



**Standard Flake Iron (FG)  
High Strength Flake Iron (HS)  
Spheroidal Graphite Iron or Nodular Iron (SG)**

*Cast Iron*

**Chemical composition**

	C	Si	Mn	Cr	Ni	Mo	Mg
FG	3.0 4.0	0.5 2.0	<1	<1	<1	<0,5	-
HS	2.5 3.5	1.5 2.5	0.5 1.5	<1	<1	0.5 1.5	-
SG	2.5 3.5	1.5 2.5	0.5 1.5	<1	0.5 1.5	<1	0.05 0.15

**Properties**

Core iron	FG	HS	SG
Hardness in Equotip Ld	450-550	450-550	515-585
Hardness in Shore C	30-40	30-40	35-45
Tensile strength in MPa	200	250	400
Thermal exp. coeff. (1/Kx10-6) (20-100C)	13	13	14
Young's modulus in GPa	150	150	170
Bending strength in MPa	400	600	850
Density in kg/m <sup>3</sup>	7100	7150	7050

**Comparative properties**

	Wear resistance	Strength	Toughness	Neck surface
FG	-	-	-	—
HS	-	—	—	—
SG	-	—	—	—

**Description**

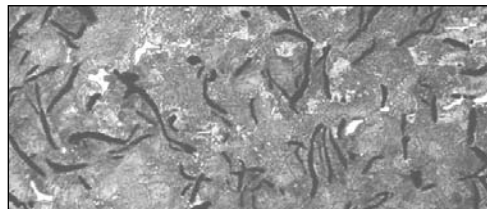
Cast iron materials with a high carbon content to allow precipitation of free graphite in lamellar shape, or after magnesium treatment nodular shape.

Both these type of core materials exhibit sufficient strength and ductility to in each application ensure a safe service life; avoid spillings or neck breakages.

The microstructure consists of a ferritic/pearlitic matrix with minor traces of Cementite (Fe<sub>3</sub>C) but different forms of free Graphite (Flake and Nodular).

**Applications**

Depending on the application and strength requirements, core and neck materials are combined with the various shell materials of spun cast work rolls. Both for the roughing and finishing stands of conventional HSM, Compact strip mill, Steckel mills and Plate mills.



Microstructure FG, HS.



Microstructure SG.

**Features & Benefits**

- Constant material properties throughout the body of the roll.
- Low level of residual carbides after spin casting to ensure good operation safety.
- Adequate strength and toughness for the chosen application.