ALTech
Redefining ALPHA

FERROALLOY

Ferrochrome

Properties of Ferrochrome

Over 80% of the world's Ferrochrome is used in the production of stainless steel, which is defined as a steel alloy with a minimum of 10% chrome by content, the average chrome content being 18%. Stainless steel depends on chrome for its appearance and its corrosion resisting properties.High Carbon Ferro Chrome is most commonly used in specialist applications such as engineering steels. Lower carbon ferro chromes are produced in smaller quantities for more specialised applications.

Ferrochrome

Production of Ferrochrome

The two main products of chromite refining are Ferrochrome and Chrome Metal. For the production of Ferrochrome the chromite ore is reduced, usually by coal and coke in a high temperature reaction to form the iron-chrome alloy. For production of pure chrome the iron has to be separated from the chrome in a two step roasting and leaching process. Ferrochrome is often classified by the ratio of chrome to carbon it contains. The vast majority of ferro chrome produced is Charge Chrome. It has a lower Cr:C ratio and is most commonly produced in South Africa for use in stainless steel production. The second largest segment of the market is High Carbon Ferrochrome which has a higher chrome content, being produced from higher grade chrome ore.

High Carbon Ferrochrome		Medium Carbon Ferrochrome	
Cr :	60 %	Cr :	60 %
Si :	3 - 3.5% Max	Si :	1.5% Max
P :	0.035% Max	P :	0.035% Max
S :	0.035% Max	S :	0.035% Max
C :	6 - 8 %	C :	2% Max
Size :	20 - 150 mm	Size :	20 - 150 mm

- **Chips & Powder also available on buyer request**

QUALITY STANDARDS: IS: 1559-1961, 1988, 1982 (Part-1, 4 & 5) Reaff: 2009 & 2014 & for Carbon and Sulphur as per ATM: E 1019-2011 (LECO).
PACKING: 50 KG GUNNY JUTE BAGS, 1 MT Jumbo Bags, Wooden Pallet, Drum Packing Etc.

Ferro-silicon

Ferrosilicon

Ferrosilicon is an atomised alloy, which is formed by combining iron and silicon with a silicon content range of 15% to 90%. Ferrosilicon is a universal "heat-blocker" used in the production of carbon and stainless steels. This additive is used with other ferro alloys in the deoxidising process of steel, as well as in the production of silicon itself. Ferrosilicon is used in the production of cast iron, as Ferrosilicon can accelerate graphitisation. Ferrosilicon replaces the need for ferro manganese, spiegeleisen and calcium silicides in the manufacturing process.

Production of Ferrosilicon:

A large portion of the global Ferrosilicon supply is manufactured in China, USA and India. The most basic definition of the Ferrosilicon production process would be that the silica (or sand) is mixed with coke, and then a reduction process takes place in the presence of millscale, scrap or another source of iron. A blast furnace is employed for Ferrosilicon production, but for larger contents of silica, an electric arc furnace is used. Ferrosilicon is usually supplied in bags of particles in pallet boxes or shrink-wrapped on pallets or in steel drums (50kg and dual layer plastic bags or 1000kg packed in drums). The granularity of particles varies from 10 mm to 100mm.

Standard Material	Result	Sizes:
• Si	70 - 75%	• 10-50mm
• Al	1.5 % Max	• 10-80mm
• C	0.100%	• 3-10mm
• P	0.035%	• 0-3mm
• S	0.035%	

Uses of Ferrosilicon:

There are many practical applications of Ferrosilicon to include carbon steel and stainless steel production, and when using the Pigeon process to produce magnesium from dolomite. Applications in the production of other alloys include the manufacture of silicon steel for electro motors and cores, as well as coatings used during arc welding. One useful by-product of the production processes is silica fume, which is later added to concrete mixes to improve compressive and bonding strength there.

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Ferro-manganese

Low and Medium Carbon Ferromanganese:

When liquid Silicomanganese is reacted with Manganese Ore or a high MnO rich slag, the silicon is oxidised increasing the Mn content of the alloy without an increase in the carbon content. This method is commonly used in South Africa to produce grades of refined (Medium and Low Carbon) Low Ferromanganese with Mn 80% with varying carbon contents 1% max and Medium Ferromanganese with Mn 78 - 85% with varying carbon contents 1.5% max and the price of the alloys increases as the carbon content is reduced and unlike standard Ferromanganese is usually sold per unit of manganese contained.

Low Carbon Ferromanganese
Chemical Property :

Mn :	80 % minimum
C :	1 % Max
Si :	3 - 4 %
P :	0.35% Max
S :	0.035% Max
Size :	20 - 150 mm

Medium Carbon Ferromanganese
Chemical Analysis

• Mn	78 - 85 %
• C	1.5 % Max
• Si	3 - 4 %
• P	0.35% Max
• S	0.035% Max

Packing:
- Drums on a pallet

Sizing:
- 20 - 150 mm

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Ferro-manganese

High Carbon Ferromanganese

Ferromanganese is produced by reduction of Manganese Oxide in blast furnaces or electric furnaces. It is a very flexible process in that the slags can be reprocessed into Ferrosilicomanganese which in turn can be further refined into Medium and Low Carbon Ferromanganese. Ferromanganese was invented in 1860 by Sir Henry Bessemer as a way to add Manganese during steel making with the advantage that a combination of Iron and Manganese Oxide results in a lower melting point for the alloy Ferromanganese compared to pure Manganese Oxide. Standard Ferromanganese (or High Carbon Ferromanganese) is a commonly used alloy produced by the reduction of manganese ore in the presence of carbon. Typically it contains 75% manganese and 7% carbon. Worldwide production of Ferromanganese in 2008 was approximately 4.5 million tons, with China being the worlds largest producer.

High Carbon Ferromanganese Chemical Analysis

• Mn	70 - 75 %	• Drums on a pallet	• 20 - 150 mm
• C	8% Max	• Bags on pallet	
• Si	3 - 4 %		
• P	0.35% Max		
• S	0.035% Max		

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Ferro-titanium

Ferro-titanium is used by stainless steel makers as a stabiliser to prevent chromium carbide forming at grain boundaries and in the production of low carbon steels for sheet production.

Ferro-titanium is manufactured by melting titanium scrap (sponge, chips and solids) with iron in an induction furnace.

We have an extensive scrap processing operation to identify and control titanium scrap. All raw material is analytically tested by an independent assayer before dispatch to the production plant. The ingot is tested and then verified after crushing to ensure accuracy of analysis.

Chemical Property
Material Standard Specification

Ti : 30% to 35% (Approx)
Si : 2% to 4% (Approx)
C : 1.5% max. (Approx)
S : 0.04% (Approx)
P : 0.03% (Approx)
Al : 6% (Approx)

Packing:

- 1mt bags
- To your specification

Available size:

- 0-2mm
- 2-10mm
- 5-30mm
- 10-50mm

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Ferro-tungsten

Ferro-tungsten is an alloy, which is formed by combining iron and tungsten with a tungsten content range in two grades (A and B) and the content ranges are 75%-82% and 70%-75% respectively. Ferrotungsten is a remarkably robust alloy because of its high melting point, tungsten has the second highest melting point after carbon. By combining iron with tungsten, the tendencies towards brittleness are overcome from the raw state of tungsten, and Ferrotungsten is often a major component of popular super alloys.

Uses of Ferro-tungsten

A good example of Ferrotungsten usage is in high-speed steel, which may contain as much as 18% pure tungsten. These super alloys that employ Ferro Tungsten are used in the production of turbine blades and other wear-resistant coatings and parts. Other applications requiring the high density of Ferro Tungsten alloys are heat sinks, counter weights, ballast keels, commercial aircraft tail ballast, and NASCAR and Formula 1 car ballast. In armaments, Ferrotungsten is used in kinetic energy penetrators as an alternative to depleted uranium, but is also used in projectiles and grenades to create super-sonic shrapnel. Ferrotungsten is also used in the manufacture of game darts for the popular bar game (the Ferrotungsten creates darts yielding smaller diameters,thus tighter groupings during play). Ferrotungsten is also found in fishing lures (as the Ferrotungsten alloy beads sink rapidly).

Chemical Property
Standard Material

W	**: 77.53% (Approx)**	**Sn**	**: 0.049% (Approx)**
As	**: 0.062% (Approx)**	**Si**	**: 0.40% (Approx)**
C	**: 0.100% (Approx)**	**Mn**	**: 0.23% (Approx)**
Cu	**: 0.0745% (Approx)**	**Pb**	**: 0.003% (Approx**
S	**: 0.071% (Approx)**	**Size**	**: 10-50mm (Approx)**
Sb	**: 0.037% (Approx)**		
P	**: 0.048% (Approx)**		

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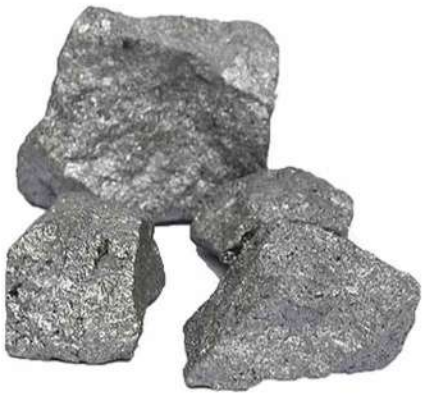
Ferrosilicomanganese

Ferrosilicomanganese is an alloy of manganese, silicon and iron.
It is applied in metallurgy while in steel production for steel deoxidation and alloyage.

Silico Manganese. Silico Manganese is an alloy containing the high amount of manganese and silicon. This range of alloys is made by heating oxides MnO_2 SiO_2, Fe_2O_3 with carbon. It finds extensive applications as deoxidizer and an alloying element in steel.



We are offering high quality Ferro Silico Manganese For Industry These are available in the market at the most competitive prices. Ferro Silico Manganese offered by us find wide application in iron and steel industries.

Specifications :

Mn	: 60% - 65% (Approx)
Si	: 14% - 15% (Approx)
C	: 2.00% Max (Approx)
P	: 0.3% Max (Approx)
S	: 0.03% Max (Approx)

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Ferromolybdenum

Ferromolybdenum prevents corrosion in stainless steels, and when mixed with iron, the Molybdenum also strengthens and hardens into austenite.
Ferro Molybdenum is mainly produced by Alumino Thermit Process.
Moly Oxide, which is the raw material is produced in Chile. Ferro Molybdenum is produced in India, China, Iran & Europe

Ferromolybdenum

Applications of Ferromolybdenum

Ferro Molybdenum is added to an alloy due to its hardening properties that makes steel extremely strong and at the same time weldable. Ferro Molybdenum also helps in increasing the corrosion resistance. The largest practical applications of Ferro Molybdenum are its use in ferrous alloys, and depending on the molybdenum content range, it is suited for machine tools and equipment, military hardware, refinery tubing, load-bearing parts and rotary drills. Ferro Molybdenum is also used in cars, trucks, locomotives and ships. In addition, Ferro Molybdenum is used in stainless and heat-resisting steels that are employed by synthetic fuel and chemical plants, heat exchangers, power generators, oil-refining equipment, pumps, turbine tubing, ship propellers, plastics and inside acid storage containers. Tool steels, with a high percentage range of Ferro Molybdenum, are used in high-speed machining parts, cold work tools, drill bits, screwdrivers, dies, chisels, heavy castings, ball and rolling mill.

SPECIFICATIONS

Grade	Mo	C	S	P	Si	Cu
A	68-70	0.10	0.05	0.05	1.0	0.50
C	60-65	0.10	0.05	0.05	1.0	0.05

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ALTech Group have a global footprint

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