MATERIAL GRADES
Indefinite chilled layer ICDP (NTV1,2,2M)

vítkovické slévárny

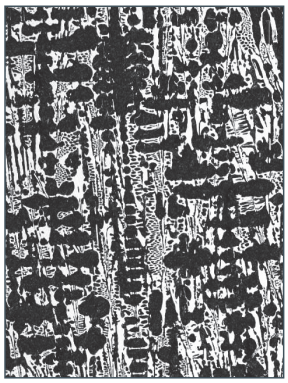
Shell

Material Barrel	Chemical composition [%]									Barrel Hardness
	C	Mn	Si	P max.	S max.	Cr	Ni	Mo	Others	[HSh"C"]
NTV 1	3,0/3,5	0,5/1,5	0,5/1,5	0,10	0,03	0,8/1,5	3,5/4,5	0,2/1,0		65-76
NTV 2	3,0/3,5	0,5/1,5	0,7/1,3	0,10	0,03	1,6/2,0	3,8/4,8	0,2/1,0		75-85
NTV 2 M	3,2/3,5	0,5/1,2	0,8/1,1	0,06	0,02	1,6/1,9	4,0/4,8	0,3/1,0		75-85

• Dimensional and weight limits:
Ø 550-1050 mm / 6.000 mm // 22.000 kg

• Barrel Structure
metallic matrix with transformed martensite and ledeburite and small fractions of lamelar and globular graphite

100x



500x

• Heat Treatment
Low tempering and/or stress relieving

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

• Physical and mechanical properties

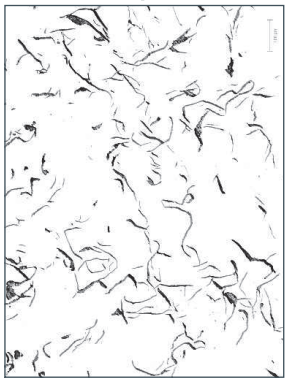
	NTV 1	NTV 2	NTV 2 M
TENSILE STRENGTH - Rm [MPa]	450	480	500
BENDING STRENGTH - Rmi [MPa]	720	720	810
YOUNG MODULUS - E.10³ [MPa]	140	150	170
COEFFICIENT OF THERMAL EXPANSION [m/K]	11 x 10^{-6}		
THERMAL CONDUCTIVITY [W/m°K]	20 - 30		

Core

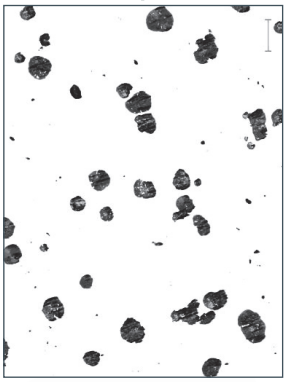
Material Core - Neck	Chemical composition [%]									Barrel Hardness
	C	Mn	Si	P max.	S max.	Cr	Ni	Mo	Others	[HSh"C"]
Lamelar iron	2,9/3,2	0,5/1,0	1,9/2,2	0,1	0,03	0,6	0,80/1,20	0,02/0,20		36 - 43
Nodular iron	2,8/3,5	0,1/1,0	1,5/2,5	0,1	0,02	0,5	0,60/1,00	0,02/0,20	Mg = 0,030 /0,080	37 - 45

• Core Structure

Lamelar Graphite 100x



Nodular Graphite - 100x



• Physical and mechanical properties

	Lamelar Iron	Nodular Iron
TENSILE STRENGTH - Rm [MPa]	250	350
BENDING STRENGTH - Rmi [MPa]	450	540
YOUNG MODULUS - E.10³ [MPa]	115	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 finishing
stands of hot strip mills