



美陶化工



安全 高效 节能 环保

**萍乡市美陶化工填料有限公司**  
**Pingxiang Meitao Chemical Packing Co.,LTD.**

ООО «ТИ-СИСТЕМС» ИНЖИНИРИНГ И ПОСТАВКА ТЕХНОЛОГИЧЕСКОГО ОБОРУДОВАНИЯ

Интернет: [www.tisys.ru](http://www.tisys.ru) [www.tisys.kz](http://www.tisys.kz) [www.tisys.by](http://www.tisys.by) [www.tisyssec.ru](http://www.tisyssec.ru) [www.ти-системс.рф](http://www.ти-системс.рф)

телефоны для связи: +7 (495) 7774788, (925)7489626, 5007154, 55, 65 Эл. почта: [info@tisys.ru](mailto:info@tisys.ru) [info@tisys.kz](mailto:info@tisys.kz) [info@tisyssec.ru](mailto:info@tisyssec.ru)

## 公司简介 COMPANY PROFILE

萍乡市美陶化工填料有限公司成立于2001年，位于萍乡开发区，专业生产工业陶瓷、化工填料的重点大型企业。公司技术力量雄厚，工艺设备先进，检测手段齐全。公司可根据用户不同需求，生产各种类型的陶瓷、塑料及金属材质的化工填料、耐磨材料、环保滤料等产品。并已在石油化工、化肥、冶炼、电力、煤气、制药、制酸、建材等行业中得到广泛的应用，深受用户好评，并多次被我省及国家有关部门评为“重合同守信用和特级信用企业”。产品畅销国内外包括法、美、意及东南亚等地区。

我们携手并有机会为您和您的公司提供优质的服务。

Pingxiang Meitao Chemical Packing Co., LTD was founded in 2001 year, and located in Economic and Development Zone; With tremendous technical strength and advanced equipments, we specializes in production of various kinds of ceramic, plastic and metallic tower packing; chemical packing; wearable materials and environmental filters etc. Those products are widely used in the oil, chemical, environmental protection, metallurgy, electric power fields and so on. It enjoys good reputation from end users.

Our production system is based on the standard of ISO9001:2000 and our products have been exported to abroad, with 60% products to Europe, Japan and Southeast Asian countries. For long-term development, we also tightly cooperate with research institution and university, which lay a good foundation for updating technology and new product's research..

The principle of our company is to promote MT brand and satisfy customers. We would like to offer you advanced solution with innovative technology and good products.





# 目录 CONTENTS



## 滤料系列 Filter Series 01

- 陶粒滤料 Ceramic Grain Filter
- 瓷砂滤料 Porcelain Sand Filter
- 具体应用和包装(包装图片) Application and Packing

## 散堆塔填料系列 Random Tower Packing 05

- 陶瓷散堆塔填料 Ceramic Random Tower Packing
  - 陶瓷鲍尔环 Ceramic Pall Ring
  - 陶瓷矩鞍环 Ceramic Intalox Saddle
  - 陶瓷异鞍环 Ceramic Super Saddle
  - 陶瓷拉西环 Ceramic Rasching Ring
  - 陶瓷阶梯环 Ceramic Cascade Mini Ring
  - 陶瓷十字环 Ceramic Cross Partition Ring
- 陶瓷规整填料 Ceramic Structure Packing
- 塑料散堆塔填料 Plastic Random Tower Packing
  - 泰勒花环 Tellerette
  - 鲍尔环 Plastic Pall Ring
  - 拉西环 Plastic Rasching Ring
  - 矩鞍环 Plastic Intalox Saddle
  - 异鞍环 Plastic Super Saddle
  - 多面空心球 Multi-aspect Hollow Ball
  - 共轭环 Plastic Conjugate Ring
  - 阶梯环 Plastic Cascade Mini Ring
  - 海尔环 Heilex Ring
- 塑料规整填料 Plastic Structure Packing
- 金属散堆塔填料 Metallic Random Tower Packing
  - 鲍尔环 Metallic Pall Ring
  - 阶梯环 Metallic Cascade Mini Ring
  - 矩鞍环 Metallic Intalox Saddle
  - 拉西环 Metallic Rasching Ring

## 瓷球系列 Ceramic Ball 14

## 分子筛 Molecular Sieve 17

- 3A
- 4A
- 5A
- 13X
- 中空玻璃分子筛

## 研磨系列 Alumina Grinding Series 18

- 高铝研磨球 High alumina grinding ball
- 锆珠 Zirconium Beads
- 钇稳定氧化锆珠 YTZP



## 滤料系列 Filter Series

### C 陶粒滤料 Ceramic Grain Filter

陶粒滤料是一种国内先进水平的填料，红褐色。采用优质陶土，粘土，粘溶剂等经团磨、筛分、煅烧加工而成，具有表面坚硬、内部多微孔、孔隙率高等特点。以好氧活性污泥作为接种，进水两周即可达到曝气生物滤池的处理效果。

#### 主要特点:

- 颗粒圆、均匀、表面粗糙、多微孔、内部孔隙发达，比表面积大，从而生物面附着能力强，繁殖快、挂膜效率高，低温低浊条件下去除氨氮效果达到国内先进水平，工作周期长，周期产水量大，一般为500-1000m<sup>3</sup>/m<sup>2</sup>。
- 堆积比重轻，强度大，从而反冲洗能耗低，水头损失小，清洁料水头损失仅为150mm/m。
- 滤速高，一般为15-20m/h，最高可达35kg/m<sup>3</sup>。
- 反冲洗耗水量低，仅为石英滤料的30-40%。
- 截污能力强，一般位9-13kg/m<sup>3</sup>。
- 化学性能稳定，抗酸碱性能强，使用寿命长。



Ceramic Grain Filter is made of high quality argil. Appended to hole-former and bonder, the granules of spherical shape form after ball grinding, filtering, molding and calcining. The product has even granule, red and brown appearance, flinty and porous surface, interlaced with holes and net as well as strong absorption function. It has the characteristic of strong capacity, fast filtering speed, long period and low strength in anti-washing and sewage treatment. Ceramic granule filter is a new type of filter which is able to increase the water production, improve the water quality and save the energy loss, therefore it is an ideal filtering material, especial in filtering pool and oil filtering pool in water plant and oil refinery.

#### Characteristic

- With the characteristic of pellet, even surface, asperities, micro porous, internal porosity factor developed and large specific surface area, for that, it has strong biological adhesion ability, fast breeding, Pegged high efficiency membrane, under the Low temperature and turbidity conditions. Ammonia removal efficiency have reached domestic advanced levels, long working cycle, large water production cycle, generally with 500-1000m<sup>3</sup>/m<sup>2</sup>.
- With light bulk proportion, strong intensive, low energy consumption of back-flushing, small head loss and the loss is only 150mm/m.
- With high speed filtering, generally 15-20m/h, up to a maximum 35kg/m<sup>3</sup>.
- With low water consumption of backwash, quartz filter rates is only 30-40%.
- With strong decontamination capacity, generally with 9-13kg/m<sup>3</sup>.
- Stable chemical properties, strong anti-acid and alkaline capacity and long life performance.

#### 物理性能 Physical Property

| 项目        | Item                            | 球状，红褐色，多微孔<br>Reddish-brown; Globosity;<br>Porosity |                    |
|-----------|---------------------------------|---|--------------------|
|           |                                 | 单位 Unit   | 指标 Index           |
| 孔径        | Pore Diameter                   | g/cm <sup>3</sup>                                   | 0.15-39            |
| 视密度       | Real Density                    | T/m <sup>3</sup>                                    | 0.9-1.2            |
| 堆积密度      | Bulk Density                    | g/cm <sup>3</sup>                                   | 0.8-1.2            |
| 密度        | Density                         | %   | 3                  |
| 破碎率       | Crushing Rate                   | %   | 0.07               |
| 磨耗率       | Abrasion Ratio                  | g/cm <sup>3</sup>                                   | <3                 |
| 表现密度      | Apparent Density                | %   | 2.02               |
| 堆积孔隙率     | Bulk Porosity Factor            | %   | 43                 |
| 粒内孔隙率     | Internal Porosity Factor        | %   | 20                 |
| 含泥量       | Sediment Percentage             | %   | 0.13               |
| 灼烧减量      | Burning Consumption             |   | 0. 1               |
| 盐酸可溶率     | Hydrochloric Acid Dissolubility | %   | ≤2                 |
| 比表面积      | Specific Surface                | cm <sup>2</sup> /g                                  | >1×10 <sup>4</sup> |
| 氨氮去除率     | Ammonia Removal Ration          | %   | 65-90              |
| 混凝剂节约量    | Coagulant Saving Volume         | %   | 10-20              |
| 高锰酸盐指数去除率 | Permanganate Index Removal      | %   | 20-30              |

#### 化学成份 Chemical Composition

| 名称<br>Ingredients                  | 含量<br>Content |
|------------------------------------|---------------|
| SiO <sub>2</sub>                   | 69-88         |
| Al <sub>2</sub> O <sub>3</sub>     | 10-15         |
| Fe <sub>2</sub> O <sub>3</sub>     | 1-0           |
| CaO                                | 3.5           |
| MgO                                | 2             |
| K <sub>2</sub> O+Na <sub>2</sub> O | 3.2           |
| 烧失量<br>Combustion Loss             | 6.5           |



## 滤料系列 Filter Series

### P 瓷砂滤料 Porcelain Sand Filter

瓷砂滤料是我厂和哈尔滨工业大学市政环境工程学院环境工程系在原有瓷砂滤料的基础上共同研制的一种新型滤料，它具有比表面大，截污能力强，产水量高，水质稳定，过滤周期长等特点。能满足各种成份复杂的工业废水和城市污水的深度处理。针对传统滤料存在的缺陷，并根据国内新型滤料研制的经验，采用优质高岭土，粘结剂、成孔剂、抗腐蚀性剂等经高温煅烧而成，外观白色，质地坚硬，颗粒均匀，微孔发达，孔隙率高，圆度好。

Based on previous ceramic sand filter, we developed a new filter, with the characteristic of large specific surface; strong decontamination capacity; high water yield; long filter cycle, Ceramic Sand Filter effectively solves industry effluent and urban sewage. Aiming at conventional product's defect, and in the opinion of new filter development, we adopt porcelain clay; agglomerant; pore-forming agent and CRE, through heating agglomeration, it shows white color; hard texture; even-grained; high porosity and good roundness.

该滤料广泛应用于：化工，石油，电力，医药，电镀，造纸，酿酒等不同行业不同性质的污水，自来水，工业用水处理，具有以下优点：

- 1、瓷砂滤料初始水头损失小，对于延长滤池工作周期十分有利，瓷砂滤料终止水头损失小，可以降低滤池高度，节省基建费用。
- 2、瓷砂载污量大，一般在9-10kg/m<sup>2</sup>以内，约为石英砂滤池载污量（7.8-9kg/m<sup>2</sup>）的1.2-1.5倍。
- 3、瓷砂为球形表面，易清洗，反冲洗耗水量比石英砂降低30-50%
- 4、瓷砂强度高，磨耗量小，一般比石英砂滤料使用寿命长5倍以上
- 5、瓷砂均匀规整，装填方便，不易流失，无二次污染，适应于离子交换，机械过滤器，无阀滤池，反渗透处理装置中做预处理滤料或树脂承托层，可以用于活性炭吸附器的垫层。
- 6、根据水质情况，经特殊工艺处理，可以做除铁、锰、氟瓷砂等多用途滤料，并可作为含油废水处理粗粒化滤料，生物滤池的生物滤料，去除铁，锰，氟，油及其它有机污染物。



It is applicable for Chemical Plant; Oil Refinery; Electric Power; Pharmaceutical Factory; Galvanization; Paper Mill and Brewery filed. The advantage as follows

1. Big voids on the surface of ball, normally, its filtering velocity is 15-20m<sup>3</sup>/h, with small head loss; it lowers filtering tank's height and saves electric power and infrastructure expense.
2. Because of even and regular in particle size, making it easy to be cleaned, the back-flush strength is 12-20 l/m<sup>2</sup>, so the water consumption could be reduced 30-50%.
3. Large surface area and pore volume; strong decontamination capacity, generally with 9-10kg/m<sup>2</sup>, it is as 1.2-1.5 times as quartz sand filtering.
4. High strength; small abrasion; usage life is over 15 years.
5. Corrosion resistant, free from contamination;

#### 物理性能 Physical Property

| 项目 Item                        | 指标 Index             | 备注 Remark   |
|--------------------------------|----------------------|---|
| 耐酸度<br>Acid Resistance         | 99.80%               | 浸泡于30%盐酸50%硫酸王水中2周<br>Immersed in 30% hydrochloric acid and 50% vitriol water for two weeks |
| 耐碱度<br>Alkali Resistance       | 98%                  | 浸泡于NaOH/KOH碱液中2周<br>Immersed in NaOH/KOH for two weeks                                      |
| 抗压强度<br>Compression Strength   | Mpa                  | HG/T36831-2000  |
| 硬度<br>Hardness                 | 7级 Level 7           | 莫氏 Mohs   |
| 耐磨度<br>Wearing Ratio           | <0.15                |   |
| 耐温度<br>High Temperature        | >1350℃               |   |
| 比重<br>Specific Gravity         | 1.5-2.2              |   |
| 堆密度<br>Bulk Density            | 1.9g/cm <sup>3</sup> |   |
| 吸水率<br>Hygroscopic Coefficient | <1.2%                |   |
| 破碎率<br>Crushing Ratio          | 0.55%                |   |
| 空隙率<br>Void Ration             | 29%                  |   |

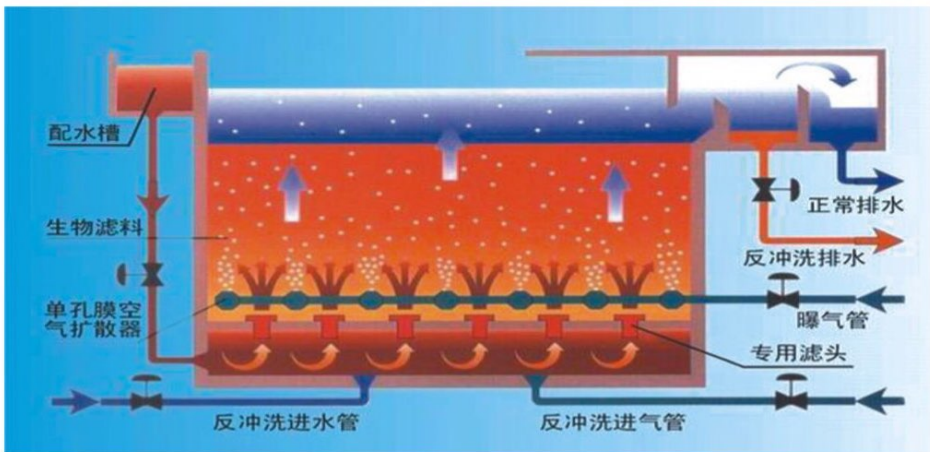
#### 化学成份 Chemical Composition

| 成分<br>Ingredients                  | 含量<br>Content |
|------------------------------------|---------------|
| Al <sub>2</sub> O <sub>3</sub>     | 17            |
| SiO <sub>2</sub>                   | 77            |
| Fe <sub>2</sub> O <sub>3</sub>     | 0.6           |
| MgO                                | 0.7           |
| CaO                                | 0.5           |
| K <sub>2</sub> O-Na <sub>2</sub> O | 4             |
| 抗蚀元素<br>Anti Corrosion Element     | 微量<br>Minim   |

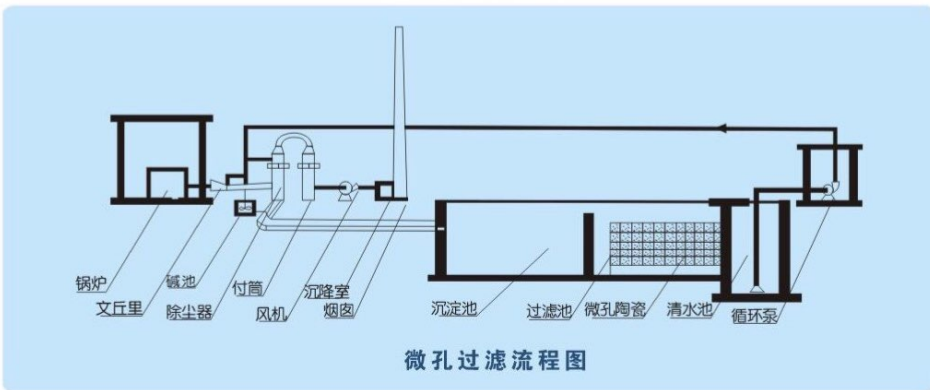


## 滤料系列 Filter Series

### A 具体应用和包装 Application and Packing



BAF 工艺流程图



微孔过滤流程图

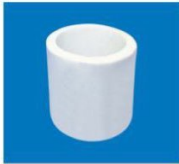


## 散堆塔填料系列 Random Tower Packing

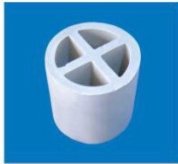
### C 陶瓷散堆塔填料 Ceramic Random Tower Packing

陶瓷填料具有优异的耐酸耐热性能。能耐除氢氟酸以外的各种无机酸、有机酸及有机溶剂的腐蚀，适用于各种高、低温及强腐蚀性的场合，可用于化工、冶金、煤气、制氧等行业的干燥塔、吸收塔、冷却塔、洗涤塔再生塔等。

Ceramic tower packings have great advantage of acid-& heatresistance.It can withstand almost all kinds of acid up to 1000℃ except H<sub>2</sub>F acid,and be widely used in the tower of dry, absorbing, cooling, washing and recovery etc. in chemical, petrochemical and metallurgical industry.



拉西环 Rasching ring



十字隔板环  
Cross partition ring



鲍尔环 Pall ring



矩鞍环 Intalox saddles



共轭环 Conjugate ring



异鞍环 Super Intalox



阶梯环 Cascade ring



三丫环 Tri-Y ring





## 散堆塔填料系列 Random Tower Packing

### C 陶瓷散堆塔填料 Ceramic Random Tower Packing

#### 特性数据 Characteristic indexes

| 名称<br>Name                           | 规格<br>Normal size | 直径×高度×壁厚<br>Diameter×Height×Thickness<br>mm | 比表面积<br>Surface<br>aream <sup>2</sup> /m <sup>2</sup> | 空隙率<br>Void space<br>% | 堆重<br>Bulk density<br>kg/m <sup>3</sup> | 堆积个数<br>No elements<br>per/m <sup>3</sup> | 干填料因子<br>Packing factor<br>m <sup>-1</sup> |
|--------------------------------------|-------------------|---|---|------------------------|---|---|--|
| 拉西环<br>Rasching<br>ring              | φ16               | 16×16×3                                     | 250   | 66                     | 820                                     | 178000                                    | 870  |
|                                      | φ25               | 25×25×3                                     | 147   | 78                     | 510                                     | 42000                                     | 310  |
|                                      | φ38               | 38×38×4                                     | 100   | 80                     | 458                                     | 12000                                     | 195  |
|                                      | φ50               | 50×50×5                                     | 80  | 81                     | 465                                     | 5600                                      | 156  |
| 十字隔板环<br>Cross-<br>partition<br>ring | φ76               | 76×76×9                                     | 62  | 75                     | 575                                     | 1700                                      | 147  |
|                                      | φ50               | 50×50×5                                     | 135   | 50                     | 520                                     | 5600                                      | 1080                                       |
|                                      | φ80               | 80×80×8                                     | 120   | 53                     | 780                                     | 2100-2500                                 | 806  |
|                                      | φ100              | 100×100×10                                  | 110   | 56                     | 750                                     | 900-1000                                  | 626  |
| 鲍尔环<br>Rasching<br>ring              | φ150              | 150×150×15                                  | 60  | 58                     | 680                                     | 270-300                                   | 308  |
|                                      | φ25               | 25×25×3                                     | 210   | 73                     | 630                                     | 36000                                     | 540  |
|                                      | φ38               | 38×38×4                                     | 140   | 75                     | 590                                     | 12000                                     | 332  |
|                                      | φ50               | 50×50×5                                     | 100   | 78                     | 520                                     | 4900                                      | 210  |
| 矩鞍环<br>Intalox<br>saddles            | φ76               | 76×76×9                                     | 70  | 80                     | 470                                     | 1500                                      | 137  |
|                                      | φ16               | 16×12×2                                     | 450   | 70                     | 710                                     | 382000                                    | 1311                                       |
|                                      | φ25               | 25×19×3                                     | 250   | 74                     | 610                                     | 84000                                     | 617  |
|                                      | φ38               | 38×30×4                                     | 164   | 75                     | 590                                     | 25000                                     | 389  |
| 异鞍环<br>Supper<br>Intalox             | φ50               | 50×40×5                                     | 142   | 76                     | 560                                     | 9300                                      | 323  |
|                                      | φ76               | 76×57×9                                     | 92  | 78                     | 520                                     | 1800                                      | 194  |
|                                      | φ25               | 25×19×3                                     | 160   | 78                     | 530                                     | 52000                                     | 337  |
|                                      | φ38               | 38×30×4                                     | 102   | 80                     | 480                                     | 16000                                     | 199  |
| 阶梯环<br>Cascade<br>ring               | φ50               | 50×40×5                                     | 88  | 81                     | 450                                     | 7300                                      | 166  |
|                                      | φ76               | 76×57×9                                     | 58  | 82                     | 430                                     | 1600                                      | 105  |
|                                      | φ25               | 25×15×3                                     | 210   | 73                     | 650                                     | 72000                                     | 540  |
|                                      | φ38               | 38×23×4                                     | 153   | 74                     | 630                                     | 21600                                     | 378  |
| 共轭环<br>Conjugate<br>ring             | φ50               | 50×30×5                                     | 102   | 76                     | 580                                     | 9100                                      | 232  |
|                                      | φ76               | 76×46×9                                     | 75  | 78                     | 530                                     | 2500                                      | 158  |
|                                      | φ25               | 25×25×3                                     | 175   | 78                     | 520                                     | 64000                                     | 369  |
|                                      | φ38               | 38×38×4                                     | 118   | 80                     | 470                                     | 14000                                     | 230  |
| 三丫环<br>Tri-Y ring                    | φ50               | 50×50×5                                     | 72  | 81                     | 450                                     | 6300                                      | 135  |
|                                      | φ25               | 25×13×2                                     | 240   | 74                     | 760                                     | 87000                                     | 390  |
|                                      | φ38               | 38×20×3                                     | 160   | 75                     | 740                                     | 27600                                     | 260  |
|                                      | φ50               | 50×30×4                                     | 138   | 75                     | 745                                     | 10100                                     | 233  |
| 多鞍环<br>HQP ring                      | φ80               | 80×50×9                                     | 90  | 70                     | 710                                     | 1910                                      | 262  |
|                                      | φ25               | 25×13×3                                     | 260   | 71                     | 690                                     | 87000                                     | 726  |
|                                      | φ38               | 38×19×4                                     | 170   | 72                     | 700                                     | 27800                                     | 455  |
|                                      | φ50               | 50×25×5                                     | 130   | 73                     | 680                                     | 6800                                      | 334  |
| 组合环<br>Combined<br>ring              | φ80               | 80×40×8                                     | 88  | 78                     | 630                                     | 1800                                      | 187  |
|                                      | φ100              | 100×50×10                                   | 75  | 88                     | 600                                     | 1000                                      | 626  |
|                                      | HQC-2B            | 115×25×4                                    | 180   | 68                     | 820                                     | 720                                       | 655  |
|                                      | HQC-3B            | 150×30×5                                    | 130   | 70                     | 780                                     | 700                                       | 432  |
| 组合环<br>Combined<br>ring              | HQC-4B            | 240×50×5                                    | 90  | 74                     | 750                                     | 610                                       | 286  |
|                                      | HQC-5B            | 300×60×8                                    | 80  | 75                     | 720                                     | 580                                       | 233  |

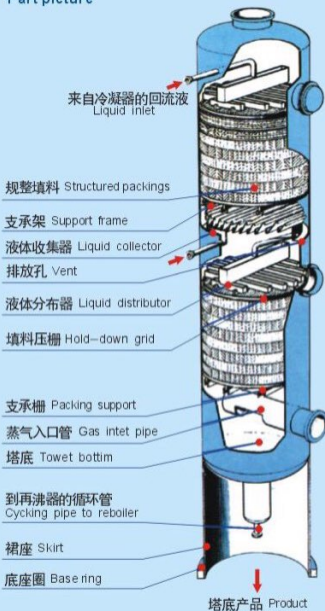




## 散堆塔填料系列 Random Tower Packing

### C 陶瓷规整填料 Ceramic Structured Packings

填料塔整体剖面图  
Part picture

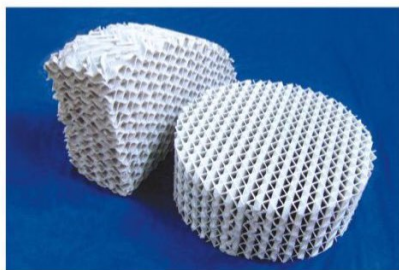


陶瓷波纹填料具有比表面积大, 通量大、阻力小、效率高、耐腐蚀、耐高温可达1000℃以上)、操作弹性大、放大效应不明显等优点。特别适用于对压降和理论板数有严格要求的高温腐蚀性物料的蒸馏、吸收等分离过程。

The Ceramic structured packing has the advantages of a higher surface area, flux, less resistance, higher efficiency, corrosion resistance and high-temperature resistance (up to 1,000°C or above). It is flexible in operation and without amplification effect in a large tower, and particularly suitable for the rectification and absorption of corrosive mixture on the occasion of strict requirements of pressure drop and number of theoretical plates.

#### 理化性能 Physical & Chemical properties

|      |                     |         |
|------|---------------------|---------|
| 耐酸度  | Acid resistance     | ≥99.8%  |
| 耐高温  | Thermal resistance  | ≥1000℃  |
| 莫氏硬度 | Mohs' hardness scal | ≥7      |
| 抗压强度 | Crushing strength   | ≥2.0MPa |



#### 特性数据 Characteristic Indexes

| 型号<br>Type | 比表面积<br>Surface area<br>m <sup>2</sup> /m <sup>3</sup> | 空隙率<br>Void fraction<br>% | 堆积重量<br>Bulk density<br>kg/m <sup>3</sup> | 峰高<br>Wave height<br>mm | 波距<br>Wave span<br>mm | 片厚<br>Thickness<br>mm | 理论板数<br>Nt/m <sup>4</sup> | 最大F-因子<br>Max.F-factor<br>M/s (kg/m <sup>3</sup> ) <sup>0.5</sup> | 压力降<br>ΔP<br>Pa/m |
|------------|--|---------------------------|---|-------------------------|-----------------------|-----------------------|---------------------------|---|-------------------|
| 450        | 450  | 75                        | 520-550                                   | 6.0±0.5                 | 12±0.5                | 1.0-1.3               | 3-4                       | 1.8-2.0   | 200-250           |
| 400        | 400  | 76                        | 500-520                                   | 7.0±0.5                 | 14±0.5                | 1.0-1.3               | 2.8-3.2                   | 2.0-2.2   | 180-260           |
| 350        | 350  | 78                        | 480-520                                   | 8.0±0.5                 | 16±0.5                | 1.2-1.5               | 2.5-2.8                   | 2.2-2.6   | 200-260           |
| 250        | 250  | 82                        | 420-450                                   | 11.0±0.5                | 22±0.5                | 1.2-1.5               | 2.3-2.5                   | 2.6-2.8   | 220-280           |
| 160        | 160  | 86                        | 350-380                                   | 17.0±0.5                | 34±0.5                | 1.5-2.0               | 1.8-2.0                   | 2.8-3.0   | 250-300           |
| 125        | 125  | 87                        | 300-350                                   | 23.0±0.5                | 42±0.5                | 2.0-2.5               | 1.5-1.8                   | 3.0-3.2   | 280-350           |
| 100        | 100  | 90                        | 220-250                                   | 30.0±0.5                | 50±0.5                | 2.0-2.5               | 1                         | 3.5   | 250-300           |

陶瓷波纹填料的型号可以有 100-750 X/Y、X、Y 分别代表波倾角为 30°、45°、X、Y 前面阿拉伯数字为波纹填料的比表面积。填料盘直径可以有 100-8000mm, 也可按用户要求设计制造。

The ceramic structured packing has the types of 100-750 X/Y, X and Y respectively represents the wave angle are 30°, 45°, and the number means the value of surface. The diameter can be manufactured in 100-8000mm, if upon request, it can also be designed and manufactured to meet the need of specific applications.



## 散堆塔填料系列 Random Tower Packing

### 全瓷组合环填料 Light Ceramic Structured Packings

我公司生产的规整填料广泛应用于石油、焦化、发电、化肥、合成氨等煤化工及精细化工行业，在气体净化中的脱硫、洗涤、脱苯、脱萘洗蒸氨、精馏、吸收、干燥、反应合成萃取等化工工艺流程中作填料，并广泛用于各种淋水塔内作为凉水填料。其产品使用寿命长，操作弹性大，并可按用户要求生产供应全瓷和超轻瓷系列规整填料，直至达到用户所需的质量、重量要求。

Light ceramic structured packings is widely used as the chemical packing of desulfurizing, washing, debenzolization, naphthalene-cleaning, rectification, absorption, drying tower in chemical-processing coal and fine chemicals industries, such as petroleum, coking, generating, fertilizer, synthetic ammonia. And it is also used as cooling packing in watertight tower.



#### 物理化学性能 Physical property

| 指标<br>名称 Item         | 比重<br>Bulk density<br>kg/cm <sup>3</sup> | 吸水率%<br>Water<br>Absorptivity | 抗压强度(Mpa)<br>Crushing<br>strength | 抗折强度(Mpa)<br>Bending<br>strength | 硬度莫氏<br>Hardness<br>Mohs | 气孔率%<br>Porosity | 热稳定性℃<br>Thermostability | 冻融次数<br>Freezing<br>Frequency |
|-----------------------|--|-------------------------------|-----------------------------------|----------------------------------|--------------------------|------------------|--------------------------|-------------------------------|
| 全瓷Ceramics            | 1.8-2.2                                  | 1.80-2.2                      | 1.8-2.9                           | 600-1000                         | >7级                      | 1-15             | -25-600                  | >60                           |
| 超轻瓷<br>Lighe Ceramics | 0.8-0.95                                 | 0.8-0.95                      | 0.8-0.95                          | 600-1000                         | >6级                      | 1-25             | -25-600                  | >80                           |

#### 外观尺寸 Size

| 项目<br>型号 Type | 形状 Shape                     | 对边距<br>Subtense distance | 高<br>Highness | 分布层高<br>High of bed | 孔径<br>Porous diameter | 外观<br>Appearame |
|---------------|------------------------------|--------------------------|---------------|---------------------|-----------------------|-----------------|
| MT125         | 花形7孔 Flower, seven pores     | 200                      | 105           | 10                  | 56                    | 白色 white        |
| MT138         | 花形带筋7孔 Flower, seven pores   | 200                      | 105           | 10                  | 56                    | 白色 white        |
| MT150         | 六方三角孔 Square, triangle pores | 220                      | 105           | 10                  | 50×3                  | 白色 white        |
| MT180         | 六方三角孔 Square, triangle pores | 220                      | 105           | 10                  | 50×3                  | 白色 white        |

#### 技术参数 Main specification

| 项目<br>型号 Type | 比表面积<br>Specific surface<br>M <sup>2</sup> /m <sup>3</sup> | 空隙率%<br>Void volume<br>M <sup>3</sup> /m <sup>3</sup> | 堆积重kg/m <sup>3</sup><br>Bulk density |                     | 堆积块数<br>Piece per<br>cube<br>N/m <sup>3</sup> | 泛点气速m/s<br>Air speed | 压力降<br>△ pressure drop<br>MPa/m | 理论块数<br>块/m <sup>3</sup><br>NTP |
|---------------|--|---|--------------------------------------|---------------------|---|----------------------|---------------------------------|---------------------------------|
|               |  |   | 全瓷<br>Ceramics                       | 超轻瓷<br>LighCeramics |   |                      |                                 |                                 |
| MT125         | 125  | 0.67  | 320                                  | 150                 | 236   | 236                  | 90-160                          | 3-4                             |
| MT138         | 138  | 0.68  | 330                                  | 160                 | 236   | 236                  | 90-160                          | 3.2-4.1                         |
| MT150         | 150  | 0.72  | 330                                  | 180                 | 189   | 189                  | 90-160                          | 3.8-4.5                         |
| MT180         | 180  | 0.75  | 360                                  | 201                 | 189   | 189                  | 90-160                          | 4.8-5.5                         |

#### 化学成份 Chemical composition

| 化学成份<br>Chemical composition |                        | SiO <sub>2</sub> | Al <sub>2</sub> O <sub>3</sub> | K <sub>2</sub> O | NO <sub>2</sub> | CaO  | MgO  | Fe <sub>2</sub> O <sub>3</sub> | 烧失%<br>Ignition loss | 耐酸度 %<br>Acid resistance | 耐碱度 %<br>Alkali resistance |
|------------------------------|------------------------|------------------|--------------------------------|------------------|-----------------|------|------|--------------------------------|----------------------|--------------------------|----------------------------|
| 名称<br>Name                   | 全瓷(%)<br>Ceramics      | 75.48            | 18.9                           | 2.7              | 0.95            | 0.82 | 0.12 | ≤1                             | 0.54                 | 99.8                     | 98.7                       |
|                              | 超轻瓷(%)<br>LighCeramics | 65               | 28                             | 2.7              | 1               | 0.8  | 0.12 | ≤1                             | 0.8                  | 99.8                     | 96                         |



## 散堆塔填料系列 Random Tower Packing

### P 塑料散堆塔填料 Plastic Random Tower Packing

塑料填料材质包括：聚乙烯(PE)、聚丙烯(PP)、增强聚丙烯(RPP)、聚氯乙烯(PVC)、氯化聚氯乙烯(CPVC)及聚偏氯乙烯(PVDF)等。它耐腐蚀性能好、空隙大、通量大。阻力小、能耗低、操作费用低。重量轻，易装卸，可重复使用。特别适用于石油、化工、氯硅、煤气、环保等行业的中低温(60-150℃)提馏、吸收及洗涤塔中。

Plastic tower packings are made from polyethylene (PE), polypropylene (PP), reinforced polypropylene (RPP), polyvinyl chloride (PVC), chlorinated polyvinyl chloride (CPVC) and polyvinylidene fluoride (PVDF). They have a strong resistance to chemical corrosion, large void space and fluid capacity, low pressure drop, energy saving, low operation cost, light in weight and easy to be load and unload, and reusable. They are available for stripping, absorbing and washing in low temperature of 60-150°C in the tower in chemical, petrochemical, alkali chloride, coal gas and environmental protection industries.



鲍尔环 Pall ring



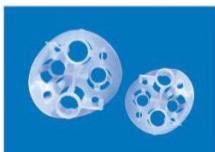
矩鞍环 Intalox saddles



异鞍环 Super Intalox



阶梯环 Cascade ring



海尔环 Heilix ring



共轭环 Conjugate ring



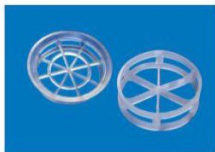
多面球 Polyhedral ball



花环 Rosette ring



空心浮球 Hollow ball



扁环 HQM ring



覆盖球 Covering ball

### 理化性能 Physical & Chemical properties

| 性能 Item                         | 材质 Material | PE        | PP        | RPP       | PVC       | CPVC      | PVDF      |
|---------------------------------|-------------|-----------|-----------|-----------|-----------|-----------|-----------|
| 密度 Density g/cm <sup>3</sup>    |             | 0.94-0.96 | 0.89-0.91 | 0.92-0.94 | 1.32-1.44 | 1.50-1.54 | 1.75-1.78 |
| 使用温度 Working temperature, C     |             | < 90      | < 100     | < 120     | < 60      | < 90      | < 150     |
| 耐化学腐蚀性 Chemical resistance      |             | 耐腐蚀       | 耐腐蚀       | 耐腐蚀       | 耐腐蚀       | 耐腐蚀       | 耐腐蚀       |
| 抗压强度 Compressive strength, N/mm |             | > 6.0     | > 6.5     | > 7.0     | > 6.0     | > 8.0     | > 10.0    |



## 散堆塔填料系列 Random Tower Packing

### P 塑料散堆塔填料 Plastic Random Tower Packing

#### 特性数据 Characteristic Indexes

| 名称<br>Name                | 规格<br>Normal size | 直径×高度×壁厚<br>Diameter×Height×Thickness<br>mm | 比表面积<br>Surface<br>area/m <sup>2</sup> | 空隙率<br>Void space<br>% | 堆重<br>Bulk density<br>kg/m <sup>3</sup> | 堆积个数<br>No elements<br>piece/m <sup>2</sup> | 干填料因子<br>Packing factor<br>m <sup>3</sup> |
|---------------------------|-------------------|---|--|------------------------|---|---|---|
| 鲍尔环<br>Pall<br>ring       | φ25               | 25×25×1.2                                   | 213                                    | 91                     | 85                                      | 48300                                       | 285                                       |
|                           | φ38               | 38×38×1.4                                   | 151                                    | 91                     | 82                                      | 15800                                       | 200                                       |
|                           | φ50               | 50×50×1.5                                   | 100                                    | 92                     | 80                                      | 8300  | 130                                       |
|                           | φ76               | 76×76×2.6                                   | 72                                     | 92                     | 82                                      | 1935  | 92  |
| 矩鞍环<br>Intalox<br>saddles | φ25               | 25×13×1.2                                   | 288                                    | 85                     | 102                                     | 9760  | 467                                       |
|                           | φ38               | 38×19×1.2                                   | 265                                    | 95                     | 91                                      | 25200                                       | 309                                       |
|                           | φ50               | 50×25×1.5                                   | 250                                    | 96                     | 75                                      | 9400  | 282                                       |
| 异鞍环<br>Super<br>intalox   | φ38               | 38×19×1.2                                   | 178                                    | 96                     | 75                                      | 25200                                       | 201                                       |
|                           | φ50               | 50×25×1.5                                   | 168                                    | 97                     | 86                                      | 9400  | 184                                       |
|                           | φ76               | 76×38×3.0                                   | 130                                    | 98                     | 52                                      | 3700  | 138                                       |
| 阶梯环<br>Cascade<br>ring    | φ25               | 25×13×1.2                                   | 228                                    | 90                     | 96                                      | 81500                                       | 313                                       |
|                           | φ38               | 38×19×1.4                                   | 133                                    | 93                     | 58                                      | 27200                                       | 176                                       |
|                           | φ50               | 50×25×1.5                                   | 114                                    | 94                     | 55                                      | 10740                                       | 143                                       |
| 海尔环<br>Hailex<br>ring     | φ38               | 38×19×1.4                                   | 133                                    | 93                     | 58                                      | 27200                                       | 176                                       |
|                           | φ50               | 50×25×1.5                                   | 107                                    | 94                     | 81                                      | 8200  | 128                                       |
|                           | φ76               | 76×76×1.6                                   | 75                                     | 95                     | 58                                      | 3180  | 87  |
| 共轭环<br>Conjugate<br>ring  | φ25-I             | 25×25×1.0                                   | 185                                    | 95                     | 96                                      | 74000                                       | 216                                       |
|                           | φ38-I             | 40×34×1.5                                   | 130                                    | 93                     | 81                                      | 18650                                       | 162                                       |
|                           | φ38-II            | 37×37×1.5                                   | 142                                    | 91                     | 80                                      | 16320                                       | 186                                       |
| 扁环<br>HCM<br>ring         | φ50-II            | 50×40×1.5                                   | 104                                    | 80                     | 86                                      | 9500  | 164                                       |
|                           | φ76               | 76×76×2.5                                   | 81                                     | 95                     | 81                                      | 3980  | 94  |
|                           | φ38               | 38×12×1.2                                   | 145                                    | 92                     | 70                                      | 46000                                       | 186                                       |
| 花环<br>rosetter<br>ring    | φ50               | 50×17×1.5                                   | 128                                    | 93                     | 87                                      | 21500                                       | 159                                       |
|                           | φ76               | 76×26×2.5                                   | 116                                    | 93                     | 58                                      | 8500  | 144                                       |
|                           | φ25               | 25×9×(1.5×2)                                | 289                                    | 82                     | 128                                     | 175000                                      | 488                                       |
|                           | φ47               | 47×19×(3×3)                                 | 185                                    | 88                     | 111                                     | 32500                                       | 271                                       |
|                           | φ51               | 51×19×(3×3)                                 | 180                                    | 89                     | 103                                     | 25000                                       | 255                                       |
|                           | φ59               | 59×19×(3×3)                                 | 150                                    | 92                     | 102                                     | 17500                                       | 213                                       |
|                           | φ73               | 73×26×(3×4)                                 | 127                                    | 89                     | 102                                     | 8600  | 180                                       |
| 空心浮环<br>Hollow<br>ball    | φ95               | 95×37×(3×6)                                 | 94                                     | 90                     | 88                                      | 3600  | 129                                       |
|                           | φ145              | 145×48×(3×6)                                | 65                                     | 95                     | 47                                      | 1100  | 76  |
|                           | φ25               | φ25×1.0                                     | 200                                    | 42                     | 125                                     | 41500                                       | 2700                                      |
| 多面球<br>Polyhedral<br>ball | φ38               | φ38×1.2                                     | 150                                    | 42                     | 121                                     | 22000                                       | 2025                                      |
|                           | φ50               | φ50×1.5                                     | 120                                    | 42                     | 73                                      | 10480                                       | 1620                                      |
|                           | φ25               | φ25×1.0                                     | 460                                    | 90                     | 96                                      | 85100                                       | 631                                       |
| 覆盖球<br>Covering<br>ball   | φ38               | φ38×1.2                                     | 325                                    | 91                     | 83                                      | 28500                                       | 355                                       |
|                           | φ50               | φ50×1.5                                     | 236                                    | 91                     | 76                                      | 11500                                       | 313                                       |
|                           | φ40-I             | φ40×1.2                                     | 覆盖率91%                                 | 9.5                    | 116                                     | 710   | 耐压强度<0.4MPa                               |
| φ40-II                    | φ40×1.2带边型        | 覆盖率97%                                      | 9.3                                    | 110                    | 660                                     | 工作温度<120℃                                   |   |

※注：表中堆重数据是按聚丙烯(PP)塑料计算的，其它塑料可由密度换算后计算。  
The bulk density given here is based on PP material.



## 散堆塔填料系列 Random Tower Packing

### P 塑料规整整填料 Plastic Structure Packing

塑料规整整填料有蜂窝斜管、直管，塑料板波纹填料和塑料丝网波纹填料等。

1. 蜂窝斜管：该产品主要用于给水净化，生活污水的除砂和加速沉淀，隔油分离以及尾矿浓缩等工程，是目前优良的净水填料。
2. 蜂窝直管：该产品主要用于接触氧化池，生物滤塔及生物转盘中的微生物载体，对工业有机废水或城镇生活污水进行生化处理，还可以作为化工塔的填充料，冷却塔填料等。
3. 塑料板波纹、丝网波纹填料：该产品主要用于气体净化，环保及分离提纯等多种行业。它具有重量轻，大容量、低压降、高比表面积、易更换等优点。

The plastic structured packing has the characteristic of light weight, big flow, low drop pressure, large specific surface area, easy change etc. The plastic gauze corrugated packing is made of PP and polyacrylonitrile line. Also the plastic corrugated plate packing was assembled PP, PVDF and PVC material. The plastic plate same metal corrugated plate packing which can be perforated to increase the transfer efficiency. The honeycomb sloping pipe and the honeycomb straight pipe are existed as packings of water treatment, chemical tower and cooling tower etc. It is characterized the properties as below.



### 塑料蜂窝填料

#### Plastic Honeycomb Monoliths Products

我公司生产的六角形蜂窝填料有斜管和直管两种形式，材质为聚丙烯。

Our hexagon honeycomb packing is made of PP and have the following two types. One is inclined pipe and another type is straight pipe.



#### 斜管主要用途: Inclined Pipe Main Application

主要用于沉淀和除砂作用，是近十年来给排水工程中采用最广泛而且成熟的一项水处理装置。它适用范围广，处理效率高，占地面积小等优点，适用于进水口除砂，一般工业和生活给水沉淀，污水沉淀，隔油以及尾矿浓缩处理，既适用于新建工程，又适用于现在旧池的改造，均能取得理想使用效果。

It is mainly used in the sedimentation and removing sand. And this is widely used in the drainage projects in recent ten years. This is a mature water treatment device. It has the advantages of wide usage, high efficiency and small occupying area. It is applicable for removing sands, sedimentation for the industry effluent, urban sewage and separating oil. It is both used in the new construction projects and for the rebuilding of the old pools. And the good results may be achieved as per your expected.

#### 直管主要用途: Straight Pipe Main Application

主要用于生物滤池和高负荷生物滤池、塔式生物滤池、淹没式生物滤池(又称接触氧化池)以及生物转盘的微生物载体，对工业有机废水和城市污水进行生化处理。

It is widely used in bio filter, high load bio filter, tower bio filter, submerge filter (it is also named oxidation filter) and microbe carrier. It can deal with industry effluent and urban sewage.

#### 特性数据 Characteristic Indexes

| 名称<br>Name                           | 规格<br>Normal Size | 片厚<br>Wave Height<br>(mm) | 比表面积<br>Surface Area<br>m <sup>2</sup> /m <sup>3</sup> | 空隙率<br>Free Volume<br>% | 材料<br>Material<br>(kg/m <sup>3</sup> ) |
|--------------------------------------|-------------------|---------------------------|--|-------------------------|--|
| 聚丙烯<br>PP<br>共聚物<br>Materials:<br>PP | D25               | 0.5                       | 200  | 0.95                    | 46                                     |
|                                      | D35               | 0.5                       | 140  | 0.965                   | 32                                     |
|                                      | D50               | 0.5                       | 100  | 0.9700                  | 27.5                                   |
|                                      | D80               | 0.5                       | 62   | 0.932                   | 22.8                                   |





## 散堆塔填料系列 Random Tower Packing

### M 金属散堆填料 Metallic Random Packing

金属填料材质包括碳钢及不锈钢等。由于其加工壁厚、空阻率大、通量大、阻力小、又耐脏、耐腐蚀、分离效果好，特别适用于真空精馏塔。处理热敏性、易分解、易聚合、易结碳的物料。

Owing to its thin wall high void and capacity, low fluid resistance and heat & corrosion resistance, metallic packings include carbon steel or stainless steel applied to handle the thermal-sensitive, hard to separation and easy carbonized materials in the vacuum rectifying towers.

金属散堆填料有共轭环、八四内弧环、矩鞍环、双弧环、扁环、阶梯环和鲍尔环等。

Metallic random packings include conjugated rings, vsp ring, Intalox saddles, Twin curved saddles, HGM flat ring, Cascade ring and Pall ring.



共轭环  
Conjugate ring



八四内弧环  
VSP ring



矩鞍环  
Intalox saddles



扁环  
HGM flat ring



阶梯环  
Cascade ring



鲍尔环  
Pall ring

#### 主要技术指标 Main specification

| 名称<br>Name             | 规格<br>Normal Size | 直径×高度×壁厚<br>Diameter×Height×Thickness<br>mm | 比表面积<br>Surface Area m <sup>2</sup> /m <sup>3</sup> | 空隙率<br>Free Volume % | 堆积重量<br>Bulk Density kg/m <sup>3</sup> | 堆积个数<br>No Elements per m <sup>2</sup> | 干填料因子<br>Packing Factor m <sup>3</sup> |
|------------------------|-------------------|---|---|----------------------|--|--|--|
| 共轭环<br>Conjugate Ring  | φ25               | 25×25×0.3                                   | 185   | 95                   | 376                                    | 75000                                  | 216                                    |
|                        | φ38               | 38×38×0.5                                   | 116   | 96                   | 367                                    | 19500                                  | 131                                    |
|                        | φ50               | 50×50×0.8                                   | 86  | 96                   | 513                                    | 9770                                   | 97                                     |
|                        | φ76               | 76×76×1.0                                   | 61  | 97                   | 600                                    | 3980                                   | 95                                     |
| 鲍尔环<br>Pall Ring       | φ25               | 25×25×0.5                                   | 219   | 95                   | 414                                    | 53500                                  | 255                                    |
|                        | φ38               | 38×38×0.6                                   | 146   | 96                   | 339                                    | 15800                                  | 165                                    |
|                        | φ50               | 50×50×0.8                                   | 109   | 96                   | 322                                    | 6500                                   | 124                                    |
|                        | φ76               | 76×76×1.0                                   | 71  | 96                   | 275                                    | 1927                                   | 80                                     |
| 阶梯环<br>Cascade Ring    | φ25               | 25×12.5×0.5                                 | 221   | 95                   | 409                                    | 98120                                  | 257                                    |
|                        | φ38               | 38×19×0.6                                   | 153   | 96                   | 347                                    | 30640                                  | 173                                    |
|                        | φ50               | 50×25×0.8                                   | 109   | 96                   | 330                                    | 12340                                  | 123                                    |
|                        | φ76               | 76×38×1.2                                   | 72  | 96                   | 269                                    | 3540                                   | 61                                     |
| 扁环<br>Hgm Flat Ring    | φ16               | 16×5.5×0.5                                  | 348   | 92                   | 686                                    | 630000                                 | 312                                    |
|                        | φ25               | 25×9.0×0.6                                  | 226   | 94                   | 535                                    | 160000                                 | 280                                    |
|                        | φ38               | 38×12.7×0.7                                 | 150   | 95                   | 401                                    | 48000                                  | 175                                    |
|                        | φ50               | 50×17×0.8                                   | 115   | 97                   | 362                                    | 21500                                  | 156                                    |
| 矩鞍环<br>Intalox Saddles | φ25               | 25×20×0.4                                   | 165   | 92                   | 551                                    | 103160                                 | 209                                    |
|                        | φ38               | 38×30×0.6                                   | 112   | 94                   | 461                                    | 24680                                  | 137                                    |
|                        | φ50               | 50×40×0.8                                   | 75  | 96                   | 443                                    | 10400                                  | 65                                     |
|                        | φ76               | 76×60×1.0                                   | 56  | 97                   | 400                                    | 3320                                   | 63                                     |
| 拉西环<br>Raschig Ring    | 1/2"              | 16×16×0.4                                   | 368   | 94                   | 630                                    | 210000                                 | 468                                    |
|                        | 1"                | 25×25×0.4                                   | 228   | 95                   | 340                                    | 55000                                  | 288                                    |
|                        | 1.5"              | 38×38×0.6                                   | 158   | 93                   | 408                                    | 19000                                  | 188                                    |
| 八四内弧环<br>Vsp Ring      | 2"                | 50×50×0.8                                   | 118   | 95                   | 322                                    | 6500                                   | 138                                    |
|                        | φ25               | 25×25×0.4                                   | 250   | 93                   | 366                                    | 59200                                  | 310                                    |
|                        | φ38               | 38×38×0.6                                   | 138   | 95                   | 300                                    | 14000                                  | 163                                    |
|                        | φ50               | 50×50×0.8                                   | 121   | 95                   | 347                                    | 7000                                   | 144                                    |
|                        | φ76               | 76×76×1.0                                   | 75  | 95                   | 280                                    | 1950                                   | 66                                     |



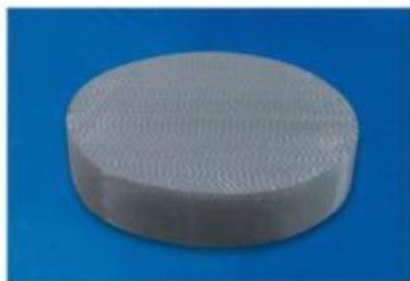
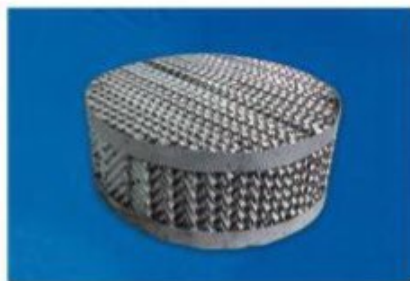
## 散堆塔填料系列 Random Tower Packing

### M 金属规整填料 Metallic Structured Packing

金属填料材质包括碳钢及不锈钢等。由于其加工壁薄、空隙率大、通量大、阻力小，又耐热、耐腐蚀、分离效果好，特别适用于真空精馏塔、处理热敏性、易分解、易聚合、易结垢的物料。  
金属规整填料有孔板波纹填料、板网波纹填料、刺孔板波纹填料、丝网波纹填料及环形波纹填料。

Owing to its thin wall, high void and capacity, low fluid resistance and heat & corrosion resistance, metallic packings, include carbon steel or stainless steel applied to handle the thermal-sensitive, hard to separation and easy carbonized materials in the vacuum rectifying towers.

Metallic Structured Packings include perforated & corrugated plate, corrugated plate gauze, pricked & corrugated plate, Corrugated wire gauze and annular corrugated plate.



### 特性数据 Characteristic Indexes

| 填料名称<br>Name                                     | 型号<br>Type | 比表面积<br>Surface Area<br>m <sup>2</sup> /m <sup>3</sup> | 空隙率<br>Free Volume<br>% | 堆积重量<br>Bulk Density<br>kg/m <sup>3</sup> | 塔高<br>Wave Height<br>mm | 理论板数<br>NT/m <sup>3</sup> | 压力降<br>ΔP<br>Pa/m | 最大F-因子<br>Max F-factor<br>M/s (kg/m <sup>3</sup> ) <sup>0.5</sup> |
|--|------------|--|-------------------------|---|-------------------------|---------------------------|-------------------|---|
| 金属孔板<br>波纹填料<br>Perforated &<br>Corrugated Plate | 125        | 125  | 98                      | 85-100                                    | 25.4                    | 1-2                       | 150               | 3   |
|  | 250        | 250  | 97                      | 150-180                                   | 12.5                    | 2-3                       | 200               | 2.6   |
|  | 350        | 350  | 94                      | 220-260                                   | 9                       | 2.0-2.5                   | 300               | 2.0   |
|  | 500        | 500  | 92                      | 340-380                                   | 6.3                     | 4-5                       | 180               | 1.8   |
| 金属刺孔板<br>波纹填料<br>Pricked &<br>Corrugated Plate   | 700Y       | 700  | 85                      | 220-260                                   | 4.5                     | 5.0-7.0                   | 900               | 1.6   |
|  | 500Y       | 500  | 93                      | 150-180                                   | 6.3                     | 3.0-4.0                   | 200               | 2.1   |
|  | 250Y       | 250  | 97                      | 85-100                                    | 12.5                    | 2.5-3.0                   | 300               | 2.6   |
| 金属板网波纹填料<br>Corrugated<br>Plate Gauze            | SW-1       | 650  | 91.6                    | 140                                       | 4.5                     | 6-8                       | 260-460           | 1.4-2.2   |
|  | SW-2       | 450  | 95.5                    | 360                                       | 6.5                     | 4-5                       | 220-240           | 1.6-1.8   |
| 金属丝网<br>波纹填料<br>Corrugated<br>Wire Gauze         | 250(A,X)   | 250  | 97                      | 70  | 12.5                    | 2.5-3.0                   | 25-120            | 2.5-3.5   |
|  | 500(B,X)   | 500  | 95                      | 140                                       | 6.3                     | 4-5                       | 200               | 2.0-2.4   |
|  | 700(C,Y)   | 700  | 87                      | 180                                       | 4.5                     | 6-10                      | 670               | 1.5-2.0   |



## 瓷球系列 Ceramic Ball

### 惰性氧化铝瓷球

Inert Alumina Ceramic Ball

惰性氧化铝瓷球具有高强度、高化学稳定性和热稳定性的特性。它可以耐高温、高压和酸、碱、盐及各种有机溶剂的腐蚀，广泛用于石油、化工、化肥、天然气及环保等行业。作为反应器内催化剂的支撑和衬基材料，可缓冲进入反应器内液和气体对催化剂的冲击，保护催化剂，并改善反应器内液体和气体的分布。

Inert Alumina Ceramic Ball is widely used in petrochemical industry, chemical industry, fertilizer industry, natural gas industry and environment protection etc with functions as covering and supporting materials for catalyst in reactors and packing for towers. Its main role is increasing the distributions of liquid and gas holding and protecting the activated catalyst with low strength.



### 主要技术指标

#### Main Specification

| 项目<br>Item                           | 品名<br>Specification | MT19 inert<br>普通瓷球<br>Ceramic Ball | MT25 inert<br>惰性氧化铝瓷球<br>Ceramic Ball | MT50 inert<br>中铝瓷球<br>Ceramic Ball | MT90<br>高铝瓷球<br>Alumina Ball | MT99<br>99高铝瓷球<br>Alumina Ball |
|--------------------------------------|---------------------|------------------------------------|---------------------------------------|------------------------------------|------------------------------|--------------------------------|
| $Al_2O_3 \cdot SiO_2$                |                     | >93                                | >92                                   | >93                                | >94                          | >99                            |
| $Al_2O_3$ (%)                        |                     | 17-19                              | 23-30                                 | 47-75                              | 90-92                        | 99                             |
| $Fe_2O_3$ (%)                        |                     | <0.9                               | <0.9                                  | <0.9                               | <0.9                         | 0.2                            |
| 吸水率(%)<br>Water Absorption           |                     | <0.5%                              | <0.5%                                 | <0.5%                              | <2.0                         | 2.0-6.0                        |
| 颗粒密度 $g/cm^3$<br>Particle Density    |                     | 2.3-2.4                            | 2.3-2.4                               | 2.6-2.9                            | 3.4                          | 3.0-3.6                        |
| 操作温度 (max)℃<br>Operation Temp (max)℃ |                     | >962                               | >962                                  | 1480                               | 1580                         | 1600                           |
| 莫氏硬度 (级)<br>Moh' s Hardness (scale)  |                     | >7                                 | >7                                    | >8                                 | >8                           | >8                             |
| 抗压强度 Crush Strength                  |                     | kN/粒 (granular)                    |                                       |                                    |                              |                                |
| 1/4" (6 mm)                          |                     | >0.60                              | >0.60                                 | >0.80                              | >0.90                        | >0.90                          |
| 1/2" (12 mm)                         |                     | >2.55                              | >2.55                                 | >3.22                              | >3.50                        | >3.50                          |
| 3/4" (19 mm)                         |                     | >6.22                              | >6.22                                 | >7.50                              | >8.00                        | >8.00                          |
| 1" (25 mm)                           |                     | >8.25                              | >8.25                                 | >9.20                              | >10.50                       | >10.50                         |

注：堆积密度数据仅供参考，不作为验收依据。

Remark: the data of the bulk density is just for reference only, not to be check and accept going on





## 瓷球系列 Ceramic Ball

### A 活性氧化铝 Activated Alumina

活性氧化铝具有吸附容量大、比表面积大、强度高、热稳定性好等特点，可广泛应用于化工、石化和化肥等工业中作吸附剂、干燥剂及催化剂载体等。

Activated alumina has large capacity of absorption, high surface area, high strength and thermal stability, which is widely used as an absorbent, desiccant and catalyst carrier in chemical, petrochemical and fertilizer industries.



#### 主要技术指标 Main Specification

| 性能 Item   | 品种 Type | KA401<br>吸附剂<br>Absorbent | KA402<br>除氟剂<br>Defluoriner | KA403<br>催化剂<br>Catalyst | KA404<br>脱氯剂<br>Antichlor | KA405<br>催化剂载体<br>Catalyst carrier | KA406<br>干燥剂<br>Desiccant |
|---|---------|---------------------------|-----------------------------|--------------------------|---------------------------|------------------------------------|---------------------------|
| 晶相<br>Crystalline Phase   |         | X-P                       | X-P                         | r                        | X-P                       | r                                  | X-P                       |
| Al <sub>2</sub> O <sub>3</sub> 含量 %<br>Al <sub>2</sub> O <sub>3</sub> Content |         | ≥90                       | ≥90                         | ≥92                      | ≥92                       | ≥93                                | ≥90                       |
| Na <sub>2</sub> O 含量 %<br>Na <sub>2</sub> O Content                           |         |                           |                             | <1.0                     |                           | <0.6                               |                           |
| 尺寸(mm)<br>Size  |         | φ 3-5                     | φ 1-2                       | φ 3-5                    | φ 0.4-1                   | φ 3-5                              | φ 3-5                     |
|   |         | φ 4-6                     | φ 2-3                       | φ 4-6                    | φ 1-2                     | φ 4-6                              | φ 4-6                     |
| 比表面积(m <sup>2</sup> /g)<br>Surface Area                                       |         | ≥280                      | ≥300                        | ≥200                     | ≥300                      | ≥240                               | ≥300                      |
| 孔隙(ml/g)<br>Porosity  |         | >0.38                     | >0.38                       | >0.45                    | >0.4                      | >0.45                              | >0.38                     |
| 静态吸水量(%)<br>Static Water Absorption   |         | >16                       | >16                         |                          |                           |                                    | >17                       |
| 堆积密度(g/ml)<br>Bulk Density  |         | >0.7                      | >0.7                        | 0.65-0.75                | >0.7                      | 0.65-0.75                          | 0.65-0.75                 |
| 磨损率(%)<br>Abrasion Rate   |         | <0.4                      | <0.4                        | <1                       | <0.4                      | <0.4                               | <0.4                      |
| 抗压强度(N/颗)<br>Crush Strength   |         | ≥100                      | ≥80                         | <70                      |                           | <100                               | >120                      |
| 吸水率(%)<br>Water Absorption  |         |                           |                             | ≥50                      |                           |                                    |                           |



## 瓷球系列 Ceramic Ball

### T 蓄热瓷球 Thermal Storage Ball

具有表面光滑、耐腐蚀、高强度、蓄热性能好等特点。是空分蓄热器、冶金行业加热炉蓄热室中的专用填料。

Thermal storage ball, which has the characteristics of smooth surface, standing up to chemical corrosion, high strength and good storage function, is thermal storage packings in heat exchanged of air separation.



#### 主要技术指标 Main Specification

| 物理化学性能 Chemical and Physical Property |                  |          | 化学成份 Chemical Composition                          |          |
|---------------------------------------|------------------|----------|--|----------|
| 项目 Item                               | 单位 Unit          | 指标 Index | 成份含量(%) Content                                    | 指标 Index |
| 容重 Bulk Density                       | t/m <sup>3</sup> | 2.4-2.6  | Al <sub>2</sub> O <sub>3</sub> %                   | 20-25    |
| 比热 Specific Heat                      | J/kg.K           | 836      | Al <sub>2</sub> O <sub>3</sub> +SiO <sub>2</sub> % | >92      |
| 导热系数 Specific Heat Conductance        | w/m.K            | 2.7-2.9  | Fe <sub>2</sub> O <sub>3</sub> %                   | <1       |
| 硬度 Hardness                           | 莫氏级 Mohs         | ≥6.5     |  |          |
| 磨损 Abrasion Loss                      | %                | 0.05     |  |          |
| 吸水率 Water Absorption                  | %                | <1       |  |          |

### R 耐火球 Refractory Ball

用于合成氨厂、冶炼厂的变换炉，高温转化炉内的催化剂支撑、覆盖填料。

Catalyst support and covering packings used in shift converter and reformer in ammonia plant



#### 主要技术指标 Main Specification

| 项目 Item                       | 单位 Unit     | 指标 Index  | 备注 Remark   |
|-------------------------------|-------------|-----------|---|
| 耐火度 Refractoriness            | ℃           | ≥1770     | 产品规格按用户要求制作。<br>Product specification follow after the requirement of customers |
| 耐压强度 Crushing Strength        | N/颗 N/piece | 400-15000 |   |
| 荷重软化温度 Loading Refractoriness | ℃           | ≥1450     |   |
| 气孔率 Porosity                  | %           | ≤21       |   |
| 重烧收缩 Reburning                | %           | ≤0.5      |   |



## 分子筛系列 Molecular Sieve

### M 分子筛 Molecular Sieves

各种专用分子筛具有强度高，热稳定性好，选择吸附性强的优点。广泛应用于化工、石化、天然气等行业，得到用户的满意。

Various series of specific molecular sieves have strong capability of selective absorption, high strength, and thermal stability which have been proved successful while being used in chemical, petrochemical and natural gas processes



#### 主要技术指标 Main Specification

| 型号<br>Type | 堆重<br>Bulk density<br>$\gamma_s$ (g/ml) | 静态吸水率 (%)<br>Static absorption | 磨耗率 (%)<br>Loss on abrasion | 应用<br>Application   |
|------------|---|--------------------------------|-----------------------------|---|
| 3A         | 0.60-0.68                               | 19-20                          | 0.3-0.6                     | 用于石油裂解气和烯烃的干燥<br>Drying agent for pyrolysis gas and alkene  |
| 4A         | 0.60-0.65                               | 20-21                          | 0.3-0.6                     | 用于天然气干燥及烷烃分离<br>Drying agent for natural gas and absorbent for paraffin separation  |
| 5A         | 0.60-0.65                               | 20-21                          | 0.3-0.5                     | 空气的干燥净化、天然气脱水脱硫、石油气脱硫及<br>变压吸附制氧制氮等过程<br>Dehydration, desulfurization and purification of air, natural gas<br>and oil, in oxygen making and hydrogen making by PSA<br>processes |
| 5A-DW      | 0.45-0.50                               | 21-22                          | 0.3-0.6                     | 航空煤油及柴油的脱蜡降凝及烷烃分离<br>Aviation kerosene dewaxing and paraffin separation   |
| 10X        | 0.50-0.60                               | 23-24                          | 0.3-0.6                     | 高效吸附剂，用于气体和液体的干燥、脱硫、脱羰及芳烃分离<br>High-pow absorbents for removal of $H_2O$ , $H_2S$ and<br>$CO$ in liquid and gas, as well as for paraffin separation                             |
| 13X        | 0.55-0.65                               | 23-24                          | 0.3-0.5                     | 石油气、天然气的干燥、脱硫、净化<br>Dry and desulfurization and purification for oil and gas  |
| 13X-AS     | 0.55-0.65                               | 23-24                          | 0.3-0.5                     | 用于空分行业脱碳、干燥<br>Dry and decarbonation in air separation  |
| Cu-13X     | 0.50-0.60                               | 23-24                          | 0.3-0.5                     | 用于航空煤油及相应液态烃类的脱硫醇<br>Absorbent for removal of thioalcohol in aviation kerosen<br>and the liquid hydrocarbon   |



## 研磨系列Alumina Grinding Series

### H 高铝研磨球 High alumina grinding ball

氧化铝研磨球由于其氧化铝的高含量、高密度、高硬度、高耐磨性被广泛的运用于不同类型的陶瓷、瓷釉、玻璃和化工工厂的厚硬材质精磨和分割。

按铝含量分为：60-70%、65-75%、92%、95%

按规格分：  $\phi$ 25mm- $\phi$ 75mm

The alumina grinding balls has been widely used in ball mills as abrasive media for ceramic raw materials and glaze materials in ceramic factories, cement factories, enamel factories and glasswork owing to the extraordinarily high density, high hardness, high wear resistance. During the abrasive/grinding processes, ceramic balls will not be broken, it will not contaminate the materials to be grinded.

Type: According to the content of aluminum oxide: 60-70%、65-75%、92%、95% According to the sizes:  $\phi$ 25mm- $\phi$ 75mm.



### 主要技术指标 Main Specification

| 项目<br>Item                            | 高铝研磨瓷球<br>High Alumina Grinding Ceramic Ball |                                   | 中铝研磨瓷球 Middle Alumina Grinding Ceramic Ball |  |
|---------------------------------------|--|-----------------------------------|---|--|
|                                       | 92%Al <sub>2</sub> O <sub>3</sub>            | 95%Al <sub>2</sub> O <sub>3</sub> | 微晶中铝研磨瓷球<br>Micro-crystal Middle-alumina    | 碳化中铝研磨瓷球<br>Carborundum Middle Alumina |
|                                       | 92%Al <sub>2</sub> O <sub>3</sub>            | 95%Al <sub>2</sub> O <sub>3</sub> | 65-75%Al <sub>2</sub> O <sub>3</sub>        | 60-70%Al <sub>2</sub> O <sub>3</sub>   |
| Al <sub>2</sub> O <sub>3</sub> (%)    | ≥92  | 95                                | 65-75                                       | 60-70                                  |
| SiO <sub>2</sub> (%)                  | 3.81   | 3                                 | 30~15 20~15                                 | 60~70                                  |
| Fe <sub>2</sub> O <sub>3</sub> (%)    | 0.06   | 0.05                              | 0.41  | <0.5                                   |
| TiO <sub>2</sub> (%)                  | 0.02   | 0.04                              | 1.7   | 1.8                                    |
| 其它(%) Other                           | 2.53   | 1.9                               | 5   | 10                                     |
| 堆积重量 Bulk Density(g/cm <sup>3</sup> ) | 3.65   | 3.68                              | 2.93-3.0                                    | 2.90-3.0                               |
| 吸水率 Water Absorption(%)               | <0.01  | <0.005                            | <0.01                                       | <0.05                                  |
| 莫氏硬度(级)<br>Moh' s Hardnes(grade)      | 9  | 9                                 | ≥8  | ≥8                                     |
| 抗压强度<br>Compression Strength          | >2000  | >2000                             | >1000                                       | >1000                                  |
| 磨损率 Abrasion(%)                       | 0.01   | 0.01                              | 0.02  | 0.03                                   |
| 颜色 Colour                             | 白色 White                                     | 白色 White                          | 黄色 Yellow 白色 White                          | 褐色 Brown                               |
| 主要原料<br>Main Raw Materials            | 氧化铝<br>Calcined Alumina                      | 氧化铝<br>Calcined Alumina           | 精铝矾土粉<br>Refined Bauxite Powder             | 铝矾土粉<br>Bauxite Powder                 |
| 成形方法<br>Forming Method                | 均衡挤压<br>Isostatic Pressing                   | 均衡挤压<br>Isostatic Pressing        | 挤压成块<br>Impact Briquetting                  | 手工制作<br>Handmade                       |



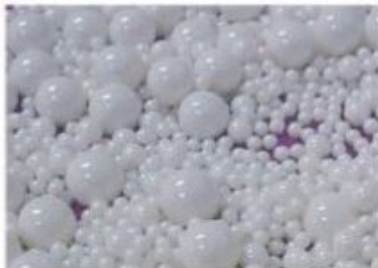
## 研磨系列Alumina Grinding Series

### 钇稳定氧化锆珠 YTZP

强度高、硬度高、耐磨性优异，特别适用于各类高剪切高能砂磨机，在常规卧室砂磨机中也有较好的应用。

采用氧化钇作稳定剂，经特殊成型工艺，高温烧成定相的工艺制成。氧化锆晶粒直径=0.5um保证了珠子的细腻、致密的微观结构。具有低磨损、高断裂韧性和良好的抗腐蚀。同时珍珠般的光泽和光滑工作球面，不愧为研磨介质中的极品。

本品特别适合立式搅拌磨、卧式滚动球磨机、振动磨和各种高转速的棒销式砂磨机等；对各种要求拒绝交叉污染的浆料和粉料作湿法、干法的超细分散及研磨。



Intensity of high hardness, excellent wear resistance, in particular applicable to all types of high shear energy sanding machine, sanding machine in the conventional bedroom also has a better application.

The use of yttria as stabilizing agent, with a special forming process, high temperature burn-baking phase of the process are made. Zirconia grain size=0.5um to ensure that the beads of fine dense microstructure. With low wear high fracture toughness and good corrosion resistance. At the same time, pearl-like luster and smooth spherical work deserves the best in the grinding media.

This product is particularly suitable for vertical stirred mill, horizontal rolling mill, vibration mill, and various high-wire-speed sanding stick pins, etc. the requirements of the refusal to cross-contamination of the slurry and powder for wet, dry dispersion and the ultra-fine grinding.

#### 特性

1. 极低的磨损(ppm)量，可防止物料污染
2. 极高的研磨效率
3. 极长的使用寿命，综合使用成本较低
4. 适用于高粘度、湿法研磨和分散的场合

#### 应用场合

1. 耐磨损、耐腐蚀产品：涂料、纺织、颜料、印染
2. 高强度、高韧性产品：磁性材料、压电陶瓷、介电陶瓷
3. 防止污染：医药、食品、化妆品
4. 陶瓷：电子陶瓷、耐火陶瓷、结构陶瓷

#### Features:

1. wearing a very low (ppm) the amount of materials to prevent pollution
2. High grinding efficiency
3. Extremely long life: low cost integrated
4. for high viscosity, wet grinding and dispersion of occasions

#### Applications:

- 1 wear-resistant, corrosion-resistant products: paints, textiles, paints, printing and dyeing
- 2 high strength, high toughness products: magnetic materials, piezoelectric ceramics, dielectric ceramics
- 3 to prevent pollution: medicine, food, cosmetics
- 4 Ceramics: Electronic ceramics, refractory ceramics, structural ceramics

#### 物理参数 Physical parameters

| 性能 Items                                     | 单位                               | 参数  |
|--|----------------------------------|---|
| 成份 Composition                               | wt %                             | 94.8% ZrO <sub>2</sub> , 5.2% Y <sub>2</sub> O <sub>3</sub> |
| 填充密度 Packed Density                          | Kg/L                             | 3.73(Φ2mm)  |
| 密度 Specific Density                          | g/cm <sup>3</sup>                | ≥6.02   |
| 莫氏硬度 Moh's                                   |                                  | >8.5  |
| 弹性模量 Elastic modulus                         | GPa                              | 200   |
| 导热系数 Thermal Conductivity                    | W/m.K                            | 3   |
| 破碎强度 Crushing Load                           | KN                               | ≥20 (Φ2mm)  |
| 断裂韧性 Fracture Toughness                      | MPa·m <sup>1/2</sup>             | 9   |
| 晶粒大小 Grain size                              | μm                               | <0.5  |
| 热膨胀系数 Thermal expansion Coefficient(20-400℃) | 10x10 <sup>-6</sup> / °C(20-400) | 9.6   |



## 研磨系列Alumina Grinding Series

### 锆铝复合球 ZTA

氧化锆增韧氧化铝 (ZTA) 磨介是一种集氧化锆超耐磨、高韧性、高密度及氧化铝硬度高、耐腐蚀性等特性为一体的新产品。该产品价位适中。密度合适，耐磨性能优。

Strength, and aluminum zirconium as the perfect combination of grain, excellent wear resistance, especially for use in coatings, inks, agricultural chemical, mineral pigment grinding and dispersion. Applicable to the majority of sanding machine.



#### 适用范围

非金属材料、油漆、油墨、造纸、涂料、电子材料、磁性材料、染料食品、医药等

#### 规格

球形:  $\phi 0.1-0.3$ ,  $\phi 0.4-0.6$ ,  $0.6-0.8$ ,  $\phi 0.8-1$ ,  $\phi 1$ ,  $\phi 2$ ,  $\phi 3$ ,  $\phi 4$ ,  $\phi 5$ ,  
 $\phi 7$ ,  $\phi 10$ ,  $\phi 12$ ,  $\phi 15$ ,  $\phi 20$

#### Features:

Zirconia Toughened Alumina (ZTA) is a set mill referred super wear-resistant zirconium oxide, high toughness, high-density and high hardness alumina, corrosion resistance and other characteristics of the new products as a whole. Modest price of the product, the right density, excellent wear resistance.

#### The application of occasions:

Non-metallic mineral, paint, ink, paper, coatings, electronic materials, magnetic materials, dyes, food, medicine, etc.

### 物理参数 Physical parameters

| 性能    | Items                                   | 单位   | 参数  |
|-------|---|--|---|
| 成份    | Composition                             | wt%  | 20-80% ZrO <sub>2</sub> , 80-20% Al <sub>2</sub> O <sub>3</sub> |
| 填充密度  | Packed Density                          | Kg/L   | 2.6-3.3( $\phi 7$ mm)   |
| 密度    | Specific Density                        | g/cm <sup>3</sup>                            | 4.1-5.5   |
| 莫氏硬度  | Moh's                                   |  | 8.0-8.5   |
| 弹性模量  | Elastic modulus                         | GPa  | 200   |
| 导热系数  | Thermal Conductivity                    | W/m.K  | 3   |
| 压碎强度  | Crushing Load                           | KN   | $\geq 8$ ( $\phi 7$ mm)   |
| 断裂韧性  | Fracture Toughness                      | MPam <sup>-1/2</sup>                         | 6.7   |
| 颗粒大小  | Grain size                              | $\mu$ m                                      | $\leq 0.8$  |
| 热膨胀系数 | Thermal expansion Coefficient(20-400°C) | $10 \times 10^{-6} / ^\circ\text{C}(20-400)$ | 7.0   |

