



COMETAL

Your Door to Raw
Materials & Markets

Silicon Manganese

26	55.845	14	28.0855	25	54.938049
Fe	5D_4	Si	3P_0	Mn	${}^6S_{5/2}$
Iron	1,83	Silicon	1,90	Manganese	1,55
7,874	7,9024	2,33	8,1517	7,47	7,4340
1538	2861	1414	2900	1246	2061
(m) 126	BCC	(v) 111	cubic	(m) 127	\$cubic
[Ar] 3d ⁶ 4s ² +2,3		[Ne] 3s ² 3p ² +2,4,4		[Ar] 3d ⁵ 4s ² +2,3,4,6,7	

Description

Silicon Manganese is a Ferro Alloy obtained by carbothermic reduction with slag coke from the production of high carbon Ferro Manganese or manganese ore together with silica as a flux, usually in submerged electric arc furnaces. Manganese Silicon contains between 65%-68% Mn, 16%-21% Si and approximately 1.5%-2% of carbon. Manganese Silicon manufacturing is more energy intensive than the Ferro Manganese due to the energy requirements for the reduction of the silica to silicon metal. The world's largest producers are China - which is far above all others, representing more than 50% of the world's production - India, Ukraine, Norway and Kazakhstan.

There are basically three types of Silicon Manganese which are a function of silicon and carbon content:

Element	Grade A	Grade B	Grade C
Mn	65.0–68.0	65.0–68.0	65.0–68.0
Si	18.5–21.0	16.0–18.5	12.5–16.0
C, max.	1.5	2.0	3.0
P, max.	0.20	0.20	0.20
S, max.	0.04	0.04	0.04

Properties

PHYSICAL STATE	Solid
COLOUR	Silvered gray
ODOUR	Odourless
MELTING POINT	1,050°C-1,290°C
BOILING POINT	-
SPECIFIC GRAVITY	6.1g/cm ³

Both silicon and manganese, besides its deoxidizing and desulphurizing effects, increase the hardenability of the steels.

The product is stable under normal conditions. Its contact with moisture, acids or alkalis causes the formation of extremely flammable (hydrogen) and very toxic gases (arsine and phosphine).

Silicon Manganese is not classified as a dangerousous product according to the relevant European legislation. Silicon Manganese is not classified as a hazardous good for transportation.

Uses

Manganese and silicon play an important role in the manufacturing of steel as deoxidizing, desulphurizing and alloying agents. Silicon is a more powerful deoxidizer than manganese, but despite the lower intrinsic effectiveness of the latter, it increases the effect of the former through the formation of stable manganese silicates.