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**REFRACTORY  
RAW MATERIALS**



## Tabular Alumina

### ● Brief Introduction

Tabular Alumina is a pure sintered alpha-alumina material that has been fully densified by rapid-sintering without the use of sintering aids at temperatures in excess of 1800°C. Tabular Alumina has characteristic large & well developed hexagonal tablet shaped alpha-alumina crystals of up to 200 μm length.

Tabular alumina sizes are available as below:  
 Granular size: 0-0.5mm, 0.5-1mm, 1-3mm, 3-5mm, 5-8mm  
 Fine powder: 180mesh 200mesh 325mesh  
 Customized size is available

### ● Applications

Tabular Alumina is good choice as aggregates of unshaped and shaped high performance refractories. It is used in a variety of industries such as steel, foundry, cement, petrochemical, ceramic and waste incineration. Other common applications include its use in electrical insulators, kiln furniture and as a catalyst support. Ground Tabular is an excellent product to be used as a filler in epoxy or resin systems where high dielectric strength, thermal conductivity or abrasion resistance are desired.

### ● Product Data

Item	Chemical Composition					Physical Properties	
	Al <sub>2</sub> O <sub>3</sub> (%)	SiO <sub>2</sub> (%)	Fe <sub>2</sub> O <sub>3</sub> (%)	K <sub>2</sub> O (%)	Na <sub>2</sub> O (%)	B. D. (g/cm <sup>3</sup> )	A. P. (%)
Tabular Alumina	≥99.2	≤0.1	≤0.04	≤0.01	≤0.35	≥3.5	≤5

## White Fused Alumina

### ● Brief Introduction

White Fused Alumina (WFA or WA) is a kind of important raw materials for advanced refractories and abrasives, a widely used raw material in refractories, ceramics, grinding wheels, sandpaper, blasting media, metal preparation, laminates, coatings, lapping, polishing, grinding, and hundreds of other applications.

### ● Available grain size

0-1mm; 1-3mm; 3-5mm; 5-8mm; Powder or as customer's requirement.

### ● Properties

1. High hardness
2. High purity
3. Good self-sharpening
4. Strong grinding ability
5. Acid-alkali corrosion resistance
6. High temperature resistance
7. Good thermal stability



### ● Product Data

Color	White
Mosh hardness	9
Bulk density	1.4-2.1g/cm <sup>3</sup>
Specific gravity	3.9-4.1g/cm <sup>3</sup>
Melting point	2250°C
Maximum service temperature	1900°C

Item	Limit Value
Al <sub>2</sub> O <sub>3</sub>	≥99.2%
Fe <sub>2</sub> O <sub>3</sub>	≤0.1%
Na <sub>2</sub> O	≤0.4%
SiO <sub>2</sub>	≤0.1%



# Brown Fused Alumina

## ● Brief Introduction

Brown corundum is made of high-quality bauxite and refined in electric arc furnace at a high temperature of more than 2000 °C. Because of its high purity, good crystallization, strong fluidity, low linear expansion coefficient and great corrosion resistance, brown corundum is wide used as raw materials of refractory products.

## ● Available grain size

0-1mm; 1-3mm; 3-5mm; 5-8mm; Powder or as customer's requirement.

## ● Applications

Mainly used for abrasion and high temperature resistant, inoxidizable aggregate and filling of shaped and monolithic refractories in steel metallurgy, various industrial stoves, electric furnace etc.

## ● Product Data

Color	Brown
Mosh hardness	9
Specific gravity	3.9-4.1g/cm <sup>3</sup>
Melting point	> 1850 °C
Maximum service temperature	1600 °C

Item	Granular	Powder
Al <sub>2</sub> O <sub>3</sub>	≥95%	≥94.5%
Fe <sub>2</sub> O <sub>3</sub>	≤0.3%	≤0.5%
TiO <sub>2</sub>	≤3%	≤3.5%
SiO <sub>2</sub>	≤1%	≤1.5%



# Bauxite

## ● Brief Introduction

Bauxite is one of the principal ore of aluminum. Bauxite contains hydrous aluminum oxides and aluminum hydroxides, formed through the laterization of aluminous rocks in tropical and subtropical areas.

Bauxite is obtained by calcining (heating superior grade bauxite at high temperature ranges from 850°C to 1600 °C). In this way moisture could be removed to increase the alumina content.

## ● Applications

1. Aluminum industry.
2. Precision casting.
3. Refractory industry.
4. Alumina silicate fiber.
5. Mixed with magnesium oxide, it can be a nice bonding agent especially for pouring entire steel teeming ladle lining.
6. Raw materials for refractory cement, grinding abrasive alumina, ceramic industry and chemical industry for making aluminium compounds.

## ● Available grain size

0-1mm; 1-3mm; 3-5mm; 5-8mm; 16-30mesh; 30-60mesh; 120mesh; 200mesh; 325mesh or as customer's requirement.

## ● Package

1MT Jumbo bag  
Standard exporting package for sea transportation or air delivery  
Special packing requirement is acceptable

## ● Product Data

Item	SNR90	SNR88	SNR86	SNR85
Al <sub>2</sub> O <sub>3</sub> (%)	90 min	88 min	86 min	85 min
Fe <sub>2</sub> O <sub>3</sub> (%)	1.6 max	1.6 max	1.8 max	2.0 max
TiO <sub>2</sub> (%)	4.0 max	4.0 max	4.0 max	4.0 max
CaO+MgO (%)	0.4 max	0.4 max	0.4 max	0.4max
K <sub>2</sub> O+Na <sub>2</sub> O (%)	0.4 max	0.4 max	0.4 max	0.4 max
Bulk density (g/cm <sup>3</sup> )	3.3 min	3.25 min	3.2 min	3.1 min
Moisture (%)	0.3 max	0.3 max	0.3 max	0.4 max

# Flint Clay

## ● Brief Introduction

The Flint clay is important raw materials for high grade refractory fire bricks, refractory clay castable, low porosity fire clay bricks etc. It could also be engineered into casting sand for foundry industry.

## ● Product Data

Type	Content %		Refractoriness CN	Density g/cm <sup>3</sup>	Water Absorption %	Others
	Al <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>				
LKT45	45~50	1.0 max	178	2.55 min	2.5	2.0 max
LKT44	44~50	1.3 max	176	2.50 min	2.5	2.5 max
LKT43	43~50	1.5 max	176	2.45 min	3	3.0 max



# Calcined Alumina

## ● Brief Introduction

Calcined Alumina is made from industrial aluminium hydroxide or industrial alumina, it is generally used to produce slide gate sets, submerged entry nozzles, ladle shrouds, corundum bricks etc., it could also be used together with reactive alumina in monolithic refractories to increase liquidity, decrease water addition and porosity, increase strength and get lower linear change.

Reactive  $\alpha$ -Alumina micro powder is widely used to produce refractory castable for steel ladle, castable for iron flow trough, purge plug, well block, corundum self-flow refractory castable, gunning repairing mass etc., quality and performance are equal to international super standard.

## ● Product Data

Product	Calcined Alumina			Reactive Alumina			
	CL-800SG	BM-9FG	BM+1	4000SG	BM-10	BL-2	BL-1
Typical Value							
Na <sub>2</sub> O (%)	0.06	0.12	0.04	0.05	0.14	0.04	0.03
Fe <sub>2</sub> O <sub>3</sub> (%)	0.02	0.04	0.04	0.03	0.02	0.03	0.04
MgO (%)	0.01	0.02	0.01	0.04	0.01	0.02	0.001
SiO <sub>2</sub> (%)	0.04	0.06	0.05	0.003	0.05	0.07	0.06
CaO (%)	0.02	0.02	0.02	0.03	0.02	0.03	0.02
Specific Surface Area/BET (m <sup>2</sup> /g)	0.85	0.93	1.28	3.30	2.86	3.71	1.70
D50 Malvern (μm)	4.8	5.2	3.7	0.95	2.01	1.12	2.95
D90 Malvern (μm)	11.3	22.7	9.2	2.40	8.91	2.80	9.50





## Fused Magnesite

### ● Brief Introduction

The products are manufactured by fusion with raw magnesite ores which have advantages of firm and tight structure, stable chemical properties, high strength etc. This high grade alkali fused magnesite is mainly used in metallurgy, chemical scientific & research.

## Dead Burned Magnesite

### ● Brief Introduction

Dead-burned magnesite is made from selected Natural magnesite, it is produced by mine-selecting, purifying, being calcined in shaft kiln.

### ● Properties

High temperature performance and high density, strong anti-oerme ability, easy to be rapidly sintered, good thermal stability, strong alkali slag resistance, long service life etc.

### ● Product Data

Items	MgO	SiO <sub>2</sub>	CaO	LOI	Fe <sub>2</sub> O <sub>3</sub>	Al <sub>2</sub> O <sub>3</sub>	B.D.
DBM91	≥91%	≤4.5%	≤1.6%	≤0.3%	≤1.5%	≤1.5%	3.18g/cm <sup>3</sup>
DBM92	≥92%	≤4.0%	≤1.6%	≤0.3%	≤1.5%	≤1.5%	3.18g/cm <sup>3</sup>
DBM95	≥95%	≤1.5%	≤1.6%	≤0.15%	≤0.8%	≤0.2%	3.3g/cm <sup>3</sup>
DBM96	≥96%	≤1.2%	≤1.6%	≤0.15%	≤0.8%	≤0.2%	3.35g/cm <sup>3</sup>
DBM97	≥97%	≤1.0%	≤1%	≤0.12%	≤0.8%	≤0.15%	3.4g/cm <sup>3</sup>



### ● Product Data

Item	Specifications						Particle size (mm)
	MgO (%) ≥	SiO <sub>2</sub> (%) ≤	CaO (%) ≤	Fe <sub>2</sub> O <sub>3</sub> (%) ≤	I.L. (%) ≤	B.D. (g/cm <sup>3</sup> ) ≥	
FM-98	97.8	0.5	1.1	0.5	0.2	3.5	0-30
FM-975	97.5	0.6	1.2	0.7	0.2	3.5	
FM-97	97	0.7	1.4	0.8	0.3	3.45	0-120
FM-96	96	1.1	1.4	1.0	0.4	3.4	



# White Fused Magnesite

## ● Brief Introduction

White fused magnesite is made from super A grade natural magnesite or high purity light burnt magnesite, fused in high temperature electric arc furnace. WFM has high purity, large size crystalline, dense structure, high slag resistance and good thermal shock resistance. It's important raw material for high grade magnesia fire bricks, magnesia carbon bricks, monolithic refractories etc.

## ● Product Data

Item	Specifications						Particle size (mm)
	MgO (%) ≥	SiO <sub>2</sub> (%) ≤	CaO (%) ≤	Fe <sub>2</sub> O <sub>3</sub> (%) ≤	I.L. (%) ≤	B.D. (g/cm <sup>3</sup> ) ≥	
FM-98	99	0.15	0.40	0.25	0.10	3.50	0-30 0-60
FM-98.5	98.5	0.3	0.70	0.30	0.10	3.50	
FM-98	98	0.35	1.00	0.40	0.10	3.50	
FM-97.8	97.8	0.40	1.00	0.50	0.10	3.50	
FM-97.5	97.5	0.50	1.00	0.55	0.15	3.50	
FM-97	95	0.60	1.20	0.70	0.20	3.50	

# Sintered Magnesia Spinel

## ● Brief Introduction

Sintered spinel is sintered by high temperature rotary kiln, using industrial alumina powder or super grade bauxite mixed with high purity caustic magnesia as raw materials, features strong hardness, high melting point and small coefficient of thermal expansion, etc.

Therefore it is ideal raw material for ladle castable, magnesia spinel bricks, which are widely applied to the large and medium size rotary kilns, glass kilns, open hearth, etc.

## ● Product Data

	Al <sub>2</sub> O <sub>3</sub> %	MgO %	SiO <sub>2</sub> %	Fe <sub>2</sub> O <sub>3</sub> %	CaO %	B.D. g/cm <sup>3</sup>
HMAS-90	87-90	8-11	≤0.18	≤0.17	≤0.25	3.26
HMAS-76	75-77	22-24	≤0.20	≤0.20	≤0.30	3.30
HMAS-66	64-66	32-34	≤0.30	≤0.30	0.50	3.25
HMAS-50	49-51	48-50	≤0.35	≤0.40	0.65	3.25
HMAS-30	58-62	28-32	≤3.00	≤2.00	1.5	3.10





# Fused Magnesia Spinel

## ● Brief Introduction

Fused magnesia-aluminum spinel is ideal raw material for slide gate plates and nozzles,refractories for steel continuous casting, plates and nozzles, firebricks for lining of ladle, inner bricks for cement kiln, refractory casting, Kiln furniture for medium and high temperature equipment.



## ● Product Data

Index	Brand	FMA-76		FMA-66	
		Standard Value	Typical value	Standard Value	Typical value
Chemical composition (%)	MgO	≤26	25	≥32	34
	Al <sub>2</sub> O <sub>3</sub>	≤76	73	≤68	65
	SiO <sub>2</sub>	≤0.5	0.4	≤0.5	0.4
	Fe <sub>2</sub> O <sub>3</sub>	≤0.5	0.4	≤0.5	0.4
	CaO	≤0.65	0.4	≤0.65	0.5
	Na <sub>2</sub> O	≤0.4	0.3	≤0.4	0.3
Bulk density (g/cm <sup>3</sup> )		≥3.3	3.35	≥3.3	3.35
Apparent porosity (%)		≤5	4.0	≤5	4.0

Specifications for reference. High-grade or medium-grade magnesia alumina spinel with various contents (rich magnesia or rich alumina) can be provided as request.

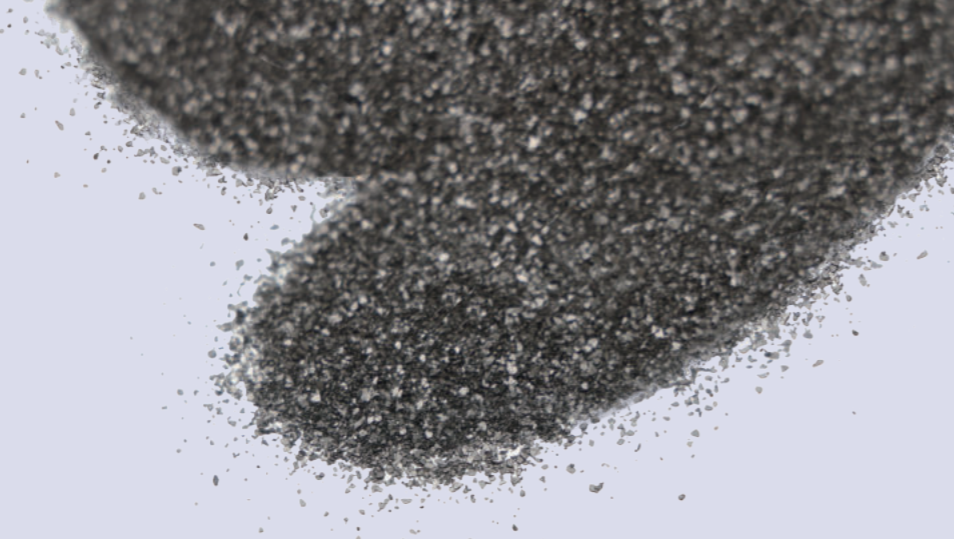
# Silicon Carbide

## ● Brief Introduction

Silicon carbide is important refractory raw material combined by Silica and Carbon. Silicon carbide is with high stiffness, high melting point, great corrosion and erosion resistance, excellent thermal conductivity etc. With excellent performance both in chemical and physical properties,they are widely used to produce high temperature, high strength,and high corrosion resistance industrial ceramics, abrasive materials, cutting tools, electrical elements etc.

## ● Product Data

Brand	LKTSC-98	LKTSC-97	LKTSC-95	LKTSC-90	LKTSC-88
SiC%	98	97	95	90	88
Fe <sub>2</sub> O <sub>3</sub> %	0.4	0.6	1.0	2.5	3.0
F.C.%	0.4	0.6	1.0	2.5	3.0
Size	1-3mm / 0-1 mm / 200F / 325F				



# Natural Flake Graphite

## ● Brief Introduction

Graphite is used as refractory material in metallurgical industry. In foundry industry, it is used as mould and anti-rust coating material. In electric industry, it is used to produce carbon electrode, carbon rod and battery. Natural flake graphite is also widely used as raw materials of magnesia carbon bricks, slide gate plates, ladle nozzles, tundish nozzles etc.

## ● Properties

Graphite has various superior properties such as good lubrication, great chemical stability, high temperature resistance, excellent electricity conductivity, plasticity, coating and spreadability, leakage resistance, anti-corrosivity and non-decomposition etc.

## ● Product Data

Brand	Technical specifications			
	Fixed carbon (≥ %)	Volatile (≤ %)	Ash (≤ %)	Moisture (≤ %)
NFG-90	90	1.8-2.0	8-8.2	1.0
NFG-91	91	1.4-1.6	7.4-7.6	1.0
NFG-92	92	1.35-1.55	6.45-6.65	1.0
NFG-93	93	1.3-1.5	5.5-5.7	1.0
NFG-94	94	1.2	4.8	0.5
NFG-95	95	1.2	3.8	0.5
NFG-96	96	1.2	2.8	0.5
NFG-97	97	1.0-1.2	1.8-2.0	0.5
NFG-98	98	0.7-1.0	1.0-1.3	0.5

The above specifications could be adjusted according to the customer's requirements

# Andalusite

## ● Brief Introduction

Andalusite is a kind of alumina silicate mineral. It's one of the Kyanite series mineral(include andalusite, silimanite, kyanite), main contents are  $Al_2O_3$  and  $SiO_2$ .

## ● Properties

Andalusite has great thermal resistance, stable volume, high strength, great erosion and corrosion resistance, great slag resistance and high refractoriness under load.

It's widely used as raw materials for monolithic refractories,high alumina refractory bricks for hot blast furnace, copper smelting furnace etc.

## ● Product Data

Type	Unit	Y55	Y56	Y57	Y58
$Al_2O_3$	%	55	56	57	58
$SiO_2$	%	42.5	41	41	41
$Fe_2O_3$	%	1.4	1.2	1.0	0.8
$TiO_2$	%	0.3	0.4	0.4	0.4
CaO	%	/	0.4	0.4	0.4
MgO	%	/	0.35	0.35	0.35
$Na_2O$	%	/	0.15	0.15	0.15
$K_2O$	%	/	0.25	0.25	0.25
$H_2O$	%	/	0.15	0.15	0.15
L.O.I	%	0.9	0.9	0.9	0.9
Volume density	$g/cm^3$	3.1	3.1	3.1	3.1
Particle size	0-1 mm, 1-3 mm, 200 mesh				







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