ROLL MATERIAL DATA SHEET

High Speed Steel

GRADE

HSS

01 FIELD OF APPLICATION

Mill Type	Position
Hot Strip Mill	Roughing Stands Work Roll
Hot Strip Mill	Early Finishing Stands Work Roll
Steckel Mill	Work Roll
Plate Mill	Work Roll

02 MECHANICAL PROPERTIES

HARDNESS RANGE	TENSILE STRENGTH	BENDING STRENGTH	YOUNG'S MODULUS
75-85 ShC	> **700** MPa	> **1200** MPa	approx. **225,000** MPa

The microstructure of HSS materials usually consists of a high proportion of MC, M_2C and M_6C carbides. The main alloying elements are V, Cr, Mo and W. After a comprehensive heat treatment, the carbides of the vanadium (VC), molybdenum (Mo_2C), tungsten (W_2C) and composite carbides (M_6C) are finely dispersed in the martensitic matrix.

The hardness of the special carbides is significantly higher than the hardness of M_7C_3 or M_3C carbides, which results in better wear resistance compared to chromium cast iron rolls.

This type of rolls, having exceptional wear resistance, smooth surface and high resistance to fire crack, work longer campaigns, so reduce the need for roll changes in the mills and increase mill productivity.

PRODUCT HIGHLIGHTS

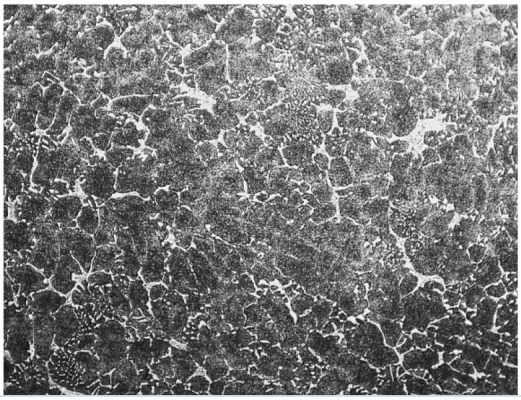
- Excellent wear resistance
- Excellent smooth surface
- Good fire cracking resistance and oxidation resistance
- Constant material properties during service life



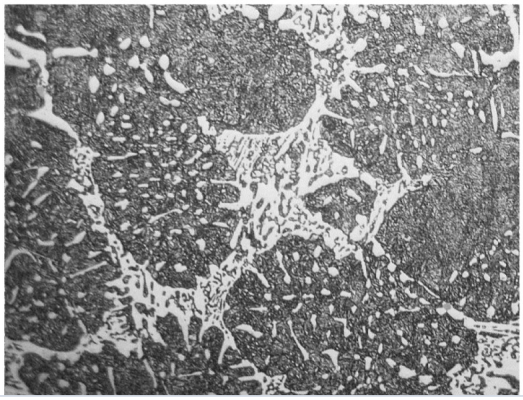
03 CHEMICAL COMPOSITION

wt. %	C	Mn	Si	P	S	Ni	Cr	Mo	V	W
Min	1.60	0.50	0.40	0	0	0.50	4.00	3.00	4.00	0
Max	2.40	1.50	1.20	0.050	0.050	1.50	6.50	5.00	6.50	3.00

04 MICROSTRUCTURE



■ *100 X – etched (2Vol. % Nital)*



■ *400 X – etched (Nital)*

05 HARDNESS PENETRATION CURVE (SHELL – INTERFACE – CORE)

