



# SPECRA F

High Speed Steel

## Chemical composition

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

## Properties

Hardness Range	Le	745-790
Tensile strength	(MPa)	750
Thermal conductivity	(W/m x K)	22
Thermal exp. coeff. (20-100C)	(1/Kx10-6)	13
Young's modulus	(GPa)	235
Poisson's ratio	-	0,28
Density	(kg/m <sup>3</sup> )	7700
Specific heat	(J/kg x K)	430

## Comparative properties

	Wear resistance	Fire crack resistance	Oxidation behaviour	Product surface
<b>SPECRA F</b>	————	————	————	————
MICRA	——	—	—	——
ICRA	—	—	—	—
CRONA	——	——	——	——
CICRA	————	——	——	——

## Description

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

The microstructure consists of a tempered bainitic/martensitic matrix with  $M_7C_3$ -,  $M_2C$ - and small evenly distributed MC-carbides.

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

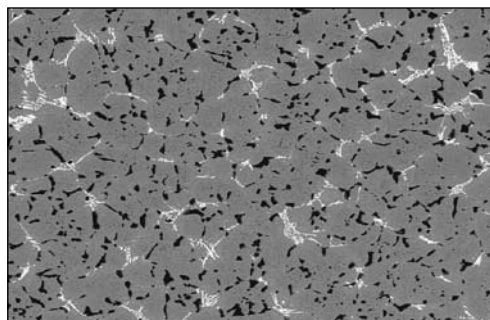
### CORE MATERIAL

Nodular iron (SG).

(Properties displayed in a separate product data sheet.)

## Applications

Work rolls for the early finishing stands F1-3(4) of conventional HSM or Steckel mill finishing stands.



Microstructure SPECRA F

## Features & Benefits

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