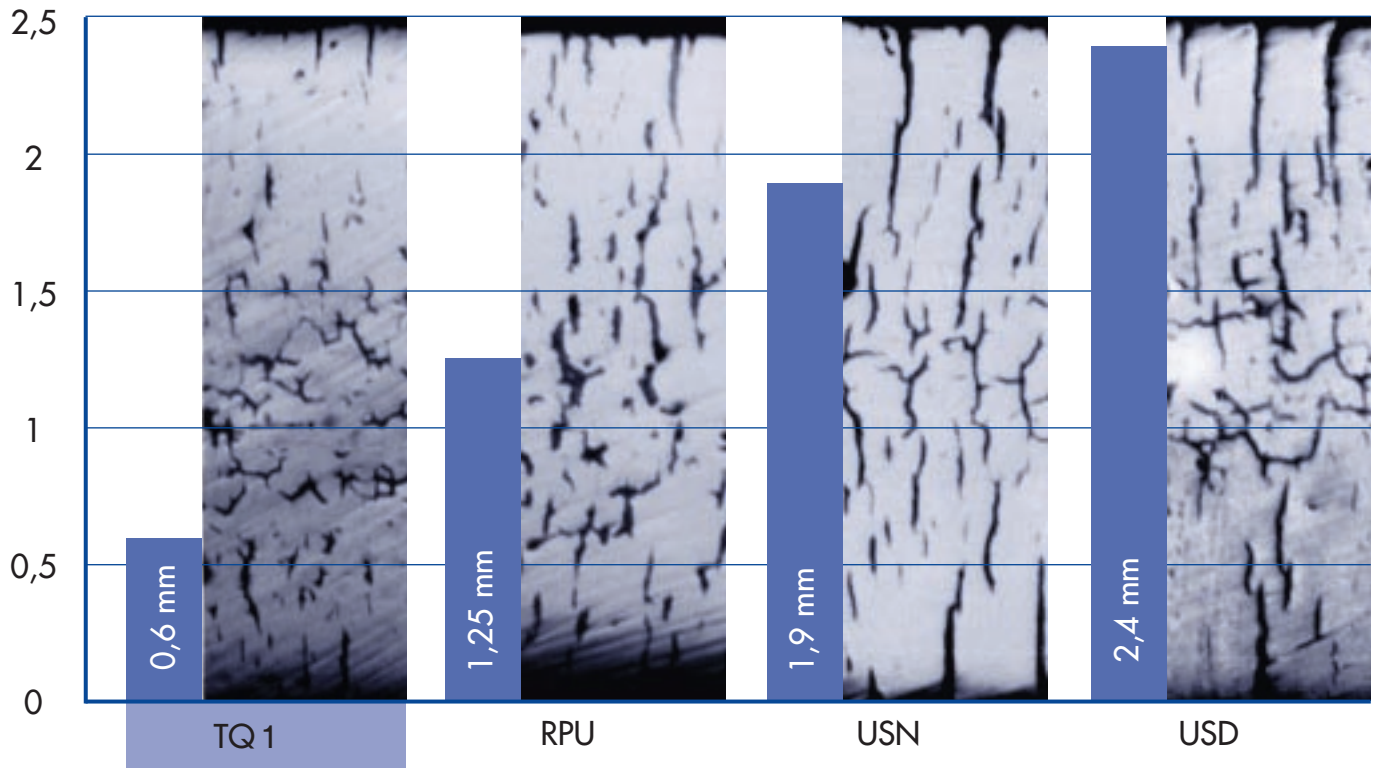


Interpretation of test results

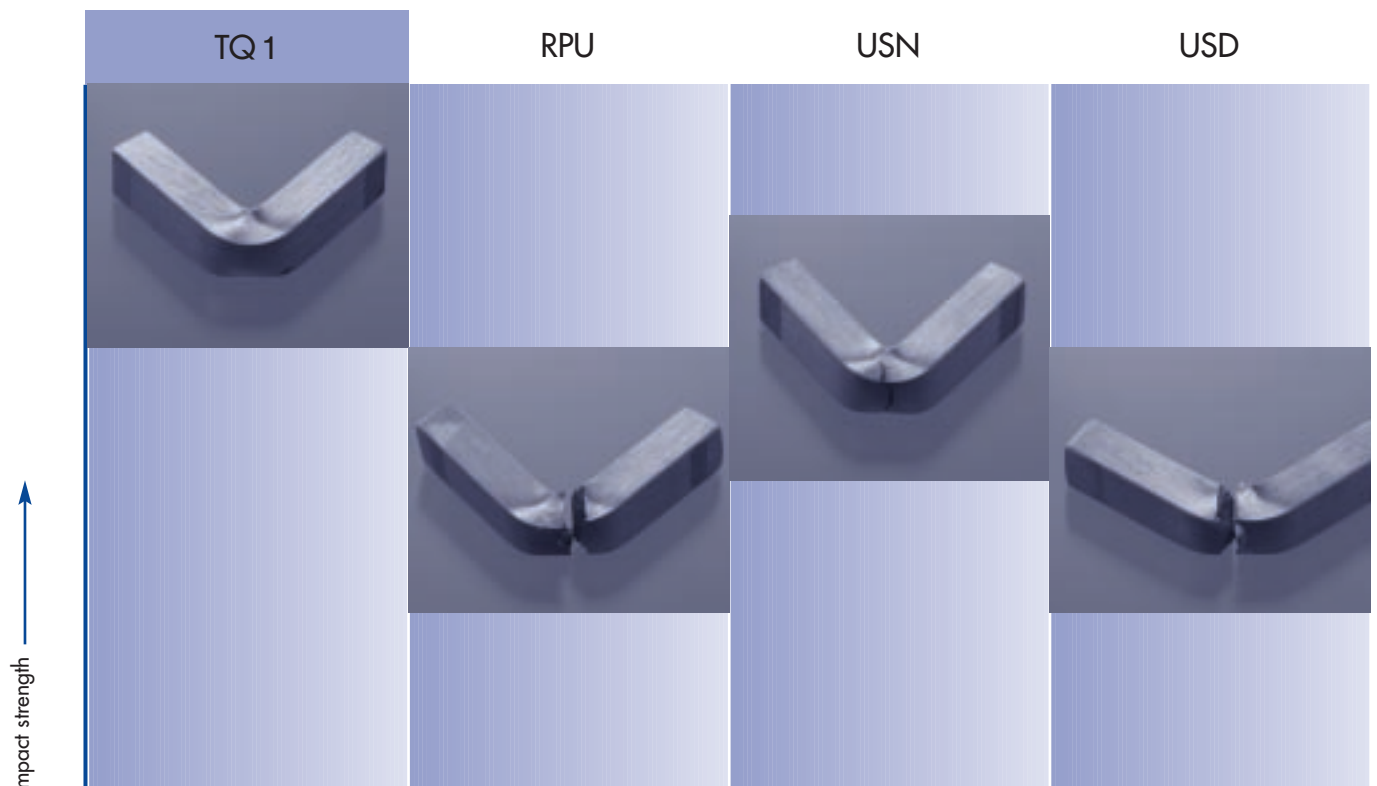
Thermal shock test

crack configuration in mm after 6000 immersion cycles
Testing temperature 600 °C; water quenched

max. length of crack
enlarg. 16:1



Impact bending test



Complete responsibility out of one source

- Melting
- Forging
- Heat treatment



compri 04.99



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