

MATERIAL GRADES

High chromium steel (KV3,4,4M)



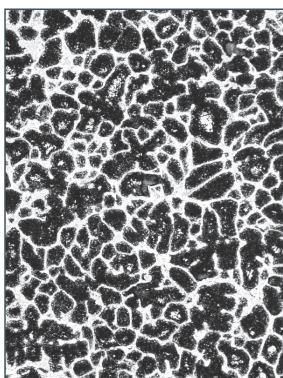
Material Barrel	Chemical composition [%]									Barrel Hardness [HSh“C“]
	C	Mn	Si	P max.	S max.	Cr	Ni	Mo	Others	
KV 3	1,0/2,0	0,5/1,5	0,5/1,5	0,1	0,03	10/12	0,5/2,0	2,0/4,0		60-68
KV 4	1,4/2,0	0,4/1,2	0,4/1,1	0,06	0,02	10/12	0,5/2,0	3,0/5,0	V 0,1/1,0	65-73
KV 4 M	1,4/2,0	0,4/1,2	0,4/1,1	0,06	0,02	9/11	0,5/2,0	3,5/6,0	V 0,2/1,2	65-73

- Dimensional and weight limits:**

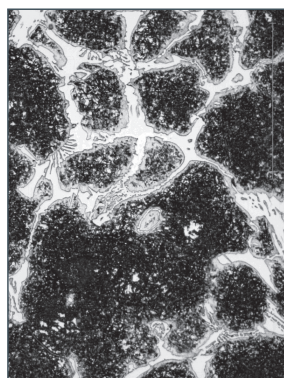
Ø 550-1050 mm / 6.000 mm // 22.000 kg

- Barrel Structure**

100x



500x



- Heat Treatment**

Low tempering and/or stress relieving

BARREL HARDNESS DECREASE WITH DEPTH MAX. 3 SHORE C.
HARDNESS DISTRIBUTION ± 1,5 SHORE C (EACH SURFACE)

- Physical and mechanical properties**

	KV 3	KV 4	KV4M
TENSILE STRENGTH - Rm [MPa]	750	780	780
BENDING STRENGTH - Rmi [MPa]	1050	1150	1150
YOUNG MODULUS - E.10 ³ [MPa]	225	225	225
COEFFICIENT OF THERMAL EXPANSION [m/K]	11,9 - 12,5 x 10 ⁻⁶		
THERMAL CONDUCTIVITY [W/m °K]	16 - 20		

Shell

Material	Chemical composition [%]									Neck Hardness [HSh“C“]
	C	Mn	Si	P max.	S max.	Cr max.	Ni	Mo	Others	
Core - Neck										
Nodular iron	2,8/3,5	0,1/1,0	1,5/2,5	0,06	0,02	0,3	0,60/1,20	0,02/0,20	Mg = 0,030 / 0,080	37 - 45

- Core Structure**

Nodular Graphite - 100x



- Physical and mechanical properties**

	Nodular Iron
TENSILE STRENGTH - Rm [MPa]	350
BENDING STRENGTH - Rmi [MPa]	540
YOUNG MODULUS - E.10 ³ [MPa]	165

- NON-Destructive testing:**

Ultrasonic Test of Shell Depth and Bond Integrity

- Product certificates**

Shell and Core Chemistry
Mechanical Testing
Hardness Measurement Report of Barrel and Necks
Dimensional Inspection of Body and Journal Diameters
Ultrasonic Report of Shell Depth and Bond Integrity

- Application**

Work rolls for roughing or finishing stands of hot strip mills



Core