
PRODUCT CATALOG

Wear Resistant Pipe

Wear Resistant Ceramics

Glue for Wear Resistant Ceramics

Alumina Grinding Ball & Lining



ASTRAL MATERIAL INDUSTRIAL CO., LTD.

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Brief Introduction

Astral Material Industrial Co., Ltd. (AMI) has been serving for the ceramic, glass, semiconductor, metallurgy foundry, thermal engineering, petrochemical, mining industries for more than 15 years.

We are specialized in refractory, structural ceramics, minerals and chemicals, machinery and spare parts applied for the heat treatment and material processing. We are now supplying products through agent/distributors or direct sales to customers in more than 30 countries worldwide.

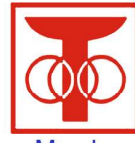
AMI's mission is to provide products and service in high quality, stability and reliability. We try our best to achieve optimal cost performance, and assist customers improve their production efficiency and cost/energy saving. Strictly quality control and trace, considerate service, professional technical support and complete material supply solution, enable AMI the welcome and reliable business partner.

For petrochemical industry, based on 15 years experience, we can provide good solution on wear resistant ceramics and pipe application.

AMI aspire to be the reliable, responsible and international modern enterprise. We enjoy the together technical advancement and business development along with all the clients and partners.



Certificate No. U15Q2GZ664942R2S
ISO9001 : 2008 Certified

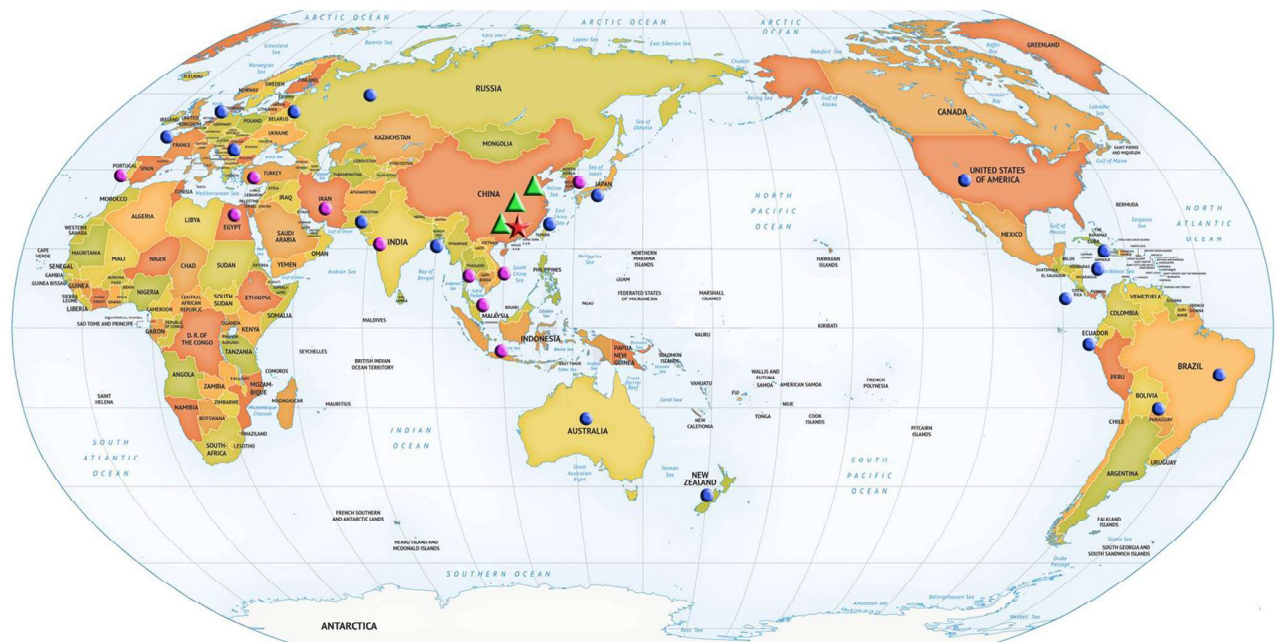


China Building Ceramics & Sanitaryware Association

Member



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★ - AMI HEAD OFFICE

▲ - PLANT

● - DISTRIBUTOR / AGENT

● - CUSTOMER



1. The Wear Resistant Ceramic Patch Pipe and Fitting is made by compact the wear resistant ceramic patch onto the inner wall of the metal pipe and fitting by glue stick, welding fastener. It synthesizes the advantages of metal and ceramic in high hardness, good chemical inertia. It is with excellent wear resistance, corrosion resistance, heat resistance and anti mechanical shock.

It is applied on:

耐磨陶瓷贴片管道、管件，是一种在金属管道、管件内壁通过粘贴、紧固件焊接耐磨陶瓷贴片形成的复合管材，综合了耐磨陶瓷硬度高、化学惰性好和金属的优点，具有优异的耐磨、耐蚀、耐热和抗热冲击及抗机械冲击性能。应用于：

1) Pipe and Fitting used for the coal and ash conveying in the thermal power plant, the conveying of the ettle and the concentrate in the concentrating mill, the conveying of the slurry, sand and pulverized coal slurry.

要求高耐磨的管道管件：火力发电、热电厂煤和灰输送、煤粉输送管道，选矿厂尾矿输送和精矿输送管道，港口矿浆和泥沙输送管道，粉煤浆输送管道等。

2) Refine coal conveying pipe in the coal concentrating plant, and the desulfurization slurry conveying in the thermal power plant.

选煤厂精煤输送管道，要求高耐腐蚀性火力发电脱硫浆渣输送管道。

3) Melting aluminium conveying. 熔融铝液输送管道，管件。

4) Other situation required high resistance to wear, corrosion and heat.

其它要求高耐磨、高耐腐蚀、耐高温的各种管道、管件。

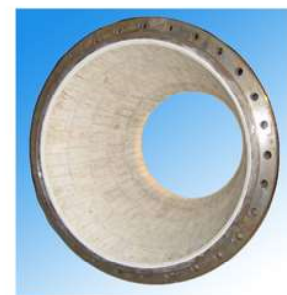
Materials of the ceramic patch 贴片陶瓷的材质	Al ₂ O ₃ 氧化铝	ZrO ₂ 氧化锆	Si ₃ N ₄ 氮化硅
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Products 分类	Pipe 管道		Pipe Fitting 管件			
Subdivision 细分	Without Flange 不带法兰	With Flange 带法兰	Elbow 弯头	Triplet 三通	Valve 阀门	Expansion Joint 膨胀节

Specification of the Patch Pip with Flange 带法兰的贴片陶瓷钢管 (mm)

Steel Pipe OD 钢管直径	50	80	100	125	150	175	200	250	300	350	400
Steel Pipe Wall Thickness 钢管壁厚	4									5	
Ceramic Thickness 陶瓷壁厚	20-22									20-25	
Flange OD 法兰外径	205	235	260	290	315	340	370	435	485	535	590
Flange Hole dia. 法兰孔中心	170	200	225	225	280	305	335	395	445	495	550
Weight 重量约 kg	13.5	21.5	25	28	32	38	42	50	60	72	81

Bending Radius 贴片陶瓷弯管弯曲半径 mm	500	1000	1500	2000	2500	3000
Angle 角度	90°		45°		30°	





Specification of the Patch Pip without Flange不带法兰的贴片陶瓷管规格 (mm)

Steel Pipe OD 钢管直径	200	220	250	275	300	325	350	380	400	450	475	500	600
Steel Pipe Wall Thickness 钢管壁厚	All in 8-10mm		Ceramic Thickness 陶瓷壁厚						All in 6mm				
Compact Pipe ID 复合管内径	178	198	228	253	278	303	328	358	378	428	453	478	578

2、Integral forming wear resistant ceramic pipe and fitting

整体成型耐磨陶瓷管道、管件

1) Moulding: iso-static press moulding.

成型方式：等静压成型



2) Integral forming wear resistant ceramic pipe and fitting are widely used in the conveying pipe of the abrasive granular materials and corrosive medium like sand, stone, ash, slag in the mine, power station, metallurgy, coal and chemical industries. It solved the problem that the ceramic patch fall off, so it is suitable for the special position which the ceramic patch can not work well.

整体成型耐磨陶瓷管道、管件广泛应用于矿山、电力、冶金、煤炭、化工等行业，作为输送砂石、灰粉、灰渣等磨削性颗粒材料和腐蚀性介质的管道中。它解决了特殊部位衬板贴片局部脱落的问题，特别适用于耐磨贴片不能满足工况要求的特殊部位。

3) Integral forming wear resistant ceramic pipe and fitting are suitable for the wear resistant liner and of the sand remover in the swirler of the papermaking and mining industries, and the high corrosion component in the textile industry.

整体成型耐磨陶瓷管道、管件适用于造纸、矿山旋流器的耐磨衬里和除沙嘴，以及纺织行业大高腐蚀部位。

Materials 材质	Al ₂ O ₃ 氧化铝	SiC 碳化硅	ZrO ₂ 氧化锆	Si ₃ N ₄ 氮化硅
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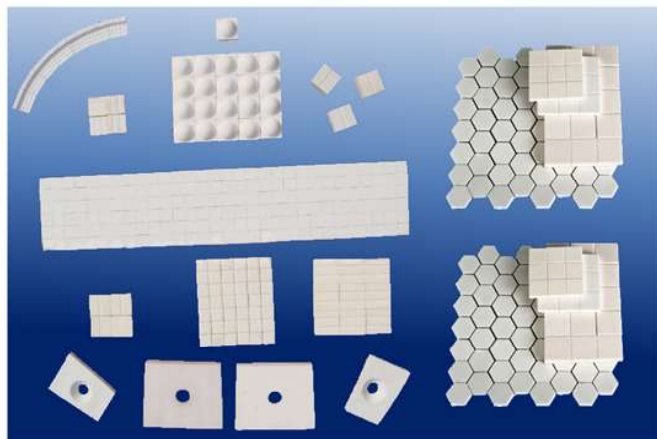
Products 分类	Pipe 管道		Pipe Fitting 管件			
Subdivision 细分	Split Joint 拼接	Integral forming 整体	Straight Joint 直通	Seat Brick 座砖	Elbow 弯头	Triplet 三通





Wear Resistant Ceramics include lining plate, lining slice, welding brick, piping brick, circle brick, sleeve, axle sleeve and fashion parts. They are produced from high purity alumina, zirconia or silicon nitride, under process of high pressure molding and high temperature sintering. Wear Resistant Ceramics are with superexcellent properties of wear resistant, corrosion proof, high temperature resistant and super long working life. They are easily installed onto the components which require abrasion proof and corrosion proof for various industrial equipments by mechanical welding or binder sticking, especially for the usage of feeding and gathering the high temperature flue gas and granule materials, and sewerage treatment. They are widely applied for electric power, petrochemical, metallurgy, mining, cement, sewage disposal, logistic, coal, foodstuffs and tobacco industries.

耐磨陶瓷制品包括衬板、衬片、焊接砖、管道砖、弧形砖、套管、轴套和异型制品。耐磨陶瓷制品是采用高纯氧化铝、氧化锆或氮化硅，经高压成型、高温烧结而成，具有卓越的耐磨、耐腐蚀、耐高温性能和超长的使用寿命。采用机械焊接式或粘结剂粘结的方式，耐磨陶瓷制品可以方便地安装到各种工业设备需要防磨抗蚀的部件上，尤其在高温烟气、颗粒物料输送归集、污水处理等场合，具有不可替代的优越性，因而被广泛应用于电力、石化、冶金、采矿、水泥、污水处理、食品、粮食、烟草等行业。



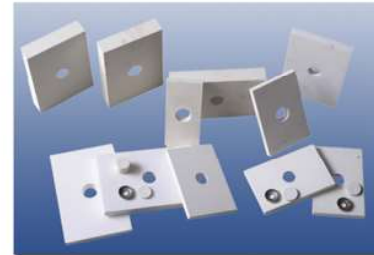
Main Technical Parameters

主要技术指标

Items 项目	Material 材质	Al ₂ O ₃				ZrO ₂	Si ₃ N ₄
Main Chemical Composition 化学成分	Al ₂ O ₃ >	90%	92%	95%	99%	-	-
	ZrO ₂ >	-	-	-	-	95%	-
	Si ₃ N ₄ >	-	-	-	-	-	20%
Density 密度	(g/cm ³) >	3.5	3.6	3.7	3.9	6.0	3.2
Bending Strength 抗折强度	(MPa) @20°C	340	345	350	520	1000	600
Compressive Strength 抗压强度	(MPa)@20°C	>2.5					
Young's Modulus 杨氏模量	(GPa)@20°C	300	310	320	380	210	260
Rockwell Hardness 洛氏硬度	(kg/mm ²) 20°C	90	92	94	98	—	—
Vickers Hardness 维氏硬度	(kg/mm ²) @20°C	—	—	—	—	1100	1300
Rupture Strength 断裂强度	(MPa) @20°C	4	4	4	5	6	4
Thermal Shock Resistance 抗热震性	(°C)	160	160	160	160	300	480

Characteristic 特点:

- High wear resistance
- High Temp. resistant
- High tenacity
- High strength
- Corrosion proof
- Light deadweight



- Hardness equal to diamond, higher than all the wear resistant metal.

For the sliding wear, it is 5 times higher than the nickel-chromium hard cast iron.

硬度相当于金刚石，高于所有用于抗磨的金属材料，在耐滑动磨损方面，比镍铬硬铸铁高5倍

- Easy operating and installing, 3 times thinner than metal wearable materials.

施工安装方便，比金属耐磨材料薄3倍

- Wear Resistant Ceramics can bear temperature higher than 1300°C.

能耐1300°C以上高温

- By selecting suitable material and thickness, the wearable ceramics' working life can be 8-30 years.

选用适当材质和厚度的耐磨陶瓷制品，使用寿命可达8—30年。



Wear Resistant Ceramics

耐磨陶瓷

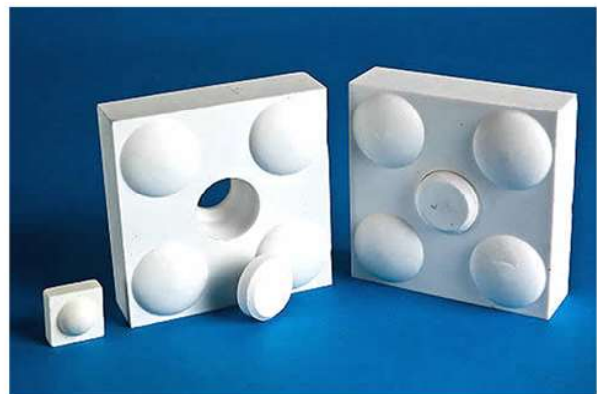
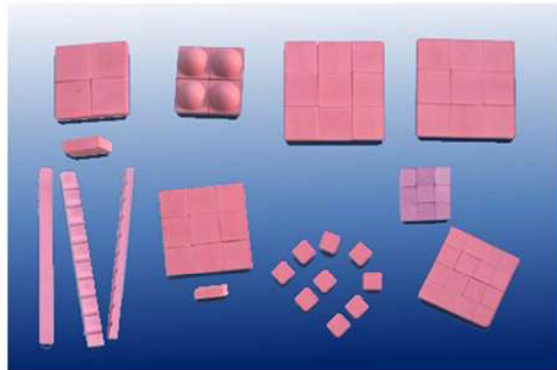
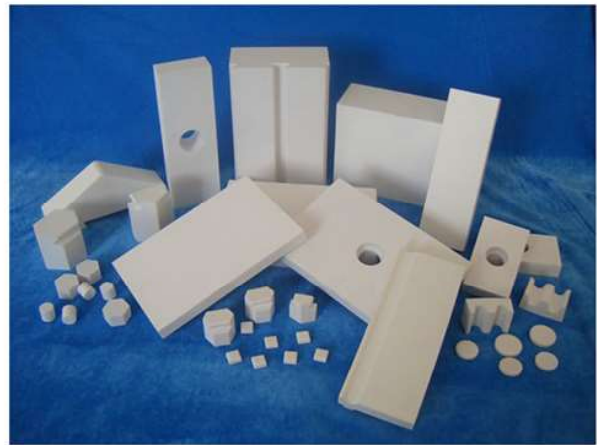
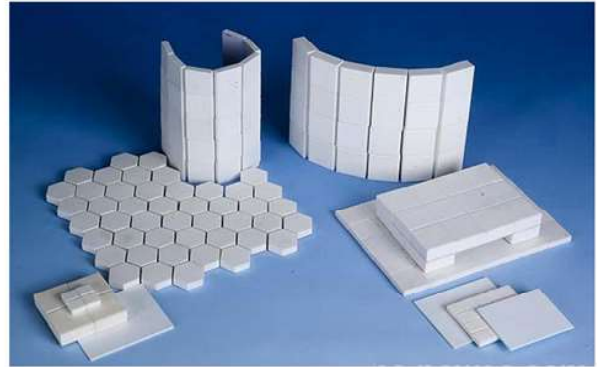


Available Type and Specification 类型和规格

1) Flat Brick / Holed Brick | 平板砖/孔砖

Type	Length	Width	Thickness
Flat Brick	10	10	3-10
	17.5	17.5	4-10
平板砖 (mm)	23.7	23.7	5-15
	50	25	5-10
	50	50	5-15
	100	100	6.5-15
	150	60	10-25
	150	100	6-25
Holed Brick 孔砖	120	80	6-20
	150	100	12-50

Customized Specifications available





Wear Resistant Ceramics

耐磨陶瓷



2) Circle Brick | 弧形砖

Conduit ID 管道内径	Unilateral Angle 单边角度	Length 长	Width 宽	Thickness 高
152-228	9°	230	35	12.7
228-413	6°	230	42	12.7
413-510	5°	230	50	12.7
510-641	5°	230	60	12.7
152-228	9°	150	35	12.7
228-413	6°	150	42	12.7
413-510	5°	150	50	12.7
510-641	5°	150	60	12.7
203-254	9°	230	40	25.4
254-356	6°	230	50	25.4
356-438	6°	230	57	25.4
438-641	6°	230	65	25.4
203-254	9°	150	40	25.4
254-356	6°	150	50	25.4
356-438	6°	150	57	25.4
438-641	6°	150	65	25.4
Customized Specifications are available				



3) Fashioned Brick | 异型砖

Customized Specifications available.



★AMI Wear Resistant Ceramics

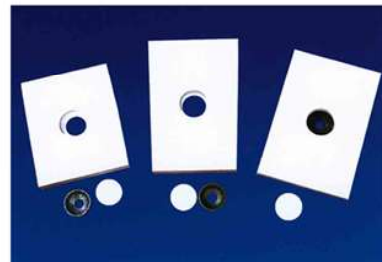
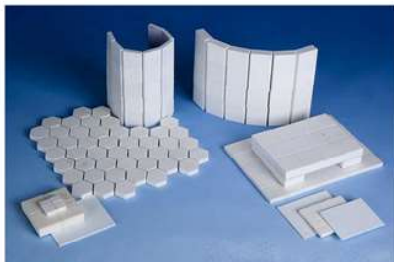
耐磨陶瓷



The Style of Wear Resistant Ceramics

耐磨陶瓷制品的各种形式

Sketch Map 示意图			
Style 形式	Lining Plate 衬片	Flat Brick 平板砖	Flat Welding Brick 平板焊接砖
Specification 规格	L x W x H	L x W x H	L x W x H Welding Hole*: d1xd2xh1xh2
Application 应用	Narrow dimension or Heterotype surface	Non-vibrational surface 适用于非振动平面铺贴	Vibrational surface / surface with special requirement
Sketch Map 示意图			
Style 形式	Piping Brick 管道砖	Piping Welding Brick 焊接砖	Circle Brick 弧形砖
Specification 规格	LxW1/W2xH	LxW1/W2xH Welding Hole*: d1xd2xh1xh2	LxR1xR2x α
Application 应用	Round or polygon wear resistant conduit	Wear resistant conduit with high requirement	Wear resistant conduit and cambered surface
Sketch Map 示意图			
Style 形式	Circle Welding Brick 弧形焊接砖	Sleeve 套管	*Sketch Map for Welding Hole On Welding Brick
Specification 规格	L x R1 x R2 x α Welding Hole*: d1xd2xh1xh2	D x d x H	d1 x d2 x h1 x h2
Application 应用	Wear resistant conduit and cambered surface	High grade or special requirement conduit	With ceramic plunger and Metal welding slice.





Glue for Wear Resistant Ceramics

耐磨陶瓷粘胶



AMI supply the Glue special for the sticking of Wear Resistant Ceramic Liner and Plate.

我们提供专门用于粘贴耐磨陶瓷衬片和衬板的粘胶。

General Type Glue 通用型陶瓷片粘胶

It is with high sticking strength, good toughness. After mix by A and B constituent, the Glue act with thixotropy, easily operating, and can be applied for vertical plane. It can be used for the bonding the Wear Resistant Ceramic Liner and the metal basal body within 150°C.

粘接强度高，韧性好；A、B组份混合后胶呈触变性，施工方便，可用于立面施工；广泛应用于150°C以内工况的耐磨陶瓷片与金属基体的粘接。

Code 产品代号	Viscosity 粘度	Smell 气味	Mix 调胶	Operating 施工	Characteristics and Application 特点及应用	Packing 包装
DB8080	Middle 中	Low 低	Easy 易	Easy 方便	For the common cases of the liner bonding 可用于一般场合耐磨陶瓷片的粘接	5kg/set
DB80801	Middle High 中高	Low 低	Easy 易	Easy 方便	For the common cases, especially for the vertical plane. 可用于一般场合耐磨陶瓷的粘接，尤其适于立面施工	5kg/套 20kg/ctn 20kg/箱
DB8080H	Middle High 中高	Low 低	Easy 易	Easy 方便	Glue with good toughness after solidifying, applied for the case with big striking such as powder concentrator 固化后胶层具有较好的韧性，用于有较大冲击场合，如选粉机械	
DB8013	ACR structural adhesive, initiate solidify in 5 min., can fast orientation, shear strength can be 18MPa after solidify in 2 hr. in room T, 1:1 proportioning, easily operation. For cases requiring fast orientation, such as the bonding at the top of the Pipe. 丙烯酸酯类结构胶，5分钟初固，可快速定位，室温固化2小时剪切强度可达到18MPa，1:1配比，操作方便。用于需快速定位场合，如耐磨管道的顶部粘接。					4kg/set 4kg/套 24kg/ctn 24kg/箱
DB8100	1:1 proportioning, easily operation, low smell. Fast solidifying in room T., high bond strength, good toughness, super high anti-striking strength. For the bonding of ceramic liner and the metal within 150°C, such as ball mill. 1:1 配比，配胶方便，低气味。室温固化快，粘接强度高，韧性好，极高的抗冲击强度。用于150°C以下工况的各种陶瓷片与金属的粘接，如球磨机等。					10kg/set 10kg/套 25kg/ctn 25kg/箱





Glue for Wear Resistant Ceramics

耐磨陶瓷粘胶



High Temperature Resistant Glue 耐高温陶瓷片粘胶

It is high temperature resistant, and with good performance of acid / alkali resistant. It is with high shear strength after solidification. The glue become thixotropy, and with long operating time, can be applied for vertical plane. It is suitable for the bonding of ceramic liner and the metal body in high temperature.

耐高温、耐酸碱性能优，固化后具有较高的剪切强度；胶液呈触变性，操作时间长，施工方便，可用于立面施工；应用于高温工况的陶瓷片与金属基体的粘接。

Code 产品代号	Viscosity 粘度	Smell 气味	Mix 调胶	Operating 施工	Characteristics and Application 特点及应用	Packing 包装
DB8180	Middle 中	Low 低	Easy 易	Easy 方便	For the common cases of the liner bonding 可用于一般场合耐磨陶瓷片的粘接	kg/set 5kg/套
DB81801	Middle-Low 中低	Low 低	Easy 易	Easy 方便	it is with good toughness after solidification, for cases with high requirement 固化后胶层有韧性，用于要求较高场合。	20kg/ctn 20kg/箱
DB8200	High 高	Low 低	Easy 易	Easy 方便	It is with good toughness after solidification, for cases with high requirement 固化后胶层有韧性，不流淌，用于要求较高立面施工	
DB8280 (单组份)	single population, neutral organosilicon-modified structural adhesive, it is with high bond strength to both metal and the ceramic. The Glue is elastomer after solidification, and with good toughness, with shaking absorption and amortizing function. It is with good resistance to wide temperature range from -60 to 320°C, good aging resistance, easily operation. 中性有机硅改性结构胶，对金属、陶瓷具有较高的粘接强度。固化后胶层为弹性体，韧性好，有吸震缓冲作用，耐高低温（-60~320°C）性能优；耐老化性能好，操作方便。					310ml/tube 310ml/管 40tube/ctn 40管/箱
DB812	Double constituent, inorganic copperoxide material, high temperature resistance to 980°C, high bonding strength on muffcoupling, groove connecting and studded bonding. It is widely used in the bonding of ceramic liner and metal body in high temperature.双组份，无机氧化铜材料，耐高温 980°C，套接、槽接或镶嵌式粘接强度高，广泛用于高温工况下陶瓷片与金属基体的粘接。					250g/set 250g/套 16set/ctn 16套/箱
DB737	Double constituent, looked like clay, filled by metal and ceramic, wear resistant, high temperature resistant to 280°C. It is used for the repair to the abrasion, scuffing and erode in high temperature. It can be used to the bonding of ceramic liner in high temperature.双组份，胶泥状，以金属、陶瓷为填充物，耐磨损，耐温 280°C。用于高温工况下设备磨损、划伤、腐蚀的修复，也可用于高温耐磨陶瓷片的粘接。					



High performance Liner Filling Glue 高性能衬板填充胶

It is the modified epoxy product. It solved the problems of low bonding strength and low striking resistance on the conventional filler materials such as hard lead, common epoxy resin and cement. It prolonged the working life of the liner as long as possible. It can decrease the times of stopping the machinery, and increase the machinery efficiency. It is widely used in the structural enhancement and filling between the wear resistant liner and the metal body in taper and gyre crusher and ball mill, so as to absorb and amortize the strike and shake during the machine running.

系改性环氧树脂产品，解决了铅锌合金、普通环氧树脂、水泥等传统填充材料结合强度低、抗冲击性差等的问题，最大限度的延长了设备衬板的使用寿命，减少停机次数，提高设备运转效率。广泛应用于圆锥式、旋回式破碎机及球磨机的耐磨衬板与基体之间的结构性补充填充，以吸收、缓冲设备工作时引起的冲击和震荡。

Code 产品代号	Characteristics and Application 特点及应用: 双组份, 流动性好	Packing 包装
DB9098	Double constituent, good fluidity, strong penetrability, fast solidification in room temperature, shorten the installation period of the machinery. It is with high press resistant strength, it can increase the rigidity of the machinery, safe and environmental. 渗透性强; 室温快速固化, 缩短设备安装周期; 抗压强度高, 提高设备刚性, 安全环保	10kg/set 10kg/套
DB9099	Double constituent, good fluidity, fast solidification in room temperature. It is with high press resistant strength, it can increase the rigidity of the machinery. It can lower down the distortion when the liner under press, and make the liner stressed equably and avoid the asymmetrical wear, so it can prolong the working life of the liner. 室温快速固化; 抗压强度高, 提高设备刚性, 使衬板受压时变形减小, 均匀受力, 避免不均匀磨损, 延长衬板使用寿命。	16kg/set 16kg/套 32kg/unit 32kg/组





Alumina Grinding Ball and Lining Brick

氧化铝研磨球和衬砖

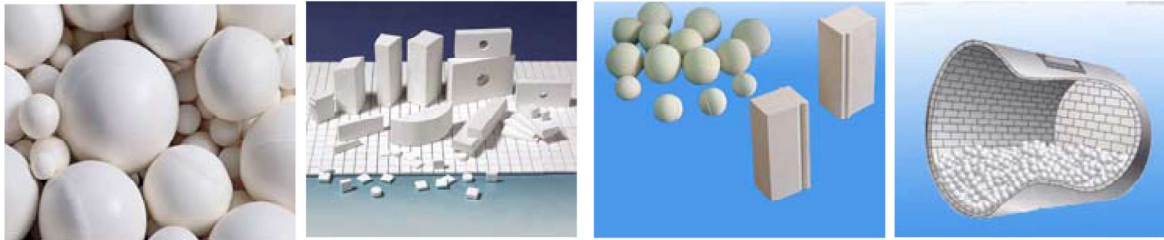


Alumina Ball & Lining Brick are one of the excellent grinding medium for materials mixing and grinding process in industries of Tile, Ceramic, Glass, Mining, Paint and Plastic.

氧化铝研磨球和衬砖是一种优异的用于物料混合研磨的研磨介质，被广泛应用于陶瓷、瓷砖玻璃。采矿、涂料和塑料行业的原料处理工序。

Advantages: high density and hardness, low wear loss, regular shape, high milling efficiency and competitive price.

优点：密度高、硬度高、低磨耗、形状规则、研磨效率高，性价比高。



Technical Parameters 技术参数

Items	Model	A95	A92	A85	A70
Al₂O₃ %		95%	92%	>78%	>68%
Bulk Density	密度 (g/cm ³)	3.65	3.60	3.30	3.00
Compression strength	抗压强度 (MPa)	>2200	>2000	>1800	>1500
Water Absorption	吸水率 (%)	<0.01	<0.02	<0.05	<0.1
Unit Wear Loss	单位磨耗 (%) *	<0.01	<0.015	<0.02	<0.03
Hardness (Mohr's)	莫氏硬度	9	9	9	7
Color	颜色	White	White	White	Light Yellow
Application	应用 (混合、研磨、粉碎) (Mixing, Grinding, Crushing on)	Material Process	Glaze, Tile Body	Glass, Cement, Tile Body	Tile Body, Mine
Grinding Ball	研磨球	★	★	★	★
Lining Brick	衬砖	★	★		★
Wearable Slice	耐磨片	★	★		
Cylinder Ball	柱状球	★	★		

*: Wear Loss is according to the Chinese National Standard JC/T 848.1-1999.

Available Sizes 主要规格

Main Sizes of Ball	研磨球 mm	Φ30, Φ40, Φ50, Φ60, Φ70, Φ80, Φ100
Micro Ball Size	微珠 mm	Φ1-3, Φ3-5, Φ5-7, Φ7-9, Φ9-11, Φ13, Φ15, Φ20
Lining Brick Sizes	衬砖 mm	Length:150mm/75, Width:50, 50/45, 25, Thickness:40/50/60/70/77/90/110
Wearable Slice Sizes	耐磨片 mm	Length:10-150, Width:10-150, Thickness: <20
Cylinder Ball	柱状球 mm	Φ5x5, Φ12.7x12.7, Φ20x20, Φ30x30, Φ40x40, Φ50x50

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