



SPECIALTM
STEEL
The stars of Tool Steel

DATA SHEET



VEGATM
Pre-Hardened
Mould Steel

ABOUT US

RR Special Steel combines the experience & know-how of two specialists in their respective fields, Steel Making and Remelting (Rubiera Special Steel) and Forging and Heat Treatment (Ringmill).



RUBIERA SPECIAL STEEL

Since 1965 supplying high integrity ingots with superb homogeneity and cleanliness and since 2009 top quality large size ESR and VAR ingots to the market.

With RR Special Steel the ownership family, with a centenary experience in the steel and forging industry, has created the stars of tool steel.



RINGMILL

Since 1978 supplying top quality forgings to the most demanding markets using the latest state of the art technologies and machinery.

RR SPECIAL STEEL UNIQUENESS

RSS - thanks to the electromagnetic stirrer system in its secondary metallurgy processes, guarantees superior cleanliness and homogeneity of the ingots.

RM - The state of the art Forging & Heat Treatment facilities guarantee high precision in its parameters and therefore total process control and reproducibility.

CERTIFICATE QUALITY

Manufacturing parameters and material properties are monitored and controlled by RR's quality management system. The results of cleanliness, microstructure, and toughness for example are available for internal- and external certification at any time.

REFERENCE COMPOSITION OF STEEL GRADE RR VEGA / 1.2738MOD.

C	Mn	Si	Ni	Cr	Mo	V
0.27 %	1.4 %	0.25 %	1.1 %	1.4 %	0.6 %	0.1 %

Pre hardened (36 HRC and 40 HRC) modified tool steel for plastic applications with ESR properties. Better wear resistance, cleanliness, homogeneity, texturability and polishability than 2738 HH.

MATERIAL PROPERTIES

- Improved through hardenability
- Uniform hardness along cross section
- Improved wear resistance by high hardness
- Very good polishability
- Superior texturability
- Highest thermal conductivity
- Good machinability even if it is prehardened up to 40 HRC.
- Very good dimensional stability while nitriding



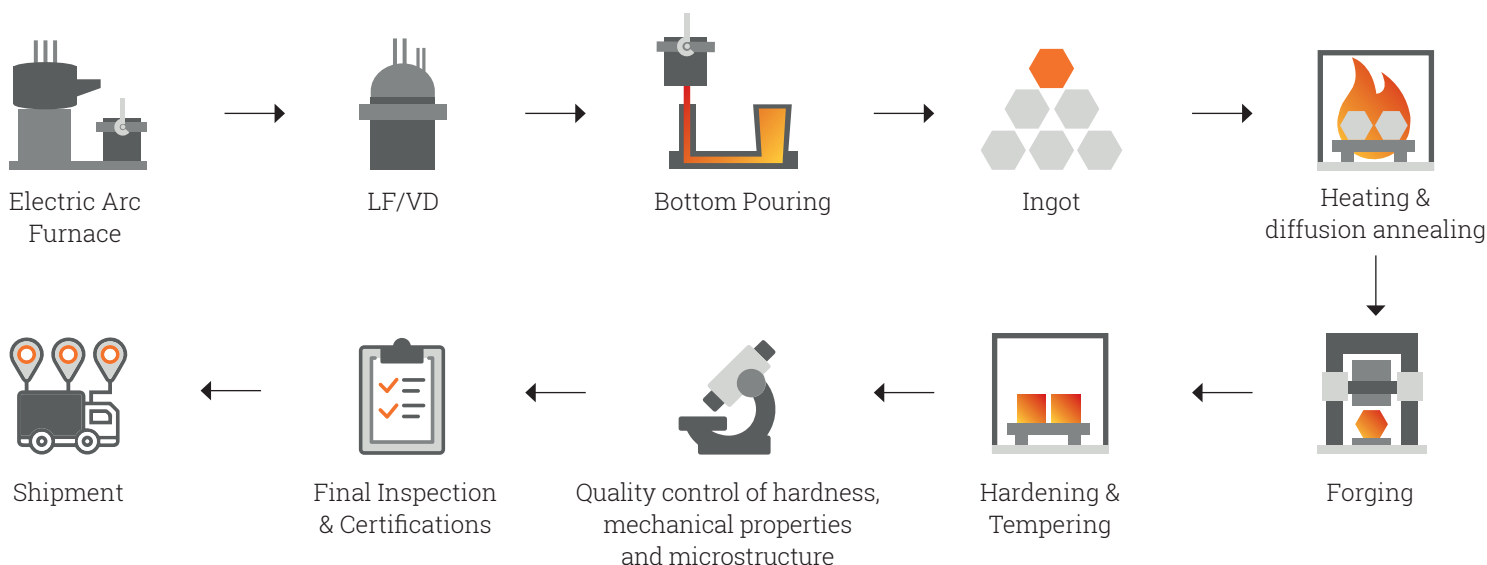
APPLICATIONS

- Large plastic injection molds
 - Automotive interior trimming molds
 - Car lighting molds
 - White goods panels
 - Air condition housing
 - TV housing, PC monitor
 - Injection molds of transparent parts
 - Packaging molds
- Reinforced polymers up to %30 without nitriding
- Best for grained or textured molds
- Molds for chrome-plated parts
- Compression molds
- Molds for plastic extrusion
- Die-casting moldframes

PROPERTIES	STEEL GRADE	1	2	3	4	5
Wear Resistance & Hardness	VEGA 40	●	●	●	●	●
	VEGA 36	●	●	●	●	●
	1.2738 HH	●	●	●	●	●
	1.2738	●	●	●	●	●
	1.2311	●	●	●	●	●
Hardness Uniformability	VEGA 40	●	●	●	●	●
	VEGA 36	●	●	●	●	●
	1.2738 HH	●	●	●	●	●
	1.2738	●	●	●	●	●
	1.2311	●	●	●	●	●
Polishability	VEGA 40	●	●	●	●	●
	VEGA 36	●	●	●	●	●
	1.2738 HH	●	●	●	●	●
	1.2738	●	●	●	●	●
	1.2311	●	●	●	●	●
Compressive Strength	VEGA 40	●	●	●	●	●
	VEGA 36	●	●	●	●	●
	1.2738 HH	●	●	●	●	●
	1.2738	●	●	●	●	●
	1.2311	●	●	●	●	●
Texturability	VEGA 40	●	●	●	●	●
	VEGA 36	●	●	●	●	●
	1.2738 HH	●	●	●	●	●
	1.2738	●	●	●	●	●
	1.2311	●	●	●	●	●

PROPERTIES	STEEL GRADE	1	2	3	4	5
Toughness	VEGA 40	●	●	●	●	●
	VEGA 36	●	●	●	●	●
	1.2738 HH	●	●	●	●	●
	1.2738	●	●	●	●	●
	1.2311	●	●	●	●	●
Weldability	VEGA 40	●	●	●	●	●
	VEGA 36	●	●	●	●	●
	1.2738 HH	●	●	●	●	●
	1.2738	●	●	●	●	●
	1.2311	●	●	●	●	●
Nitridability	VEGA 40	●	●	●	●	●
	VEGA 36	●	●	●	●	●
	1.2738 HH	●	●	●	●	●
	1.2738	●	●	●	●	●
	1.2311	●	●	●	●	●
Chrome Plating Ability	VEGA 40	●	●	●	●	●
	VEGA 36	●	●	●	●	●
	1.2738 HH	●	●	●	●	●
	1.2738	●	●	●	●	●
	1.2311	●	●	●	●	●

PRODUCTION TECHNOLOGY



PRODUCT RANGE

	Form	Thickness (mm)	Width (mm)	Length (mm)	Weight (Kg)
RR VEGA	Square/Rectangular Bar	max. 1,000	max. 1,800	max. 6,000	max. 50,000
	Round Bar	max. 1,200	N/A	max. 6,000	max. 30,000

DELIVERY CONDITIONS

Heat treatment: Q&T

Surface: Black or milled

HARDNESS

	HRC
Vega 40	38-42
Vega 36	34-38
1.2738	29-34

MICROCLEANLINESS

Method	A	B	C	D
ASTME45	0.5 - 0.5	0.5 - 0.5	0.0 - 0.0	1.0 - 0.5
DIN50602	K4 ≤ 10			

PHYSICAL PROPERTIES

Condition: Q+T

	25°C	300°C	400°C
Thermal Expansion Coefficient [$10^{-6}/K$]	11	13	14
Thermal Conductivity [W/mK]	37	40	39
Elastic Modulus [kN/mm^2]	212	192	175



MECHANICAL PROPERTIES AFTER QT

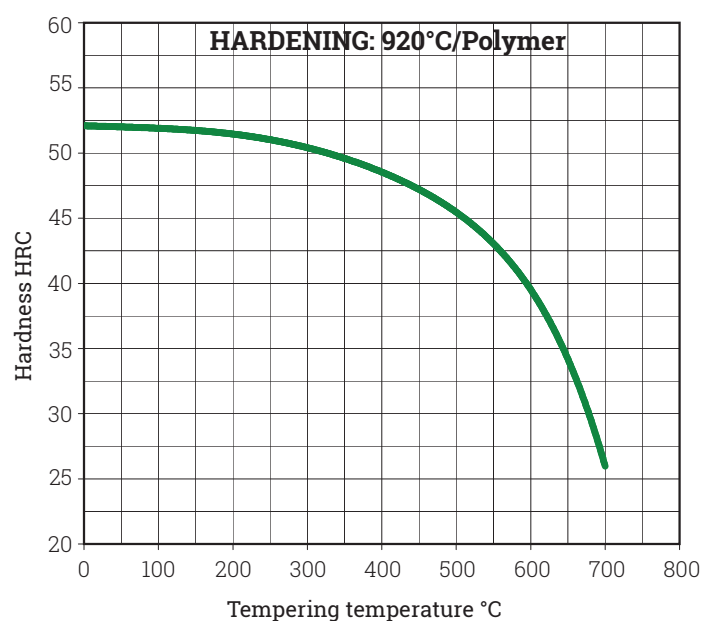
HARDNESS	Regular 32 HRC	Vega 36 36 HRC	Vega 40 40 HRC
Yield Strength, Rp02 [N/mm ²]	~ 830	~ 950	~ 1,030
Tensile Strength, Rm [N/mm ²]	~ 980	~ 1,070	~ 1,200

DIAGRAMS

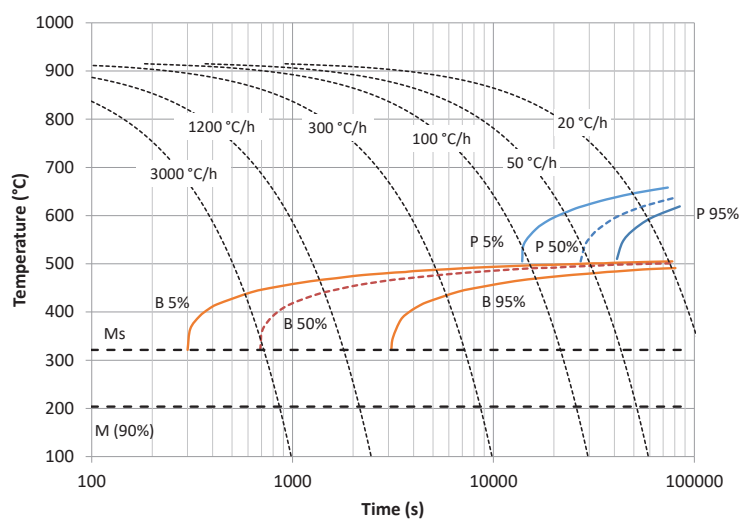
HEAT TREATMENT	TEMPERATURE
Hardening	880-920°C/oil, polymer or water
Annealing	710-730°C
Stress Relieving (before Q+T)	500-550°C
Nitriding	480-550°C



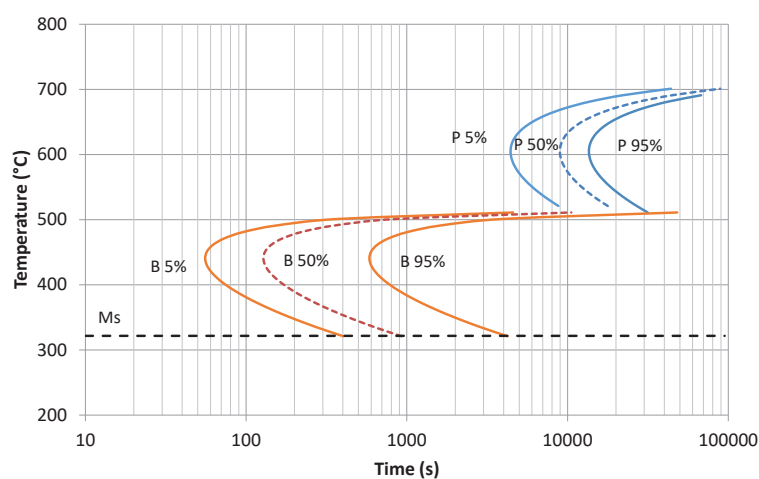
TEMPERING DIAGRAM



CCT DIAGRAM



TTT DIAGRAM





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