Union Electric Åkers
Forged and Cast Rolls

Product Data
HOT STRIP MILL WORK ROLLS

IRMA
Semi High Speed Steel

Chemical composition

	C	Si	Mn	Mo	Cr	Ni	W, V, Nb
IRMA	**0.8 – 1.8**	**0.5 – 1.5**	**0.4 – 1.5**	**2.0 – 8.0**	**4.0 – 9.0**	**0.5 – 1.5**	**1-6**
URMA	0.8 – 1.8	0.5 – 1.5	0.5 – 1.5	<1	10.0 – 14.0	0.5 – 1.5	<1
SPECRA R	1.1 – 2.1	0.5 – 1.5	0.5 – 1.5	2.0 – 8.0	3.0 – 7.0	0.5 – 1.5	2–10

Properties

Hardness	Ld (ShC)	770-820 (76-85)
Tensile strength	(MPa)	800
Thermal conductivity	(W/m x K)	18
Thermal exp. coeff. (20-100C)	(1/Kx10-6)	13
Young's modulus	(GPa)	235
Poisson's ratio	–	0,29
Density	(kg/m^3)	7600
Specific heat	(J/kg x K)	475

Comparative properties

	Wear resistance	Fire crack resistance	Oxidation behaviour	Friction
IRMA	▬	▬	▬	▬
URMA	▬	▬▬	▬	▬
SPECRA R	▬▬	▬	▬	▬

Description

Double poured semi high speed steel produced by the vertical spin casting process.

The Shell microstructure is primary and finely precipitated secondary carbides of MC, M_2C, and some M_7C_3 carbides in a matrix of tempered martensite. There is less than 3% retained austenite.

The roll is heat treated at high temperatures to obtain optimum material properties, favourable stress levels and homogeneous hardness.

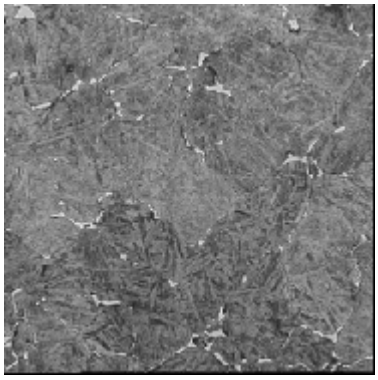
CORE MATERIAL

Nodular iron (SG).

(Properties displayed in a separate product data sheet.)

Applications

Work rolls for the roughing stands of conventional HSM and Steckel mills for all steel rolling.



Microstructure IRMA.

Features & Benefits

- Constant material properties throughout the usable shell.
- Very good wear resistance in combination with good operation safety.
- Very good fire crack resistance and very good oxidation behaviour at high temperatures.

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