

Ferro Silicon

26	55.845	14	28.0855
Fe	⁵ D ₄	Si	³ P ₀
	1,83		1,90
Iron		Silicon	
7,874	7,9024	2,33	8,1517
1538	2861	1414	2900
(m) 126	BCC	(v) 111	cubic
[Ar] 3d ⁶ 4s ²		[Ne] 3s ² 3p ²	
+2,3		+2,4,-4	

Description

Ferro Silicon is a Ferro Alloy composed of iron and silicon, with a silicon content ranging from 40% to 80%, with this content being what defines the quality of the product.

Ferro Silicon manufacture is carried out by reducing silica and iron ore with coke in blast furnaces for contents up to 15%. Silicon or electric arc furnaces are used for higher contents.

The largest producer by far is China, followed by Norway and Russia, given that China's production is higher than the total amount from rest of the world put together.

Properties

PHYSICAL STATE	Solid
COLOUR	Dark gray
ODOUR	Odourless
MELTING POINT	1210-1360°C
BOILING POINT	2355°C
SPECIFIC GRAVITY	3.4-5.1g/cm ³

Stable in normal conditions, it only reacts with nitric and hydrofluoric acids when in powder form. Contact with moisture or water may provoke the release of hydrogen gas and create flammable or explosive mixtures with air.

Its impurities can also produce arsine and phosphine, toxic gases that evolve in such a proportion that, in conditions of mechanical ventilation, the risk of poisoning clearly predominates over that of explosion.

Ferro Silicon is not classified as a hazardous product according to the relevant European regulations. For silicon contents between 30% and 90%, it is classified as a hazardous good for transportation. Class 4.3 (ADR) for road transportation and transportation category A Maritime (UN Number: 1408)

Uses

The uses of Ferro Silicon include:

- Its use as a deoxidizing agent in the manufacturing of structural and stainless steels to avoid excessive decarburization.
- Its ability to be used as a graphitizing agent for the manufacturing of gray iron.
- Its use as a silicon bearing material as an alloying element to improve the behaviour of the alloys against corrosion and high temperatures.
- Its use as a raw material for Ferro Silicon Magnesium production.

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