

ICRA

Indefinite Chill

(Åkers National Roll – NNGrain)

Chemical composition

	C	Si	Mn	Mo	Cr	Ni	W, V, Nb
ICRA	<u>3.0</u> 4.0	<u>0.5</u> 1.5	<u>0.5</u> 1.6	<u>0.2</u> 0.8	<u>1.5</u> 2.5	<u>4.0</u> 5.0	<0.5
MICRA	<u>3.0</u> 4.0	<u>0.5</u> 1.5	<u>0.5</u> 1.6	<u>0.2</u> 0.8	<u>1.5</u> 2.5	<u>4.0</u> 5.0	1-4
CRONA	<u>2.0</u> 3.0	<u>0.6</u> 1.0	<u>0.8</u> 1.2	<u>1.0</u> 1.5	<u>15.0</u> 20.0	<u>1.0</u> 1.5	<0.5
CICRA	<u>2.0</u> 3.0	<u>0.7</u> 0.8	<u>1.0</u> 1.2	<u>1.0</u> 1.5	<u>15.0</u> 20.0	<u>1.0</u> 1.5	1-2
SPECRA F	<u>1.0</u> 2.0	<u>0.5</u> 1.0	<u>0.5</u> 1.5	<u>2.0</u> 5.0	<u>3.0</u> 7.0	<u>0.5</u> 1.5	2-8

Properties

Hardness	Ld (ShC)	765-815 (75-85)
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	Oxidation behaviour	Product surface
ICRA	—	—	—	—
MICRA	—	—	—	—
CRONA	—	—	—	—
CICRA	—	—	—	—
SPECRA F	—	—	—	—

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.

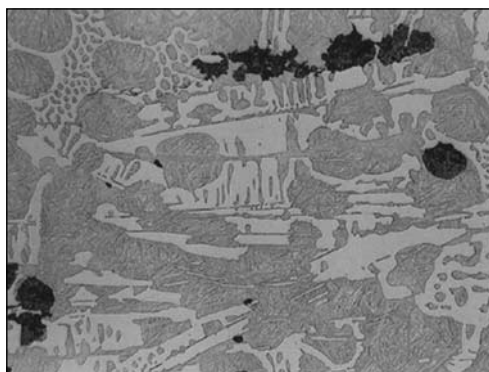
CORE MATERIAL

Standard flake iron (FG), high strength flake iron (HS) or nodular iron (SG).

(Properties displayed in a separate product data sheet.)

Applications

Work rolls for the late finishing stands F4-6(7) of conventional HSM or Steckel mill finishing stands.



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.