

# Activated

# Alumina &

Activated alumina, Pseudoboehmite & Molecular sieve

# Pseudoboehmite

# & Molecular sieve

**Quality and advanced Technology**



# About XiangRun



## Catalyst & Adsorbent

### Why Choose Xiangrun?

- ▶ Zibo XiangRun Environment Engineering Co., Ltd is a leading adsorbent ,desiccant and catalyst manufacturer in China and world. Our company was established in 2010, located in Zibo, Shandong. We manufacture activated alumina, Potassium permanganate alumina, pseudoboehmite alumina and alumina balls products. And we invest in the biggest molecular sieve factory In China.
- ▶ Our group offers exceptional expertise in the development of technology. XiangRun can blend the perfect bulk mixture to solve your oxygen and moisture control issues. Our products pass ISO9001:2008 and SGS certificate.
- ▶ Over the past years, we have established business relationships with many famous companies worldwide, including the China National Petroleum Cooperation, Sinopec, and the Petrochemical Industry Company. Our products are reliable and highly popular with customers from Germany, Britain, Kuwait, Saudi Arabia, Iran, Syria, Jordan, South Korea, New Zealand, Thailand, Indonesia, the Philippines, and many other countries.

### Products Type

- ▶ \* Activated alumina Desiccant \* Activated alumina for Hydrogen Peroxide \* Activated alumina for sulfur recovery
- ▶ \* Activated alumina catalyst carrier \* Activated alumina ball for defluorination agent
- ▶ \* Activated alumina for removal of chloride \* Activated alumina powder
- ▶ \* Catalyst
- ▶ \* Impregnated activated alumina
- ▶ \* Molecular Sieve 13X \* Molecular 5A \*Molecular 4A \* Molecular 3A \* Molecular sieve powder
- ▶ \* Pseudo boehmite
- ▶ \* Alumina balls



Learn more about desiccant and more alumina products details , please email or call us. Our expert staff are happy to answer any questions you may have – just call us or e-mail us to ask.



## Activated Alumina

### Types

#### Adsorbent

(Desiccant, Chloride adsorbent, defluorination, Hydrogen peroxide)

#### Catalyst

( Sulfur recovery, catalyst carrier, CO-MO Sulfur tolerant shift conversion catalyst Carrier, Dehydrogenation catalyst carrier )

#### Purification

( Polyethylene purification, deflorination in hydrofluoric alkylation)

#### Impregnated activated alumina

Kmno4 Activated alumina

NaMno4 Activated alumina

#### Alumina powder

Activated alumina powder

Aluminium hydroxide





## 1.1 XR-101 Activated Alumina for Desiccant

XR101 activated alumina desiccant is adsorbent used most widely to adsorb water in compressed air and produce high quality dry air.

### Product Information:

As a model of water adsorbents in China, XR101 activated alumina desiccant ball is used most widely in the country. It has a smooth surface and uniform size.

\* Various size available for the international condition.

7\* 14 mesh(2.0mm), 1/8" (3.2mm), 3/16"(4.7mm), 1/4"(6.4mm)

### Characteristics:

- High bulk density
- Uniform size
- High mechanical strength and wear resistance

As a model produced by long development production technology, XR101 activated alumina ball is a water adsorbent for compressed air for exclusive use. Especially, it has excellent wear resistance, therefore it causes little dust in compressed air.

- High pore volume and high adsorption

With large surface area, XR101 activated alumina balls adsorb higher amount of water and fast desorption during regeneration. Its life is longer, and it has a remarkable capacity to regenerate.

Item	Unit	Technical requirement			
		3-5	4-6	5-8	8-10
Particle size	mm	3-5	4-6	5-8	8-10
AL <sub>2</sub> O <sub>3</sub>	%	≥93	≥93	≥93	≥93
SiO <sub>2</sub>	%	≤0.10	≤0.10	≤0.10	≤0.10
Fe <sub>2</sub> O <sub>3</sub>	%	≤0.04	≤0.04	≤0.04	≤0.04
Na <sub>2</sub> O	%	≤0.40	≤0.40	≤0.40	≤0.40
Attrition Loss	%	≤0.08	≤0.08	≤0.08	≤0.08
Bulk density	g/ml	≥0.75	≥0.75	≥0.75	≥0.75
Surface area	m <sup>2</sup> /g	≥320	≥320	≥320	≥280
Pore Volume	ml/g	≥0.43	≥0.45	≥0.45	≥0.45
Water absorption	%	≥55	≥55	≥55	≥55
Crushing Strength (N/Particle)	N/particle	≥180	≥200	≥260	≥350

## 1.2.1 XR-102 A Clause sulfur recovery

The Claus process is a catalytic-based chemical technology used in converting gaseous hydrogen sulfide (H<sub>2</sub>S) into elemental sulfur (S). Effective catalysts for the Claus reaction generally utilize XR102 activated alumina. This activated alumina ball is an extremely porous aluminum oxide. XR102 activated alumina for sulfur recovery are critical to optimum catalytic performance.

### Characteristics:

- High surface area
- Large pore volume distribution
- Low dusting and high crush strength
- Uniform sphere size and shape



Item	Unit	Technical requirement	
Particle size	mm	4-6	5-7
AL <sub>2</sub> O <sub>3</sub>	%	≥92	≥92
SiO <sub>2</sub>	%	≤0.10	≤0.10
Fe <sub>2</sub> O <sub>3</sub>	%	≤0.03	≤0.03
Na <sub>2</sub> O	%	≤0.4	≤0.4
Bulk density	g/ml	0.7-0.8	0.7-0.8
Surface area	m <sup>2</sup> /g	≥320	≥320
Pore Volume	ml/g	0.40-0.45	0.40-0.45
Crushing Strength (N/Particle)	N/particle	≥160	≥200



## 1.2.2 XR-102 B TiO<sub>2</sub> Sulfur recovery

Activated TiO<sub>2</sub> sulfur recovery catalyst could effectively realize high sulfur conversion in low temperature, highly remove oxygen and reduce to form sulfate. In the clause unit, it could promote purification and activated alumina life.

### Characteristics

- High activated hydrolytic;
- low activated temperatures;
- Stable structure of catalyst;
- Good activated stability;
- Bimodal distribution of the pore structure is more available for gas diffusion, and Claus reaction;
- Long life time.
- 4-8% TiO<sub>2</sub> content

### Condition

- Temperature: 200 ~ 350 °C
- Pressure: ~ 0.2MPa
- Airspeed: 200 ~ 1000h<sup>-1</sup>

Item	Unit	Value
Colors and shapes	–	White spherical
Dimensions	mm	Φ3-5/ Φ4-6
Al <sub>2</sub> O <sub>3</sub> %	Wt%	≥90
TiO <sub>2</sub> %	Wt%	4-8
Specific surface area	m <sup>2</sup> / g	≥280
Pore volume	ml / g	0.45-0.50
Bulk density	kg / L	0.65 to 0.80
Crushing force	kg / particle	15/18

# Activated alumina

## 1.2.3 XR-102 C Fe<sub>2</sub>O<sub>3</sub> Sulfur recovery

Activated TiO<sub>2</sub> sulfur recovery catalyst could effectively realize high sulfur conversion in low temperature, highly remove oxygen and reduce to form sulfate. In the clause unit, it could promote purification and activated alumina life.

### Characteristics

- High activated hydrolytic;
- low activated temperatures;
- Stable structure of catalyst;
- Good activated stability;
- Bimodal distribution of the pore structure is more available for gas diffusion, and Claus reaction;
- Long life time.
- 4-8% TiO<sub>2</sub> content

### Condition

- Temperature: 200 ~ 350 °C
- Pressure: ~ 0.2MPa
- Airspeed: 200 ~ 1000h<sup>-1</sup>



Item	Unit	Value
Colors and shapes	–	Bronzing spherical
Dimensions	mm	Φ4-6
Al <sub>2</sub> O <sub>3</sub> %	Wt%	≥90
Fe <sub>2</sub> O <sub>3</sub> %	Wt%	4-6
Specific surface area	m <sup>2</sup> / g	≥280
Pore volume	ml / g	0.40-0.45
Bulk density	kg / L	0.70 to 0.80
Crushing force	N / particle	200

## 1.3 XR-103 & XR408 Column /clover shaped Alumina Catalyst carrier

XR103 & XR408 alumina catalyst carrier is a good catalyst carrier in petrochemical, hydride sulfurization, low temperature shift catalyst.

alumina catalyst carrier is mainly composed of X-Rho( $\rho$ ) activated alumina produced by the speedy dewatering process and false water alumina gel produced by continuous carbonization method and adopts advanced molding technology. It owns stable surface area, high compressive strength, low abrasion, proper pore structure, low impurities and good active impregnation and other good properties etc.

We could produce different crystal phases, diameter and content of impurities according to user requirements. Widely used in petrochemical, hydride sulfurization, low temperature shift catalyst carrier.

### Characteristics

- Stable surface area
- High compressive strength
- low dust and abrasion
- Good active impregnation
- Low impurity



## 1.4 XR-104 Chloride adsorbent

In petrochemical production process, chlorine in feed gas could cause poisoning of a variety of catalyst and adsorbent, the failure of adsorbent & catalyst performance, severely corrosivity of devices & equipment, so chlorine removal is necessary. Usually, we adopt solid antichlor to remove chloride in feed gas. XR-104 activated alumina balls for dechlorination is an high- efficient product to take off chlorine.

Various size available for the international condition.

1/8" (3.2mm), 3/16"(4.7mm)

### Characteristics:

- Uniform size
- Even and Uniform activity under high and low temperature
- Good water resistance and strong strength
- Uneasy movable active components & chlorine after reaction
- Wide application area

### Working service:

Working temperature:5-400°C

Working pressure: ordinary pressure- 0.8MPA

Space velocity: 1000-3000h-1

Bed height-diameter ratio: >3

Dechlorination ratio: ≥99.9%



Item	Unit	Technical requirement
Appearance		White bead
Particle size	mm	3-5mm, 2-4mm
AL2O3+promotor	%	≥93
Bulk density	g/cm <sup>3</sup>	0.75-0.8
Surface area	m <sup>2</sup> /g	≥130
Pore Volume	ml/g	≥0.4
Penetration of chlorine capacity(50°C)	%	≥12
Penetration of chlorine capacity(250°C)	%	≥22
Crushing Strength (N/Particle)	N/particle	≥85



## 1.5 XR-105 Defluorination agent

XR105 Activated alumina is the only filter material specifically designed to remove fluoride and arsenic from water. A ceramic compound made of aluminum oxide with a very high surface-area-to-weight ratio, XR105 activated alumina balls have a very high capacity for fluoride adsorption. Most municipal water supplies add 2 ppm (parts per million) of fluoride. XR105 activated alumina filters can reduce fluoride concentrations to below .1 ppm, or down to 99% of the normal fluoridated water level. The defluorination capacity of XR105 activated alumina ball could reach 5mg/h. And it can be regenerated after heated in the temperature about 175° c to 315° c to removing water once it's reached saturation.

### Characteristics

- High bulk density
- Uniform size
- High mechanical strength and wear resistance
- High pore volume and high adsorption

Item	Unit	Technical requirement		
Particle size	mm	1-2	2-3	3-5
AL2O3	%	≥93	≥93	≥93
SiO2	%	≤0.10	≤0.10	≤0.10
Fe2O3	%	≤0.04	≤0.04	≤0.04
Na2O	%	≤0.30	≤0.30	≤0.30
Bulk density	g/ml	0.7-0.8	0.7-0.8	0.7-0.8
Surface area	m <sup>2</sup> /g	≥320	≥320	≥320
Pore Volume	ml/g	0.4-0.5	0.4-0.5	0.4-0.5
Crushing Strength (N/Particle)	N/particle	≥50	≥50	≥100



## 1.6 XR-107 Adsorbent for Hydrogen Peroxide(H<sub>2</sub>O<sub>2</sub>)

XR107 activated alumina is  $\gamma$ -Al<sub>2</sub>O<sub>3</sub>, using intermediate in the speedy dewatering process as raw materials to make white pellets. It is high strength, non-soluble in water, hydrocarbons, alcohol, grease and other organic solvents. It doesn't become powder and soft in water and alkali. It is odorless, tasteless, non-toxic, long life and high degradation of anthraquinone derivatives and regeneration ability. XR105 activated alumina is specific adsorbent of hydrogen peroxide(H<sub>2</sub>O<sub>2</sub>) in anthraquinone production. Excepting alkali adsorption, XR107 activated alumina balls highly adsorb the degradation of hydrogenation, reduce the consumption of anthraquinone and stabilize working fluid components.

Various size available for the international condition.

6\* 10 mesh, 1/8" (3.2mm), 3/16"(4.7mm)

### Characteristics:

- Uniform size
- High mechanical strength and wear resistance
- High pore volume and high adsorption

Item		Technical requirement	
Particle size	mm	2-4	3-5
AL <sub>2</sub> O <sub>3</sub>	%	≥93	≥93
SiO <sub>2</sub>	%	≤0.10	≤0.10
Fe <sub>2</sub> O <sub>3</sub>	%	≤0.02	≤0.02
Na <sub>2</sub> O	%	0.3-1.0	0.3-1.0
loss on ignition	%	≤6.0	≤6.0
Bulk density	g/ml	0.7~0.8	0.7~0.8
Surface area	m <sup>2</sup> /g	280-350	280-350
Pore Volume	ml/g	0.45-0.5	0.45-0.5
Water absorption	%	≥52	≥52
Crushing Strength (N/Particle)	N/particle	≥80	≥100



## 1.6 XR-109 Activated alumina for Polyethylene Purification

XR109 activated alumina is as a filtration media in polyethylene production. In this process, the slurry co-catalyst is filtered out of the polyethylene and trapped in the pores of the alumina bead.

- Various size available for the international condition.
- 7\* 14 mesh(1.2-2.8mm), 6\*10mesh(1.5-3.2mm); 5\*8(2.5-4.0mm)

Item	Unit	Technical requirement
Appearance		White bead
Particle size	mm	7*14mesh
AL2O3+promotor	%	≥93.5
Na2O	%	1.5-2.0
Bulk density	g/cm <sup>3</sup>	0.7-0.8
Surface area	m <sup>2</sup> /g	300-330
Pore Volume	ml/g	0.45-0.5
Macroporosity	>750A	0.13
Loss on ignition(300-1000°C)	%	4-7
Abrasion Loss	%	≤0.1
Static absorption RH%=20%	%	≥10
Static absorption RH%=60%	%	≥20
Static absorption RH%=95%	%	≥40
Crushing Strength (N/Particle)	N/particle	50

### Characteristics:

High bulk density

Uniform size

High mechanical strength and wear resistant

High pore volume and high adsorption

## 1.8 XR112 Activated alumina for Deflorination in Hydrofluoric Alkylation

XR112 activated alumina removes fluoride from hydrocarbons in HF alkylation. Low levels of hydrofluoric acid are filtered through alumina beds.

### Characteristics

- High surface area
- Large pore size and control over smaller pores
- High crush strength



Item	Unit	Technical requirement
Particle size	mm	3-5
AL <sub>2</sub> O <sub>3</sub> +Promotor	%	≥93
SiO <sub>2</sub>	%	≤0.10
Fe <sub>2</sub> O <sub>3</sub>	%	≤0.04
Na <sub>2</sub> O	%	≤0.40
Attrition Loss	%	≤0.08
Bulk density	g/ml	≥0.75
Surface area	m <sup>2</sup> /g	≥320
Pore Volume	ml/g	≥0.45
Crushing Strength (N/Particle)	N/particle	≥180



## XR-106 Impregnated Activated Alumina Filtration

### 1. XR2006 @M KMNO4 Impregnated Activated alumina

XR2006@M impregnated activated alumina with KMNO4 media is a high surface area activated alumina pellet, impregnated with potassium permanganate during its manufacturing. Xiangrun filtration media adopts mixing material technology, not immersion.

### 2. XR2007@I impregnated activated alumina with NaMNO4 media

is a high surface area activated alumina pellet, impregnated with Sodium permanganate during its manufacturing. The result is a chemical filter with highly enhanced performance in removing Hydrogen Sulfide (H2S), Sulfur Dioxide (SO2), Nitrogen Dioxide (NO2), Mercaptans.

It is the three times than immersion KMNO4 impregnated activated alumina.

Item	Unit	Technical requirement		
		2-4	3-5	4-6
Particle size	mm	2-4	3-5	4-6
AL <sub>2</sub> O <sub>3</sub>	%	≥80	≥80	≥80
KMnO <sub>4</sub>	%	6-10	6-10	6-12
Bulk density	g/ml	0.85-0.9	0.85-0.9	0.85-0.9
Surface area	m <sup>2</sup> /g	≥250	≥250	≥250
Pore Volume	ml/g	≥0.42	≥0.42	≥0.42
Crushing Strength (N/Particle)	N/partic le	≥50	≥80	≥100
Pressure Drop @ 50 fpm (0.25 m/s):		1.0 in. of water/ft. of bed	1.0 in. of water/ft. of bed	1.0 in. of water/ft. of bed
H2S Capacity	g/ml	0.85-1.2	0.85-1.2	0.85-1.2

Item	Unit	Technical requirement	
		3-5	4-6
Particle size	mm	3-5	4-6
AL <sub>2</sub> O <sub>3</sub>	%	≥70	≥70
NaMnO <sub>4</sub>	%	≥6.0	≥6.0
Bulk density	g/ml	≥0.90	≥0.90
Surface area	m <sup>2</sup> /g	≥200	≥200
Pore Volume	ml/g	≥0.42	≥0.42
Crushing Strength (N/Particle)	N/part icle	≥100	≥150



## Activated alumina powder(Rho Alumina Powder)

Activated alumina powder is also known as the  $\rho$  - alumina powder, which is a alumina transition phase. Its main crystal phase is  $\rho$  alumina base.  $\rho$  alumina is made by aluminum hydroxide through suspension roasting rapid dehydration and rapid cooling system. Its specific surface area is more than  $200\text{m}^2/\text{g}$ , so it has strong flexibility , water absorption performance, and certain hydration.

It Replace pure calcium aluminate cement in refractory castable binder, and also instead of micro silicon powder and ultrafine alumina powder in adhesive and binder.

### Characteristics:

- High surface area
- Low LOI
- High  $\text{AL}_2\text{O}_3$

Item	Unit	Technical requirement
Particle size	um	10±0.5
$\rho\text{-AL}_2\text{O}_3$	%	≥65
$\text{AL}_2\text{O}_3$	%	92
$\text{SiO}_2$	%	≤0.02
$\text{Fe}_2\text{O}_3$	%	≤0.02
$\text{Na}_2\text{O}$	%	0.30-0.4
Surface area	$\text{m}^2/\text{g}$	250-300
Pore Volume	ml/g	0.20-0.25
LOI	%	≤10

# Package & Loading



# Thanks a lot for your visit!

We trust our best quality, best service, and competitive price could let our customers believe in us.

You could find us as below information:

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