

ICRA

Indefinite Chill

Chemical composition

	C	Si	Mn	Mo	Cr	Ni	W, V, Nb
ICRA	<u>3.0</u> <u>4.0</u>	<u>0.5</u> <u>1.5</u>	<u>0.5</u> <u>1.6</u>	<u>0.2</u> <u>0.8</u>	<u>1.0</u> <u>2.0</u>	<u>3.0</u> <u>4.0</u>	<u><0.5</u>
MICRA	<u>3.0</u> <u>4.0</u>	<u>0.5</u> <u>1.5</u>	<u>0.5</u> <u>1.6</u>	<u>0.2</u> <u>0.8</u>	<u>1.0</u> <u>2.0</u>	<u>3.0</u> <u>4.0</u>	<u>1-4</u>
CRONA	<u>2.3</u> <u>3.0</u>	<u>0.6</u> <u>1.0</u>	<u>0.8</u> <u>1.2</u>	<u>1.0</u> <u>1.5</u>	<u>15.0</u> <u>20.0</u>	<u>1.0</u> <u>1.5</u>	<u>0.2</u> <u>0.6</u>
CICRA	<u>2.2</u> <u>2.9</u>	<u>0.7</u> <u>0.8</u>	<u>1.0</u> <u>1.2</u>	<u>1.0</u> <u>1.5</u>	<u>15.0</u> <u>20.0</u>	<u>1.0</u> <u>1.5</u>	<u>1-2</u>
URMA	<u>1.0</u> <u>2.0</u>	<u>0.7</u> <u>0.8</u>	<u>0.5</u> <u>1.5</u>	<u>0.2</u> <u>0.8</u>	<u>10.0</u> <u>14.0</u>	<u>0.5</u> <u>1.5</u>	<u>0.2</u> <u>0.6</u>

Properties

Hardness Range	Le	705-735
Tensile strength	(MPa)	350
Thermal conductivity	(W/m x K)	21
Thermal exp. coeff. (20-100C)	(1/Kx10-6)	12
Young's modulus	(GPa)	180
Poisson's ratio	-	0,31
Density	(kg/m ³)	7500
Specific heat	(J/kg x K)	500

Comparative properties

	Wear resistance	Fire crack resistance	Toughness	Product surface
ICRA	—	—	—	—
MICRA	—	—	—	—
CRONA	—	—	—	—
CICRA	—	—	—	—
URMA	—	—	—	—

Description

Double poured indefinite chill iron produced by the vertical spin casting process.

The microstructure consists of a bainitic/martensitic matrix with Fe₃C-carbides and free graphite flakes.

The roll is heat treated at low temperatures to obtain favourable stress levels and the required hardness range.

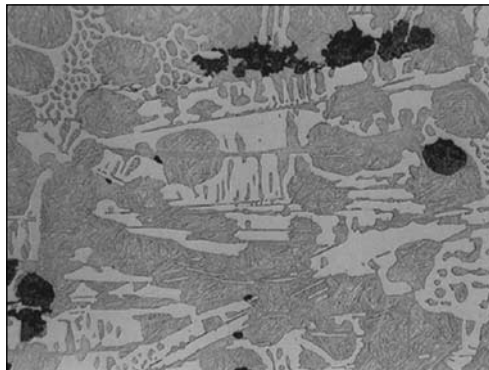
CORE MATERIAL

High strength flake iron (HS) or nodular iron (SG).

(Properties displayed in a separate product data sheet.)

Applications

Work rolls for single or double stand plate mills.



Microstructure ICRA

Features & Benefits

- The material properties provide a good resistance against thermal and mechanical impacts due to rolling incidents.
- The characteristic hardness drop of Indefinite Chill rolls is minimized by the manufacturing process.