

# URMA

## High Chrome Steel (Åkers National Roll – Chrome III)

### Chemical composition

	C	Si	Mn	Mo	Cr	Ni	W, V, Nb
<b>URMA</b>	0.8 — 1.8	0.5 — 1.5	0.5 — 1.5	<1	10.0 — 14.0	0.5 — 1.5	<1
IRMA	0.8 — 1.8	0.5 — 1.5	0.5 — 1.5	2.0 — 8.0	5.0 — 9.0	0.5 — 1.5	1-6
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)	765-815 (75-85)
Tensile strength	(MPa)	850
Thermal conductivity	(W/m x K)	16
Thermal exp. coeff. (20-100C)	(1/Kx10-6)	10
Young's modulus	(GPa)	220
Poisson's ratio	—	0,28
Density	(kg/m <sup>3</sup> )	7600
Specific heat	(J/kg x K)	490

### Comparative properties

	Wear resistance	Fire crack resistance	Oxidation behaviour	Friction
<b>URMA</b>	—	—	—	—
IRMA	—	—	—	—
SPECRA R	—	—	—	—

### Description

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

The microstructure consists of a tempered bainitic/martensitic matrix with Cr<sub>7</sub>C<sub>3</sub>-carbides.

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

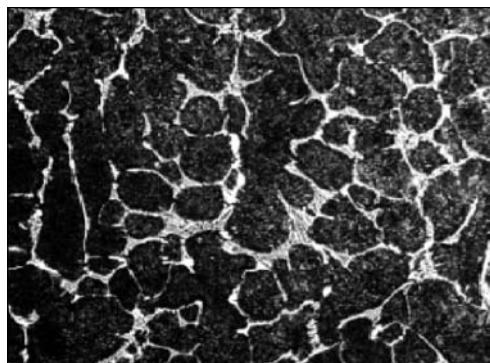
#### CORE MATERIAL

Nodular iron (SG).

(Properties displayed in a separate product data sheet.)

### Applications

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



Microstructure URMA.

### Features & Benefits

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