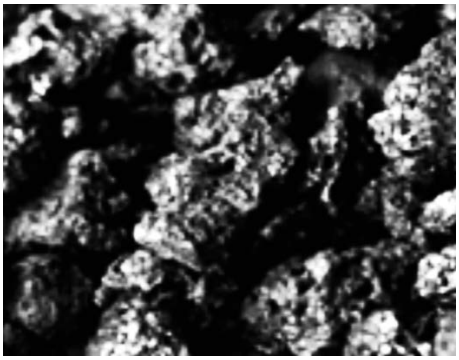
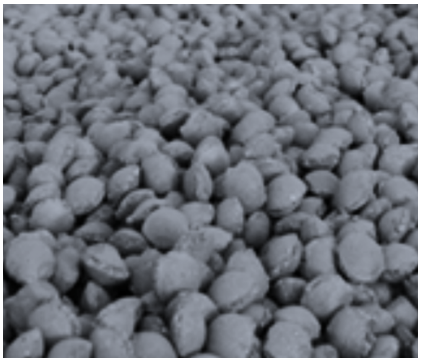
Wedge

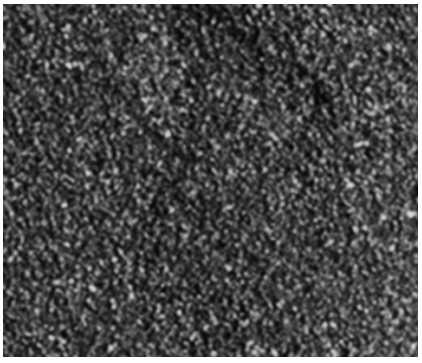
Ferro Alloys

Low Cost | High Purity | Quick Delivery





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Ferro Silicon

Wedge offers high purity 75% Grade Ferrosilicon. According to the content of Si, Fe, Al, etc., it is divided into different grades. As a rule of thumb in steel making for 1TOS about 3-5 kg of 75% ferrosilicon is consumed. We offer particle sizes are 0-3mm, 10-60mm, 10-100mm, etc. Manufacturers and suppliers can be customized according to user requirements. Ferrosilicon is used as a deoxidizer. At the same time, when SiO2 is formed, a large amount of heat is released. This is beneficial to increase the temperature of the molten steel.

Commercial Grade Ferro Silicon

Si min	Al max	C max	P max	S max	Ca max
65%	2.00%	0.20%	0.04%	0.02%	
68%	2.00%	0.20%	0.04%	0.02%	
70%	2.00%	0.20%	0.04%	0.02%	
72%	2.00%	0.20%	0.04%	0.02%	
75%	2.00%	0.20%	0.04%	0.02%	
75%	1.50%	0.10%	0.04%	0.02%	
75%	1.50%	0.10%	0.04%	0.02%	0.50%

Low Aluminium Ferro Silicon

Si min	Al max	C max	P max	S max
75%	1.50%	0.10%	0.04%	0.02%
75%	1.00%	0.20%	0.04%	0.02%
75%	0.50%	0.10%	0.04%	0.02%
75%	0.10%	0.10%	0.04%	0.02%

High Purity Ferro silicon

Si min	Al max	C max	Ti max	P max	S max
75%	0.50%	0.05%	0.10%	0.03%	0.02%
75%	0.30%	0.03%	0.05%	0.03%	0.01%
75%	0.10%	0.03%	0.03%	0.02%	0.01%
75%	0.05%	0.02%	0.03%	0.02%	0.01%

High carbon silicon

Si	C	SiO2	P	S
65%	15%	2.5%	0.05%	0.05%
67%	23%	2.5%	0.05%	0.05%

The main content of high carbon silicon are silicon and carbon. It can replace ferrosilicon, silicon carbide, recarburizer. Reduce the amount of deoxidizer, and be used in converter smelting deoxidation alloying process. The effect is stable. The properties and quality of the steel are superior to the traditional process.

Calcium Silicon Grain

Silicon calcium, also known as silicon calcium alloy. It belongs to the category of ferroalloys. The main chemical components are silicon and calcium. It also contains impurities such as iron, aluminum, carbon, sulfur, etc. There are two forms of silicon calcium lump and calcium silicon powder.

The most widely used method for integrated steel applications is in the form of cored wire. It is the silicon calcium core wire we often say. Calcium has a low density in the ladle and is highly reactive, so it is difficult to introduce and keep in the melt. The core wire eliminates these variables.

Specification	**Chemical Component%**					
	Ca	Si	Al	C	P	S
	>=		<=			
W-Ca30Si60	30	55-65	0.3	0.1	0.035	0.02
W-Ca28Si55	28	55-60	0.3	0.1	0.04	0.02

Applications Calcium Silicon

- Composite deoxidizer, desulfurizer. Mainly used for high grade steel.
- The silicon calcium alloy has strong deoxidation ability.
- The deoxidation product is easy to float and is easy to discharge.
- It also improves the properties of steel and improves the ductility of steel.
- The warming agent used in the converter steel workshop.
- Can be used as an inoculant for cast iron.
- As an additive in the production of ductile iron.

Silicon Briquette

Silicon briquette have the same physical and chemical properties as ordinary alloys. And briquettes manufacturing cost is very low. So, it has been well received by customers in practical use. Silicon balls are generally classified into three types: ferrosilicon briquettes, silicon slag briquettes, and silicon carbide balls.

Ferrosilicon briquettes
The ferro silicon briquettes is made by pressing the ferro silicon powder through a machine. It can be used as a deoxidizer and alloying agent in the steel making process. It is a substitute for smelting pig iron and ordinary foundry ferrosilicon.

Advantages of ferro silicon briquettes
The use of ferrosilicon balls can improve the furnace temperature, increase the fluidity of molten iron, effectively discharge slag, and improve the toughness and cutting ability of pig iron and castings. In addition, its particle size is uniform, the melting rate is fast, and fuel can be effectively saved. The price of ferrosilicon briquettes is low and the effect is good. It is a product that many customers will choose now.

Products	Spec(%)				
	Si	C	S	P	Al
FeSi60	60%min	8%max	0.1%max	0.05%max	5%max
FeSi65	65%min	5%max	0.08%max	0.05%max	3%max

Silicon slag Briquettes

The silicon slag ball is made by pressing metal silicon slag powder through a machine. Silicon slag is a kind of scum floating on the furnace during the process of smelting metal silicon. Silicon slag contains a large amount of metal silicon and other elemental components. It is a good deoxidizer. It is widely used in deoxidation of molten steel and purification of molten steel.

The silicon slag ball has a low price and good effect. It is used by the steel plant to replace the ferrosilicon. It is a good product to reduce costs and increase profits.

Products	**Spec(%)**			
	Si	C	S	P
Si50%	50%min	8%max	0.1%max	0.05%max
Si60%	60%min	5%max	0.1%max	0.05%max
Si70%	70%min	3%max	0.05%max	0.05%max

Silicon Carbide Balls

Silicon carbide ball, also known as silicon-carbon alloy ball. The silicon carbon alloy ball is formed by pressing a silicon carbon alloy slag and powder through a machine. It can be used instead of ferrosilicon, silicon carbide, and recarburizer.

Advantages
1. Improve the quality of molten steel and improve product quality.
2. Reduce the amount of alloy added, reduce steelmaking costs, and increase economic efficiency.

Products	**Spec(%)**			
	Si	C	S	P
Si45C10	45%min	10%min	0.05%max	0.05%max
Si65C15	65%min	15%min	0.05%max	0.05%max
Si68C18	68%min	18%min	0.05%max	0.05%max

Carbon Recarburizer / Additives

Recarburizer, also know as carbon additive, carbon raiser. It is a product for increasing the carbon element (C). During the steel making process, various factors may cause the carbon content in the molten steel to decrease. This will affect the quality of the finished steel. So, steel mills usually purchase carbon reductants to cope with the decline in carbon emissions.

There are many types of recarburizers that are common. There are artificial graphite recarburizer, petroleum coke recarburizer, calcined coal recarburizer.

1. Synthetic Graphite Recarburizer

Graphite recarburizer is is a ferroalloy product made of carbon material. Graphite carbon raisers are divided into natural graphite recarburizers and synthetic graphite recarburizers. The best quality is the synthetic graphite recarburizer. When smelting ductile iron, it is best to choose artificial graphite. The metallurgical quality of casting is better.

Type	Moisture	Ash%	V.M	F.C%	S%
Synthetic graphite	1 max	0.3 max	0.5 max	98%	0.05 max

Advantages

It has the characteristics of high fixed carbon content, low ash content, low sulfur content, low volatile content and less harmful impurities. It can make carbon absorption faster, absorption rate higher, no residue, and more stable carbonization effect.

The main raw material for synthetic graphite is powdered smoldering petroleum coke. The asphalt is used as a binder and a small amount of other auxiliary materials are added. After the various raw materials are combined, they are compression molded. It is then treated in a non-oxidizing atmosphere at 2500-3000 ° C for graphitization.

The synthetic graphite products are expensive. Most of them used in the foundry industry is chips, scrap electrodes and graphite blocks when manufacturing graphite electrodes. These materials can be recycled. And in the production process to play a role in heating up and increasing carbon. At the same time, it can greatly reduce production costs.

2. Petroleum Coke Recarburizer

Petroleum coke recarburizer is a widely used carbon riser. Its combustion temperature is 1650-1730 degrees. Therefore, many manufacturers use it as a combustion improver. It is usually replaced by coal due to its high calorific value and low volatility. The crude oil is distilled or vacuum distilled to obtain a residual oil and petroleum pitch. It is then coked to obtain the raw petroleum coke that is calcined to obtain a petroleum coke riser.

Type	**Moisture**	**Ash%**	**V.M**	**F.C%**	**S%**
petroleum coke	1 max	0.3 max	1 max	98.5	0.05-0.35

3. Calcined coal Recarburizer

Type	**Moisture**	**Ash%**	**V.M**	**F.C%**	**S%**
calcined coal	1 max	4-8	1 max	85-93	0.35 max

The common particle sizes are 1-3mm,5-8mm and 3-8mm respectively. We can also supply as per the customer requirement. The carbon additives are used in various applications such as cast iron and cast steel. However, the most widely used one is the steelmaking industry.

Silicon Carbide

Silicon carbide (SiC) are offered in two colors black and green silicon carbide. We can offer both in blocks and grains / powder forms. SiC is produced by mixing quartz sand with coke, silica and petroleum coke, wood chips, and fired into an electric furnace, heat it to a high temperature of about 2000 °C, and obtain silicon carbide after various chemical processes.

Grade	**Component%**			
	SiC	F.C		Fe2O3
W-SiC60#	60 min	15-20	8-12	3.5 max
W-SiC65#	65 min	15-20	8-12	3.5 max
W-SiC70#	70 min	12-15	8-12	3.5 max
W-SiC75#	75 min	12-15	8-12	3.5 max
W-SiC80#	80 min	5-15		3.5 max
W-SiC85#	85 min	5-15		3.5 max
W-SiC90#	90 min	2-10		1.2 max
W-SiC95#	95 min	0.6 max		1.2 max
W-SiC97#	97 min	0.3 max		1.2 max
W-SiC98#	98 min	0.3 max		0.8 max
W-SiC98.5#	98.5 min	0.2 max		0.6 max

Benefits and Applications of SiC

- Extremely high hardness
- Wear resistant
- Corrosion resistant
- Lightweight – Low Density
- High thermal conductivity
- Low thermal expansion coefficient
- Chemically and temperature resistant
- Outstanding thermal shock resistance
- Used as an abrasive, it can be used as a grinding tool, such as grinding wheel, oil stone, grinding head, sand tile, etc.
- As a metallurgical deoxidizer and high temperature resistant material.
- High-purity single crystals can be used to make semiconductors and silicon carbide fibers.
- Can be used as a deoxidizer for steel making and a modifier for cast iron construction.

Silicon Barium Inoculant

Silicon barium inoculant is an artificial composite ferro alloys product. The main application is with the production process of cast iron. 80% of Chinese foundry manufacturers are using barium-containing inoculants. In practice, Si-Ba inoculants can improve the performance of the product. Thus, it can be widely used in actual production.

Grades		**Chemical Component%**				
	mm	Si	Ba	Ca	Re	Fe
Ba3-65	0.5-2.0	60-65	2-4	0.5-2.5	-	-
Ba5-60	2-5	55-60	4-6	0.5-2.5	-	-
BaRe5-60.5	3-8	55-60	4-6	0.5-2.5	4-6	-
Ba10-55	0.2-3	50-55	8-12	3.5-5.5	-	-
	2-8					
Ba15-50	0.2-3	45-50	13-17	3.5-5.5	-	-
	2-8					
Ba20-45	0.2-3	40-45	18-20	3.5-5.5	-	-
	2-8					
Ba3-50	0.2-3	46-54	1.5-4	1-3	3-5	-
	2-8					
Si72	0.3-2	70-72		1-3	-	-

Applications of Silicon Barium Inoculant
1. Cast iron industry: When producing ductile iron and gray cast iron, silicon barium can improve the fluidity of molten iron. Improve the form of molten iron impurities. And promote the application of graphite spheroidization.
2. Steelmaking industry: Putting silicon barium inoculant can play a good deoxidation effect

Silicon Magnesium Nodulizer

An additive that crystallizes graphite in cast iron into a spherical shape, which is called a "nodulizer" or a "spheroidizing agent" . Including rare earth silicon-magnesium alloys, calcium alloys, pure magnesium alloys, etc.

The casting thickness of each grade of rare earth magnesium ferrosilicon alloy is not more than 100mm. The standard particle size of rare earth magnesium ferrosilicon alloy is 5~25mm and 5~30mm. Depending on the application, customers can specify special particle sizes such as 5~15mm, 3~25mm, 8~40mm, 25~50mm, etc.

Specification	**Chemical Component%**						
	Re	Mg	Ca	Si	Mn	Ti	Fe
FeSiMg8Re3	2-4	7-9	2-3.5	44.0	1.0	1.0	-
FeSiMg8Re3	4-6	7-9	3	44.0	1.0	1.0	-
FeSiMg8Re3	6-8	7-9	3	44.0	1.0	1.0	-

Rare earth silicon magnesium ferro alloy is a good spheroidizing agent. Mainly used in the production of ductile iron. Ductile iron is widely used in machinery manufacturing such as automobiles and tractors.

Fumed Silica / Microsilica

Silica fume, also known as microsilica, fumed silica. When smelting ferrosilicon and industrial silicon (metal silicon), a large amount of highly volatile SiO2 and Si gas is generated in the ore furnace. And the gas is rapidly oxidized after being discharged. Silica fume is formed after condensation and precipitation.

Microsilica is a by-product of large-scale industrial smelting. And the entire process needs to be recycled with dust-removing environmental protection equipment.

Features

- Appearance: gray or off-white powder
- Refractoriness: >1600°C
- Bulk density: 200 ~ 250 kg / cubic meter.
- Chemical composition: SiO2
- Silica fume particle size: 80% or more of less than 1 μm, and an average particle diameter of 0.1-0.3 μm, which is a gray state.

Analysis Object(%)	**Brand**				
	WFS97#	WFS94#	WFS90#	WFS88#	WFS85#
SiO2	97.0	94.0	90.0	88.0	85.0
Al2O3	1.0	1.0	2.0		
Fe2O3	1.0	1.0	2.0		
CaO+MgO	1.0	1.0	2.0		
K2O+Na2O	1.0	1.5	2.0		
C	1.0	2.0	2.0	2.5	3.0
NaOH	1.0	3.0	3.0	4.0	4.5
PH	4.5-6.5	4.5-7.5	4.5-7.5	4.5-8.5	4.5-8.5
Sizeabove45um	1.5	2.0	2.0	2.0	5.0
Moisture	1.5				
M2/g	1.0	2.0	2.5	3.0	3.0

Fumed Silica / Micro Silica Application

1.Use of microsilica in concrete: The advantages of microsilica in concrete are very obvious. Fumed silica is capable of filling pores between cement particles. At the same time, a gel body is formed with the hydration product. It reacts with the alkaline material magnesia to form a gel. Improve the concrete's resistance to pressure and corrosion. At the same time, it has the function of preventing segregation and water retention.

2. As an additive to refractory materials. Micro silica can improve the compactness of cast refractories.

Silicon Metal

Silicon is a non-metallic element, gray, hard and brittle, with a content of about 26% of the earth's crust. Metal silicon (lump & powder), is also known as crystalline silicon or industrial silicon. It is generally used as an iron-based alloy additive. Metal silicon can be divided into metallurgical grade and chemical grade.

Method for producing metal silicon: Silica is used as a raw material. The carbonaceous material acts as a reducing agent. Metal silicon is smelted by a submerged arc furnace. The content of Fe in the smelted metal silicon is less than 0.5%. Its chemical reaction equation is:
$SiO2 + 2C \rightarrow Si + 2CO$

The silicon thus obtained has a purity of 97% to 98%. Generally used in the metallurgical industry. If you want to get higher grade silicon, you need to refine it to remove impurities. Thus, metal silicon having a purity of 99.7% to 99.8% is obtained.

Typical sizing: 10 - 100 mm (90% minimum)

Metallurgy Grade	Si	Fe	Al	Ca	P
WMS553	98.50	0.50	0.50	0.30	-
WMS441	99.00	0.40	0.40	0.10	-
WMS3303	99.00	0.30	0.30	0.03	25/40/60
WMS2202	99.00	0.20	0.20	0.02	25/40/60
WMS1101	99.20	0.10	0.10	0.01	25
Off grade	96.00	2.00	1.00	1.00	
	%min.	%max.	%max.	%max.	ppm

Silicon Metal Powder specification

Size	Fe	Al	Ca	P
20~60 mesh	0.02	0.02	0.02	20
60~200 mesh	0.01	0.01	0.01	20
0.20~1mm mesh	0.20	0.20	0.20	30
42~325 mesh	0.30	0.30	0.30	-
-325 mesh	0.40	0.40	0.50	-
mm/mesh	%max.	%max.	%max.	ppm max

Applications Silicon Metal Uses
1. Aluminum alloy: It can improve useful properties of aluminum such as castability, hardness and strength. Adding silicon metal to aluminium alloys makes them strong and light. So, they are increasingly used in the automotive industry. Used to replace heavier cast iron parts. Automotive parts such as engine blocks and tire rims are the most common cast aluminum silicon parts.

2. Solar industry and electronics industry: Silicon metal can also be used as essential material in the solar and electronics industries. For examples, it can be used in the manufacture of solar panels, semi-conductors and silicon chips.

Ferro Manganese High Carbon

Grade	Mn	C	S	P	Si
	min		max		max
	%	%	%	%	%
WFMHC-A	75-80	6-8	0.03 - 0.05	0.25	0.5
WFMHC-B	70-75	6-8	0.05	0.3 – 0.4	1.5

Granulometry: 20 – 80 mm (90%)

Ferro Silico Manganese

Grade	Mn	Si	C	S	P
	%	%	%	%	%
WFSM-A	65-70	16-18.50	2	0.05	0.2
WFSM-B	60-65	14-17	2	0.05	0.4

Ferro Vanadium

Grade	V	C	S	P	Si	Al
	%	%	%	%	%	%
WFV-A	80 Min	0.15	0.05	0.05	1.50	2.0
WFV-B	58-62	0.10	0.05	0.05	1.50	2.0
WFV-C	50-55	0.10	0.05	0.05	1.50	2.0

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