



Sales Office:

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EX1 VICTORY ESR

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Electro-slag-remelting (ESR)

GENERAL:

- Uniform and high level of machinability and polishability
- Highest level of toughness and ductility in all directions
- High resistance to thermal shocks
- Good resistance to abrasion at both low and high temperatures
- Excellent through-hardening properties
- Good high-temperature strength and resistance to thermal fatigue
- Very limited distortion during hardening
- Isotropic properties compared to Conventionally melted steel grades
- Nitridable

APPLICATIONS:

- Pressure casting tools for light-alloy processing
- Dies and die inserts for forging presses in steel forming
- Extrusion tools
- Die holders and internal bushes in heavy metal alloys
- Form pressing dies in heavy and light metal processing
- Moulds for plastics (injection moulds)

CHEMICAL ANALYSIS: %

C	Si	Mn	P	S	Cr	Mo	V
0,34-0,38	≤ 0,50	≤ 0,50	≤ 0,015	≤ 0,001	4,80-5,20	1,80-2,20	0,40-0,60

PHYSICAL PROPERTIES:

Coefficient of thermal expansion [10 ⁻⁶ m/(m x K)]	20-100 °C	20-200 °C	20-300 °C	20-400 °C	20-500 °C	20-600 °C	20-700 °C
	11.9	12.4	12.6	12.7	13.0	13.1	13.4
Thermal conductivity [W/(m x K)]	100° C		350° C		700° C		
	29.7		31.0		33.2		



Schmiedewerke Gröditz

GmbH · since 1779 · High-Grade Steel

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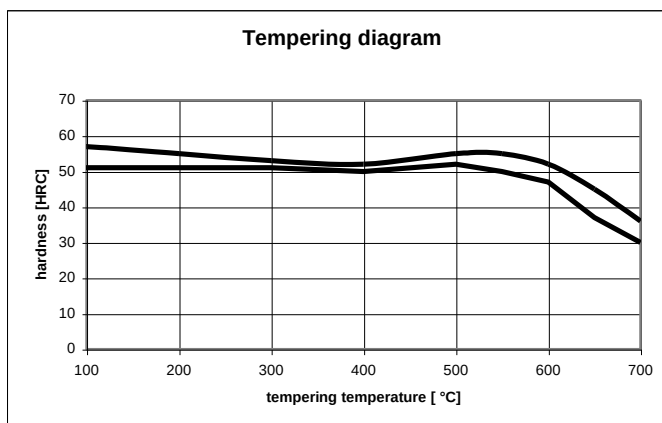
EX1 VICTORY ESR

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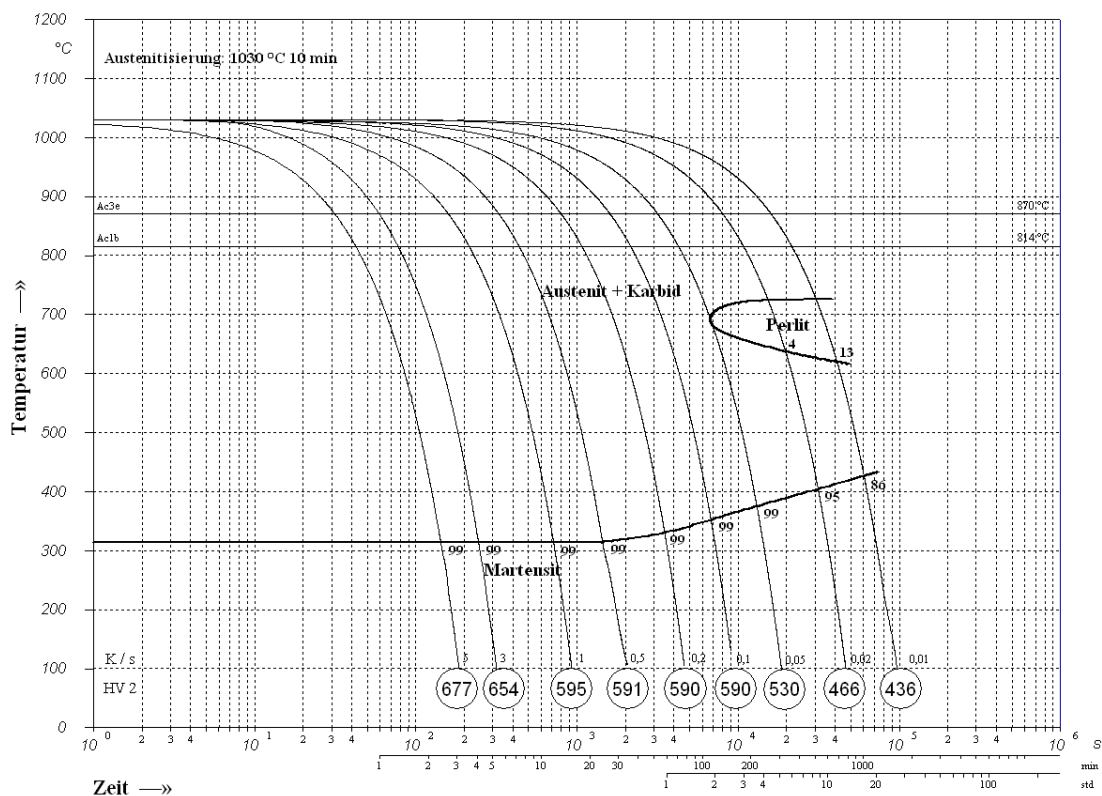
HEAT TREATMENT:

<i>Hot forming</i>	<i>Soft annealing</i>	<i>Hardening</i>	<i>Tempering</i>
1050 - 850°C	820 - 850°C	1000 - 1040°C	530 - 680°C #

TEMPERING DIAGRAM:



CCT GRAPH:



The details and values in this data sheet are typical values, no guarantee promises. Changes of the material, the qualities and/or performance data we reserve for us.

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EX1 VICTORY ESR

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DELIVERY CONDITION:

EFS annealed

fine uniform annealed structure with a hardness of a maximum of 220 HB

SERVICE HARDNESS:

30 - 56 HRC

IMPACT STRENGTH:

Unnotched test sample 10x7x55 [mm] hardened and tempered at 44-46HRC

VDG M82 Ed.02/1993

400 J/cm²

or

test sample hardened and tempered at 44-46HRC: Charpy V min. 20J

or according to



or acc. to your request

ULTRASONIC:

ASTM A388 - FBH max. 3 mm (1/8 inch)

or

SEP 1921 – test group 3 – class E , e

or

acc. to your request

CLEANLINESS:

ASTM E45- Method A with

type A $\leq 0,5$; B, C and D each ≤ 1

or

DIN 50602– K1 ≤ 10

or

acc. to your request

STRUCTURE:

fine uniform annealed structure

see next page

DELIVERY SIZES:

diameter – up to 600 mm

or

thickness - up to 400 mm

or acc. to your request

Remark:

The best mechanical properties will be reached by using material which has been produced close to the requested final dimension.



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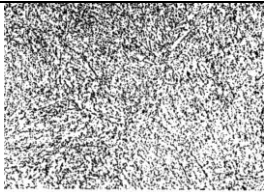
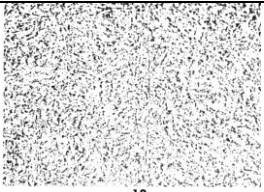
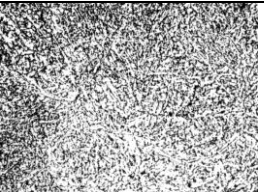
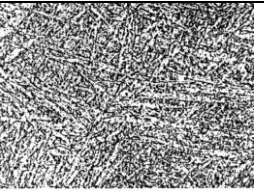
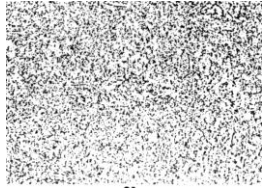
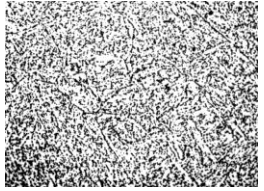
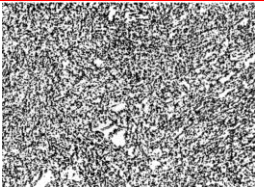
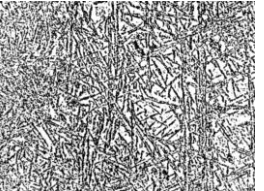
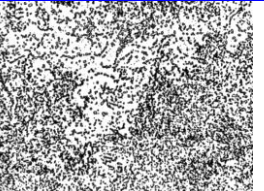
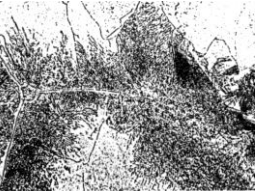
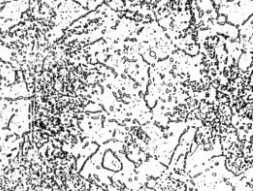
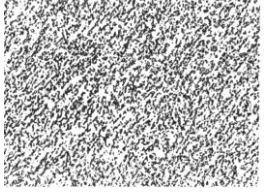
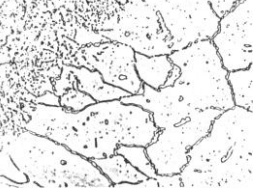
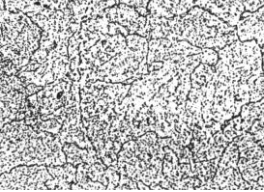
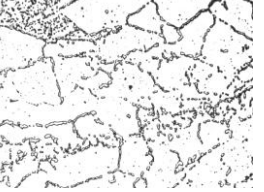
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Rating Chart for the Evaluation of Microstructure of Annealed Hot-Work Tool Steel

	GA	GB	GC	GD	GE	GF
1	 GA1	 GB1	 GC1	 GD1	 GE1	 GF1
2	 GA2	 GB2	 GC2	 GD2	 GE2	 GF2
3	 GA3	 GB3	 GC3	 GD3	 GE3	 GF3
4	 GA4	 GB4	 GC4	 GD4	 GE4	 GF4
5	 GA5	 GB5	 GC5	 GD5	 GE5	 GF5
EFS geglüht / EFS annealed			ESU bis 400 mm / ESR up to 400 mm		ESU bis 250 mm / ESR up to 250 mm	