



ZHENG YUAN



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公司简介

南京正源搪瓷设备制造有限公司位于江苏省南京市溧水区白马工业园，公司由南京氟源化工管道设备有限公司于2011年投资创立，并组建成南京正源集团有限公司。

公司成立的初衷是要向中国国内的化工、医药、农药、石油化学等行业提供与国外进口搪玻璃制品同等品质的高端搪玻璃产品，同时又极大地降低采用进口产品的高昂造价。

在公司组建初期，就瞄准了搪玻璃行业的高端发展方向，先后引进吸收了日本、法国的最新搪玻璃制造技术。公司与日本八光产业株式会社签订了搪玻璃釉料原料釉块进口加工、使用技术合作协议，在国内率先使用与日本最高档搪玻璃釉料同品质的高性能釉料。公司在搪玻璃产品搪烧工艺上采用法国等西方国家先进的冷喷中温缓烧工艺，克服了国内常用的热喷高温快烧工艺带来的搪玻璃产品容易产生的缺陷等质量问题。公司消化吸收了国外独特的搪玻璃产品结构形式与制造工艺，使得搪玻璃产品的各项技术指标都有了极大的提高，形成了具有专有技术特色的搪玻璃产品，在市场上深受广大客户的好评。

公司设有技术研发、品质保证、员工培训中心，拥有完善的计算机辅助设计系统、先进数控制造设备、搪烧加工设备、完全按日本标准建造的釉料生产车间以及各种产品性能检测设备，制定了完整的严格规范的企业标准与完善的压力容器质量保证体系。

公司始终遵循“科技创新、用户至上、以人为本、和谐共赢”的经营理念，以市场为导向，竭诚为广大用户提供优质的产品和服务。

Company Profile

Nanjing Zhengyuan Enamel Equipment Co., Ltd. is located in Nanjing city, Jiangsu province. It specializes in manufacturing glass lined reactor, glass lined storage tank, glass lined distillation tank, glass lined column, glass lined heat exchanger etc. and all kinds of non standard glass lined chemical equipment, stainless steel equipment and all kinds of glass lined accessories.

Nanjing Zhengyuan Enamel Equipment Co., Ltd. was founded in 2011, invested by Nanjing Fuyuan Chemical pipeline Equipment Co., Ltd. which was belong to Zhengyuan Group.

The company dedicated to manufacture glass lined equipment, serving in chemical, pharmaceutical, pesticide and Food & Beverage industries.

Company possess the design and manufacturing license for type I, II and III pressure vessels, ISO 9001 certificate and ISO 14000 certificate, The product has been exported with large quantities to the overseas market and the products have a wide range of praise.

The company adopts the latest glass lining technology and high-grade strong corrosion resistance glass lined enamel from Japan, employ three Japanese senior engineers control the production process. All the glass lined equipment are burned by electric furnace with same specification in one electric furnace, making a gain of enamel equipment with glass lining porcelain evenly, non-deformation, quality reliable and stable, strong corrosion resistance, not easy collapsed, glass lining porcelain face clean and non-pollution etc.

Adhering to the operation principle of "Scientific management, all devotion, customer satisfaction and perfection pursuit" and the permanent commitment of "Be honest to every customer", we expect your precious opinions and welcome your guidance.

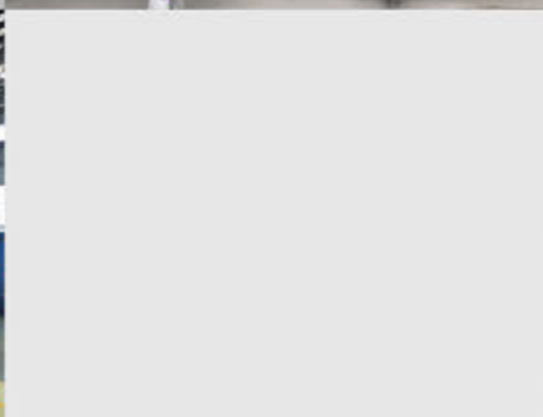
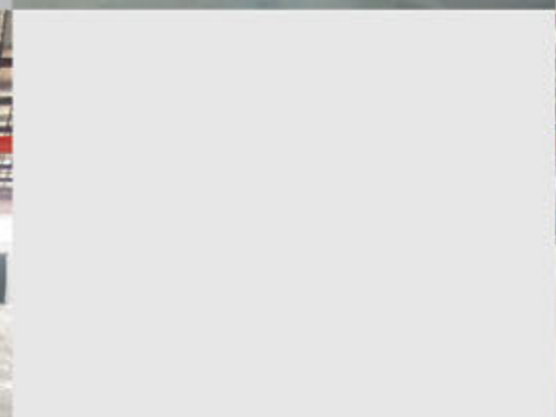
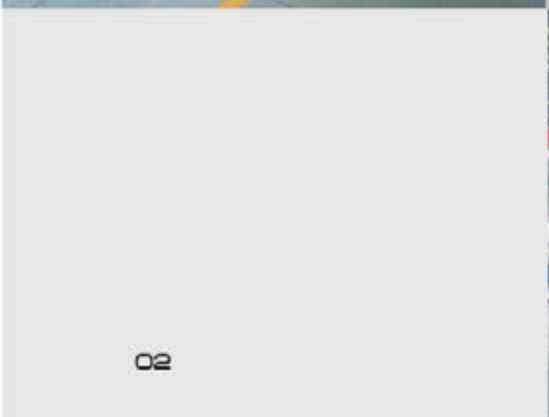
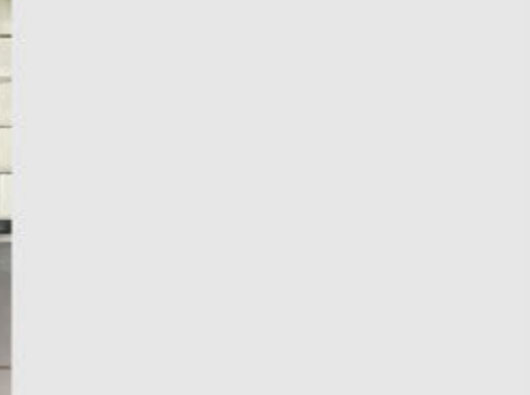
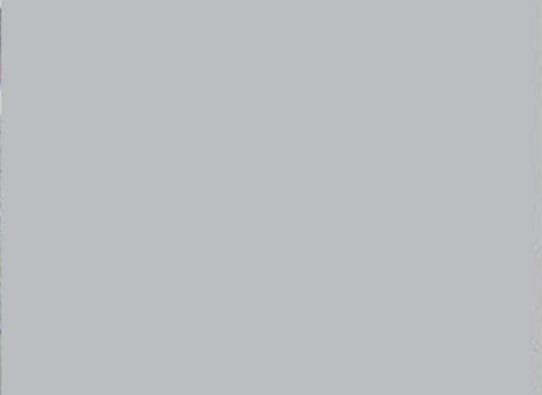
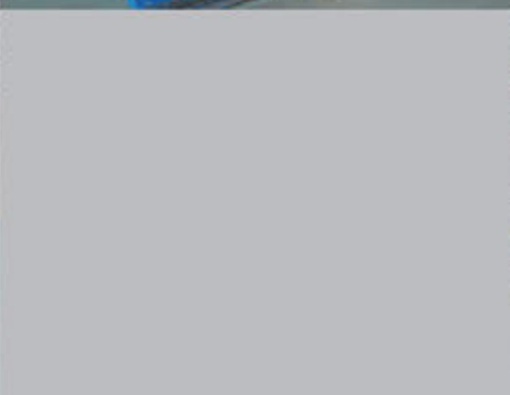
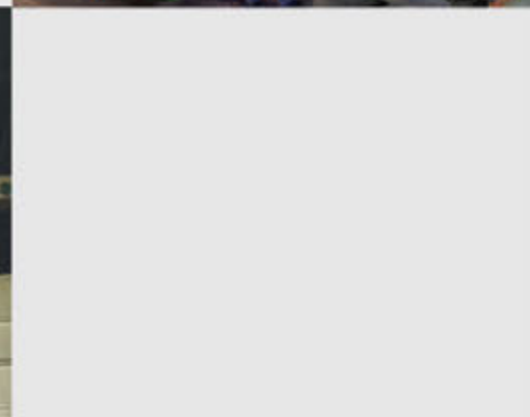
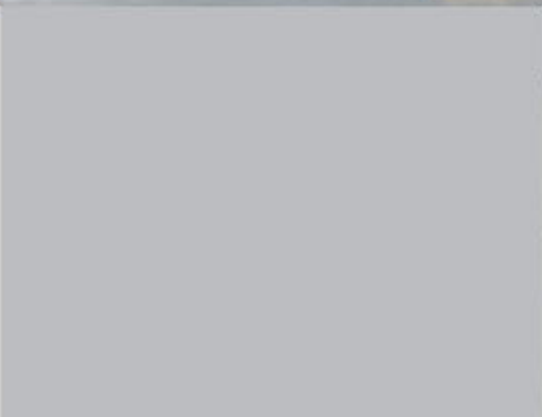
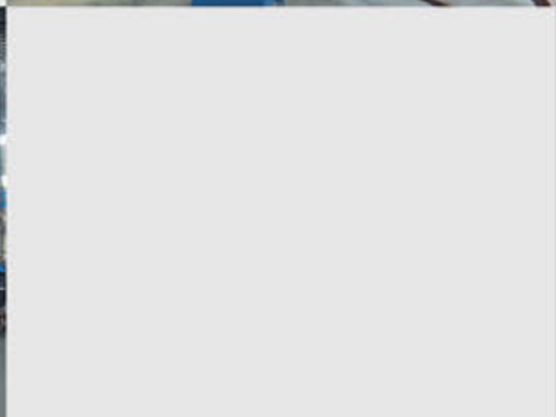
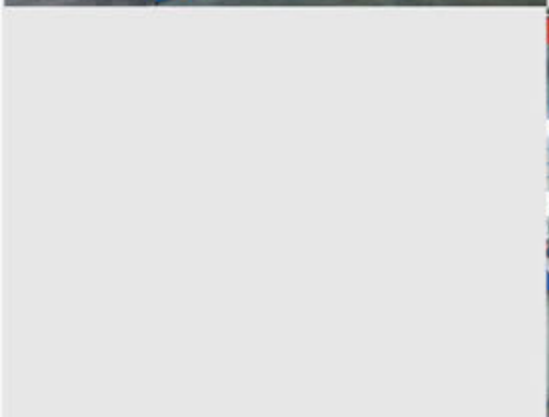
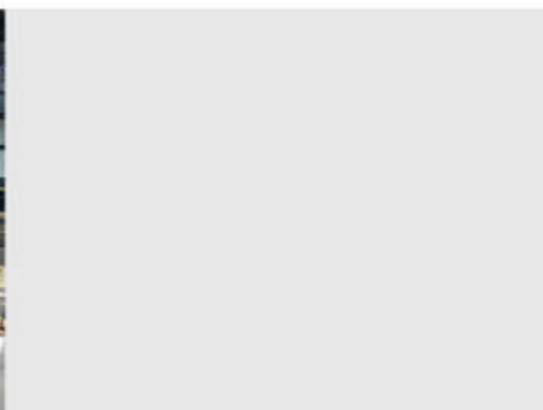
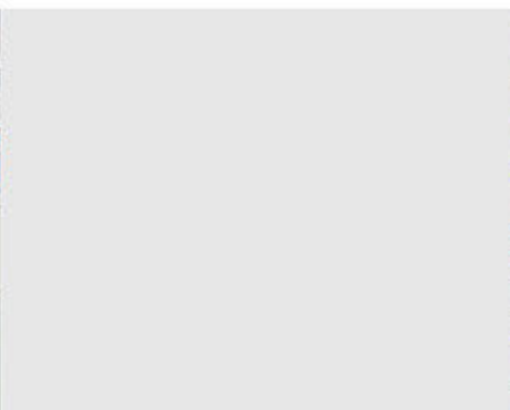
In the future, Nanjing Zhengyuan Enamel Equipment Co., Ltd. will continue to constantly supply the best product and service, teaming with business partners to create a World-Class glass lined equipment supplier.



主要设备 Main Equipments

科技创新 · 用户至上, 以人为本 · 和谐共赢

Scientific management, all devotion, customer satisfaction and perfection pursuit



产品展示 Products



标准型搪玻璃反应釜
Standard glass lined reactor



外包不锈钢搪玻璃反应釜
Outsourcing stainless steel glass lined reactor



搪玻璃贮罐
Glass lined tank



搪玻璃立式开式贮罐
Glass lined tank (Vertical open type)



搪玻璃测温挡板
Glass lined sampling baffle



搪瓷投料管
Glass lined feeding pipe



一体式快开视镜
Integrated quick sight glass



碳化硅列管式热交换器
SIC(silicon carbide) shell and tube type heat exchanger



搪玻璃薄膜蒸发器
Glass lined film evaporator



搪玻璃多孔板式冷凝器
Glass lined plate condenser



ZY212F型干磨式机械密封
ZY212F Dry Milling model Mechanical Seal



ZY212FJ型干磨洁净型机械密封
ZY212FJ Dry Milling Clean model Mechanical Seal



ZY212FL/FJL型干磨冷却型/带收集型机械密封
ZY212FL/FJL Dry Milling Cold model Mechanical Seal



ZY461型机械密封
ZY461 Mechanical Seal



搪瓷放料阀
Glass lined feeding valve



不锈钢搪瓷设备
Stainless steel glass lined equipment



搪玻璃管道及配件
Glass lined pipe fittings

企业资质 Enterprise Qualification



企业营业执照
Business license



特种设备制造许可证
Special equipment manufacturing license



全国搪玻璃设备标准化技术委员会证书
China enamel industry association membership certificate



高新技术产品认定证书
Certificate of high-tech products



ISO9001质量管理体系认证证书 (中英文)
The ISO9001 quality management system certification



专利证书 (13份)
Patent certificates



化工行业标准起草单位
Chemical industry standard drafting company

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腐蚀特性 Corrosion characteristics

下图显示的腐蚀速率为典型的具有代表性的酸与碱。

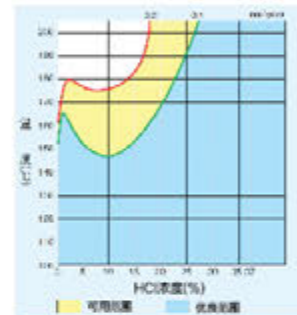
腐蚀性速率为1日24小时连续测试得出的结果。优良范围的定义为腐蚀速率在0.1mm/year以下、使用寿命在5年以上的场合。可用范围的定义为腐蚀速率在0.1—0.2mm/year之间，使用寿命在2—5年之间。谨慎使用范围定义为腐蚀速率在0.2mm/year或以上，使用寿命在1—2年或以下的场合。

The chart below shows the corrosion rates of typical acids and alkalis, obtained from a 24 hours/day continuous corrosion test. In case corrosion rate is less than 0.1mm/year, the glass can serve for more than 5 years in the condition of resisting corrosion perfectly. In case corrosion rate is 0.1—0.2mm/year, or 0.2mm/year or more, the service life will be 2—5 years, or 2 years or less, respectively.

盐酸 Hydrochloric acid

盐酸是化学工业中最常用的酸之一，但也是对机器设备腐蚀最严重的酸。八光200BW釉显示出对盐酸的非常优良的耐腐蚀特性。右图指出的优良耐腐蚀性在一个较低的集中区域内变化，峰值出现在1%处，最低值出现在10%处，但是超过10%后优良范围又迅速增加。此表中的数据也适用于氢溴酸、氢碘酸和氯乙酸。

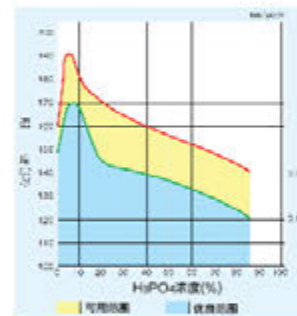
Among all kinds of acids for the chemical industry, hydrochloric acid is used most popularly, but it corrodes the materials of equipment most severely. 200BW enamel shows very excellent resistance to this corrosive acid. As indicated in this chart, corrosion resistance changes in the low concentration area, showing a peak at 1% and a minimum at 10%, but beyond 10%, it increases rapidly. This chart is also applicable to hydrobromic acid, hydriodic acid and chloroacetic acid.



磷酸 Phosphoric acid

磷酸对搪玻璃的腐蚀变化与其它酸有很大的不同，通常一般的酸随着浓度的提高，搪玻璃对它们的耐腐蚀性也相应的增加，但是随着磷酸浓度的增加，搪玻璃对它的耐腐蚀性却在降低。因为磷酸通常含有含氟杂质，需要进行一周时间以上的长期耐腐蚀性试验。

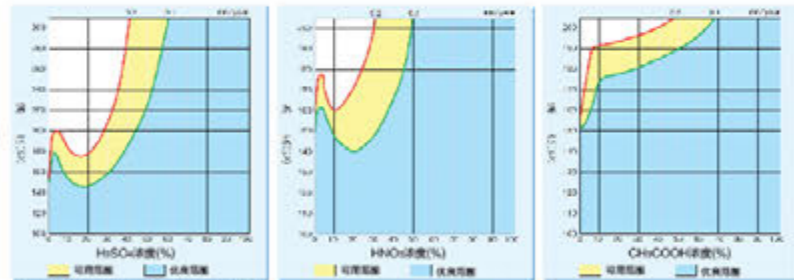
The corrosion resistance of glass to phosphoric acid changes in a much different way from that to other kinds of acids. Usually corrosion resistance of glass increases with the increase of concentration of acid, but in case of phosphoric acid, corrosion resistance decreases with the increase of concentration. As phosphoric acid often contains fluorine as a impurity, the corrosion test for a period as long as more than one week is necessary.



硫酸/硝酸/醋酸 Sulfuric acid / Nitric acid / Acetic acid

此类酸的耐腐蚀性，在峰值出现在一个较低的浓度值上，最小值大约出现在20%浓度左右。当浓度超过20%后，耐腐蚀性随着浓度的增加而提高。此表也适用于亚硫酸和亚硝酸。醋酸可作为有机酸的典型代表。

The corrosion resistance of these acids show a peak at a low concentration and a bottom at a concentration around 20%. When concentration exceeds 20%, corrosion resistance increases with the increase of concentration. This chart is also applicable to sulfurous acid and nitrous acid. Acetic acid is added as an example of organic acids.

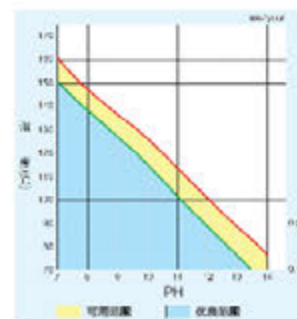


碱 Alkalis

在室温下，200BW釉可以耐受任何PH值的介质。但是随着温度的升高，搪玻璃对碱的耐蚀性能下降。对于PH≥14的氢氧化钠和氢氧化钾溶液，在不同的浓度下所对应的最高使用温度分别为：10%时66℃；20%时60℃；30%时57℃；50%时54℃。

在中和操作场合，PH值为13时的最高操作温度为100℃。当碱性溶液或者固体装入容器，应当在容器搅拌良好的情况下将介质加入到中心部位，避免介质粘在搪玻璃面上而引起局部过热的现象。

在碱性无水条件下，除氟化物之外的有机金属化合物对搪玻璃没有影响。



At room temperature, 200BW enamel is fully resistant to any PH values. But with the rise of temperature, the resistance of the glass to alkali decreases. For the caustic soda and caustic potash at PH 14 or more, the maximum usable temperature at respective concentrations are: 66℃ at 10%, 60℃ at 20%, 57℃ at 30%, 54℃ at 50%. For operation of neutralization, maximum allowable temperature is 100℃ at PH13. When alkaline solution or alkaline solid is charged into a vessel, care should be taken to put the material into the center of the vessel agitating the liquid well so that it may not cause sticking of the material to the glass nor any partial overheat in the vessel. Organometallic compounds except for fluorides do not influence the glass, if they are in a perfect alkali condition.

水 Water

在低于沸点以下温度范围内，200BW搪玻璃对液态或气态的水有优良的耐腐蚀性能，但是在超过了沸点时，对液态或气态水的最高使用温度应在150℃以下。

值得注意的是，对酸性介质有着优良耐腐蚀性的搪玻璃，并不意味着对水有着同样优良的耐蚀性。

At temperatures lower than the boiling point of water, 200BW enamel shows perfect corrosion resistance to water both in the phases of liquid and gas, but generally above the boiling point, maximum service temperature is 150℃ in both phases. Attention should be paid to the fact that the glass with high acid resistance has not always good water resistance at a time.

氟化物 Fluoride

一般的氟化物在介质中一旦被发现，操作中应引起足够的重视。氟化物一般会混杂在磷酸、磷酸化合物、硫酸和盐酸的再生酸中。因此，在使用上述介质前，应当进行必要的耐腐蚀性测试。

Generally if only traces of fluoride is found in the liquid, sufficient care should be taken in the operation. Often fluorine is contained in phosphoric acid, phosphatic compounds, and regenerated products of hydrochloric acid and sulfuric acid. Therefore for the use of those liquids, corrosion test should be conducted before the operation.

盐类 Salts

对盐类（含氟盐类除外）的耐腐蚀性与溶液的PH值耐蚀特性表相类似。例如，氯化钠是中性的，但其水溶液却呈现出腐蚀性，同样的，氯化铝溶解到水里，在溶液中离解出氯离子。200BW搪玻璃对此种盐类溶液的耐腐蚀性，可参考对盐酸耐腐蚀性数据表。

The corrosiveness of salt (except those containing fluorine) is closely related to the PH values of the solution. For instance, sodium chloride is neutral, but in its aqueous solution water acts as a corrosive agent. Also, aluminium chloride dissolves in water and gives chloric ion in the solution. For the corrosion resistance of 200BW Glass to the solutions of those salts, you are recommended to refer to the corrosion chart of hydrochloric acid.

有机溶剂 Organic solvents

对于有机溶剂，200BW釉在搪玻璃设备的最高操作温度界限时仍有着良好的耐蚀性。但是，一些低介电常数液体（如己烷、二甲苯、甲苯、苯和庚烷），它们的纯液体或者与其它液体或固体的混合物，在不同液体之间、液体与气体之间、液体与器壁或附件之间的碰撞会产生静电。电火花会引燃可燃气体、使搪玻璃表面龟裂或产生针孔。在操作这类液体时应引起充分的重视。

For organic solvents, 200BW enamel shows perfect corrosion resistance up to the maximum operating temperature of the glass lined equipment. But the liquids with low dielectric constant such as the liquids of hexane, xylene, toluene, benzene and heptane, when used single or mixed with other liquids or solids, discharge static electricity between different liquids, liquids and gases, liquids and vessel wall or accessories. The sparks of such electricity may ignite combustible vapors, or cause crack or pinholes on the glass surface, and so sufficient cares are necessary in handling those liquids.

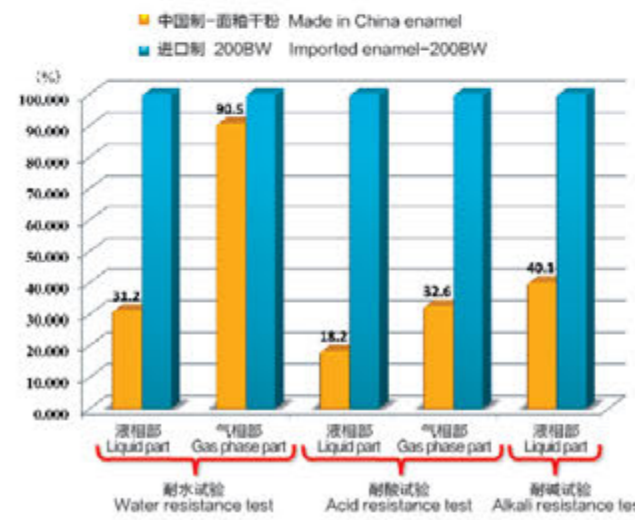


Fig.1 200BW enamel corrosion resistance test results (Blue cylinder) comparing with made in China enamel

● 耐水试验: Water resistance test

搪玻璃试件经受纯水100摄氏度沸点时气相部（水蒸气）和液相部（沸腾水）连续96小时腐蚀
Glass lining specimen from pure water 100℃ boiling point of the gas phase part (steam) and liquid part (boiling water) continuous 96 hours corrosion

● 耐酸试验: Acid resistance test

搪玻璃试件经受20vol%-HCL, 108℃沸点时气相部（盐酸蒸汽）和液相部（沸腾盐酸）连续96小时腐蚀
Glass lining specimen through 20vol%-HCL, 108℃ boiling point of the gas phase part (hydrochloric acid steam) and liquid part (boiling hydrochloric acid) continuous 96 hours corrosion

● 耐碱试验: Alkali resistance test

搪玻璃试件经受1mol-NaOH, 80℃液相部（加热的碱溶液）连续48小时腐蚀
Glass lining specimen through 1mol-NaOH, 80℃ liquid part (heating alkaline solution) continuous 48 hours corrosion

物理特性 Physical characteristics

搪玻璃的物理性质 Physical properties of 200BW Glass

比重	Specific Gravity	g/cm ³	2.5~2.7
比热	Specific Heat	J/kg·K	837
热传导率	Thermal Conductivity	W/m·K	0.87~1.04
硬度	Hardness	Mohs' Scale	5.5
表面粗糙度	Surface Roughness	μm	0.08~0.18
粘附强度	Adhesion Strength	(搪玻璃-钢 Glass lined-steel) kg/mm ²	> 10
拉伸强度	Tensile Strength	N/mm ²	68~88
压缩强度	Compression Strength	N/mm ²	784~980
弹性系数	Modulus of Elasticity	N/mm ²	49×10 ³ ~127×10 ³
电气阻抗	Electrical Resistivity	Ωcm	10 ¹² ~10 ¹⁴
绝缘强度	Dielectric Strength	KV/mm	20~30

抗热骤变性质 Thermal shock Resistance

搪玻璃设备的搪玻璃抗热冲击性能与玻璃表面的压缩应力有着密切的关系。压缩应力越高，则抗热冲击性能越好。另一方面，压缩应力随着温度的升高而下降。因此，允许的急热、急冷温差经常取决于容器壁温，也受到容器体积、形状、操作条件的影响。右侧两张图表给出了在不同的操作条件下寻找出最大允许急热、急冷温差值。但此表仅适用于15m³以内的标准型搪玻璃反应釜。

The thermal shock resistance of glass for glassed steel equipment is closely related with compressive stress of the glass surface: as the compressive stress grows higher, the thermal shock resistance also grows higher. On the other hand, compressive stress drops with the rise of temperature. Consequently, the allowable temperature difference for rapid heating and cooling always depends on the temperature of vessel wall. But the allowable temperature difference is influence by vessel's volume, form, operating conditions and so. The following two diagrams show a method of looking after maximum allowable temperatures in different operating conditions. But these diagrams are applicable to standard vessels of the capacities ranging from zero to 15m³.

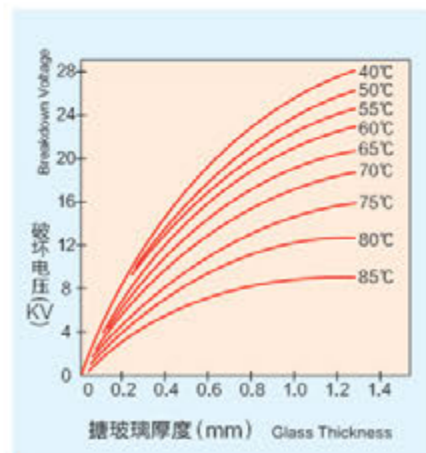
高电压测试 High Voltage Test

为确保搪玻璃设备的质量，在工厂进行了DC 20kv的电火花试验，因为这个容易造成破坏的试验，操作时要特别小心。在客户处复检时，应采用AC 50Hz 5kv的电火花试验，不推荐使用直流电火花测试仪，因为静电荷会蓄积在搪玻璃层。

搪玻璃层厚度、温度和破坏电压值之间的关系如右图所示。

To guarantee the quality of glass, spark test is carried out in the factory with DC at 20,000 Volts. As this is a breakdown test, special care should be taken for the safety of test operation. For the test conducted at the customer's site, AC with 60 cycles at 5,000 Volts is to be used. The use of DC is not recommendable, because electrostatic charges will be accumulated on the glass layer by the use of DC.

The relations between thickness of glass, temperature and breakdown voltage will be shown in the chart.



容器内溶液直接注入的场合 (图A)

(例1) 热的容器 (Tw = 180°C) 内注入冷的液体的场合最小允许温度 (Tp < Tw)

步骤: ① 在图A横坐标轴上找出壁温 Tw = 180°C

② 沿着180°C的点画一条垂线，交于蓝色区域边缘上一点

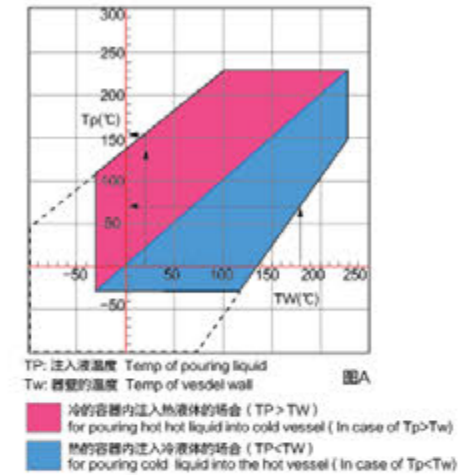
③ 过交点作一条平行于横坐标的水平线，相交于纵坐标上的Tp点。Tpmin = 70°C

(例2) 冷的容器 (Tw = 20°C) 内注入热的液体的场合最大允许温度 (Tp > Tw)

步骤: ① 在图A横坐标轴上找出壁温 Tw = 20°C

② 沿着20°C的点画一条垂线，交于红色区域边缘上一点

③ 过交点作一条平行于横坐标的水平线，相交于纵坐标上的Tp点。Tpmax = 155°C



Pouring liquid into the Vessel (chart A)

(Ex.1) Minimum allowable temperature Tp < Tw for pouring a cold liquid into a hot vessel (Tw=180°C)

Procedure:

① Read wall temperature Tw=180°C on the axis of abscissa in Chart A.

② Draw a perpendicular at the point of 180°C and find an intersecting point on the blue line.

③ Draw a line parallel to the axis of abscissa from the intersecting point on the blue line, and read the intersecting point Tp on the axis of ordinate. Tp min=70°C.

(Ex.2) Maximum allowable temperature (Tp > Tw) for pouring a hot liquid into a cold vessel (Tw=20°C)

Procedure:

① Read wall temperature Tw=20°C on the axis of abscissa in Chart A.

② Draw a perpendicular at the point of 20°C and find an intersecting point on the red line.

③ Draw a line parallel to the axis of abscissa from the intersecting point on the red line, and read the intersecting point Tp on the axis of ordinate. Tp max=155°C.

容器通过夹套加热或冷却的场合 (图B)

(例1) 热的容器 (Tw = 200°C) 夹套内注入冷的液体的场合最小允许温度 (Tj < Tw)

步骤: ① 在图B横坐标轴上找出壁温 Tw = 200°C

② 沿着200°C的点画一条垂线，交于蓝色区域边缘上一点

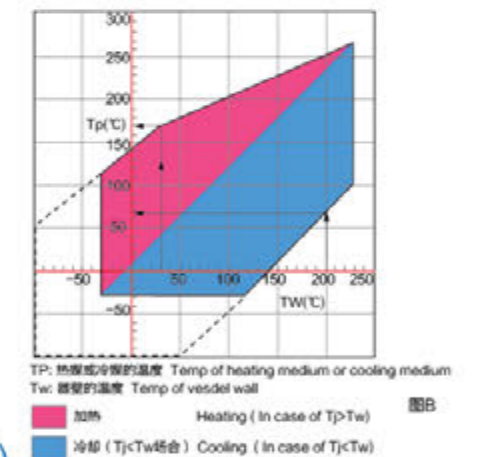
③ 过交点作一条平行于横坐标的水平线，相交于纵坐标上的Tj点。Tjmin = 65°C

(例2) 冷的容器 (Tw = 30°C) 夹套内注入热的液体的场合最大允许温度 (Tj > Tw)

步骤: ① 在图B横坐标轴上找出壁温 Tw = 30°C

② 沿着30°C的点画一条垂线，交于红色区域边缘上一点

③ 过交点作一条平行于横坐标的水平线，相交于纵坐标上的Tj点。Tjmax = 170°C



Heating and Cooling Vessel from the Jacket (Chart B)

(Ex.1) Minimum allowable temperature (Tj < Tw) for pouring cooling medium into the jacket of hot vessel (Tw=200°C)

Procedure:

① Read the temperature (Tw=200°C) of vessel wall on the axis of abscissa in Chart B.

② Draw a perpendicular at the point of 200°C and find an intersecting point on the blue line.

③ Draw a line parallel to the axis of abscissa from the intersecting point on the blue line, and read the intersecting point Tj on the axis of ordinate. Tj min=65°C.

(Ex.2) Maximum allowable temperature (Tj > Tw) for pouring heating medium into the jacket of cold vessel (Tw=30°C)

Procedure:

① Read the temperature Tw=30°C of the vessel wall on the axis of abscissa in Chart B.

② Draw a perpendicular at the point of 30°C and find an intersecting point on the red line.

③ Draw a line parallel to the axis of abscissa from the intersecting point on the red line, and read the intersecting point Tj on the axis of ordinate. Tj max=170°C.

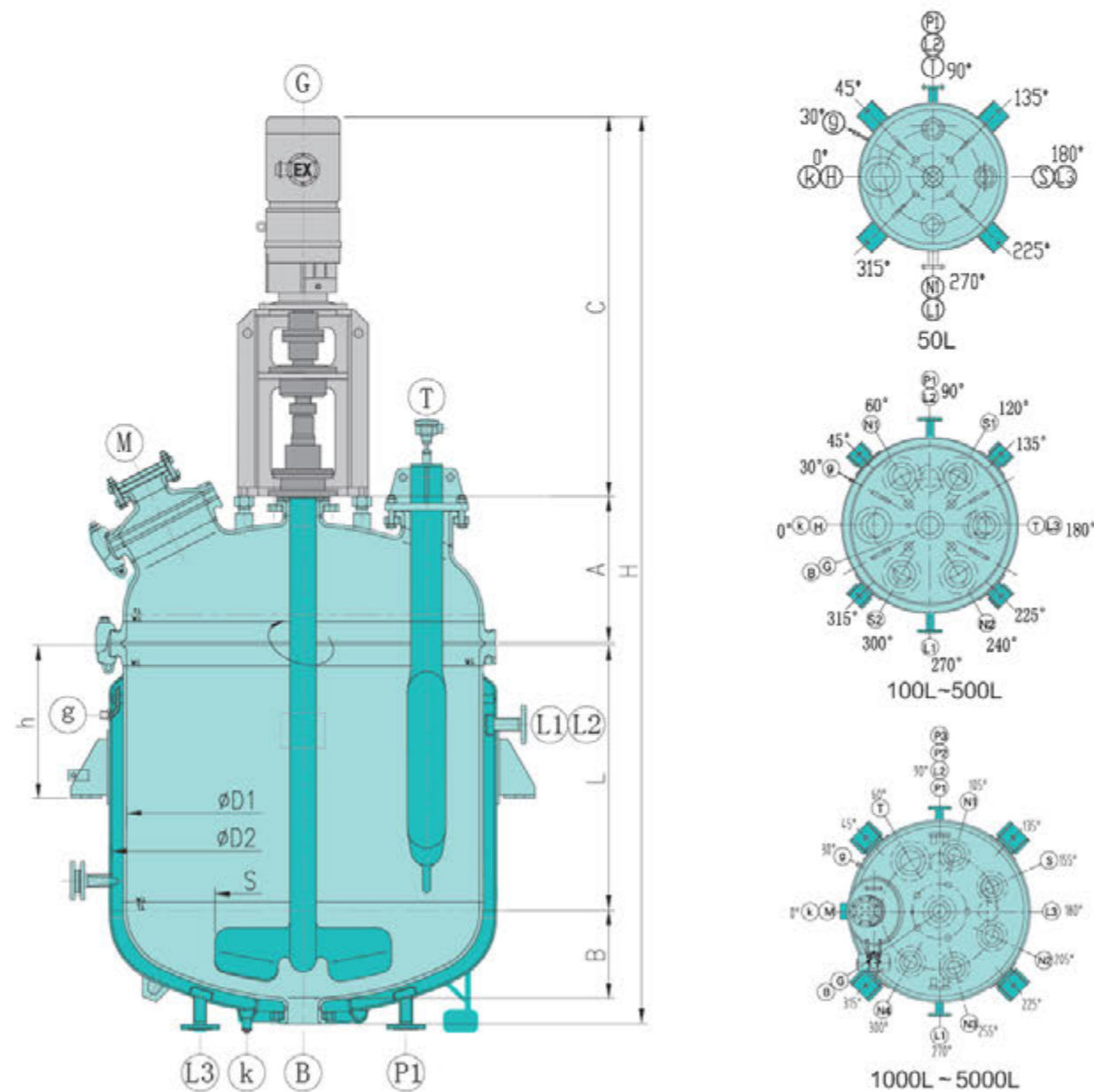
标准型搪玻璃开式反应釜 OR Standard glass lined reactor (Open type) OR

■ OR 系列 (GB/T 25027-2010)

1. 设计压力: 罐内 FV-0.4 MPa 夹套 0.6MPa
2. 搅拌桨: 两叶式、四叶式、三叶后掠式、桨式、锚式、框式、推进式等
3. 轴封: 干磨式机械密封
4. 减速机: 立式斜齿轮减速机

■ OR series (GB/T25027-2010)

1. Design pressure: Vessel FV-0.4MPa Jacket 0.6MPa
2. Agitator type: Two vane type, Four vane type, Impeller type, Paddle type, Anchor type, Frame type, Turbine type etc
3. Shaft seal: Dry Contact type Mechanical seal
4. Reducer: Vertical helical geared motor



OR系列开式反应罐主要参数表 OR series reactor (Open type) parameter

系列 Model No	OR系列 OR series									
公称容积 Capacity (L)	50	100	200	300	500	1000	1500	2000	3000	5000
D1 mm	500	600	700	800	900	1200	1300	1450	1600	1750
D2 mm	600	700	800	900	1000	1300	1450	1600	1750	1900
L mm	250	325	495	575	750	875	1050	1063	1385	1948
A mm	265	310	340	380	405	480	505	553	595	633
B mm	150	175	200	225	250	325	350	387.5	425	462.5
C mm	750	830	830	925	925	1210	1235	1245	1315	1540
H mm	1480	1720	1955	2195	2430	3020	3270	3383	3860	4710
S mm	250	300	350	400	450	600	650	725	800	875
h mm	260	330	380	380	480	520	600	600	600	600
E mm	60	60	60	60	60	60	100	100	100	100
实际容积 Actual Capacity (m ³)	0.1	0.18	0.33	0.49	0.75	1.59	2.14	2.79	4.1	6.4
传热面积 Heat transfer area (m ²)	0.54	0.85	1.4	1.9	2.8	4.8	5.7	6.7	9.3	13.7
电机功率 Motor Power (kw)	0.55	0.75	1.1	1.5	2.2	3.0	3.0	4.0	5.5	7.5
设备重量 Weight (kg)	300	350	450	600	800	1700	2000	2500	3500	4800

管口规格表 Nozzle size

公称容积(L) Capacity	M	H	G	T	S	S1 S2	N1	N2	N3 N4	B	L1 L2 L3	P1	P2	P3	g k
50	/	80	50	50	/	50	40	40	/	80	20	20	/	/	G1/2"
100	/	80	65	50	/	50	40	40	/	80	20	20	/	/	G1/2"
200	/	125	65	80	/	80	65	65	/	80	25	25	/	/	G1/2"
300	/	125	100	80	/	80	65	65	/	80	25	25	/	/	G1/2"
500	/	150	100	100	/	100	100	100	/	100	32	32	/	/	G1/2"
1000	400×300	/	100	150	100	/	100	100	100	100	50	50	/	/	G1/2"
1500	400×300	/	100	150	100	/	100	100	100	100	50	50	/	/	G1/2"
2000	400	/	100	150	100	/	100	100	100	100	50	50	50	/	G1/2"
3000	400	/	100	150	100	/	100	100	100	100	50	50	50	50	G1/2"
5000	400	/	125	200	100	/	100	150	100	125	65	65	65	65	G1/2"

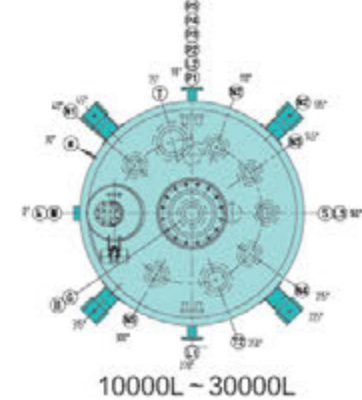
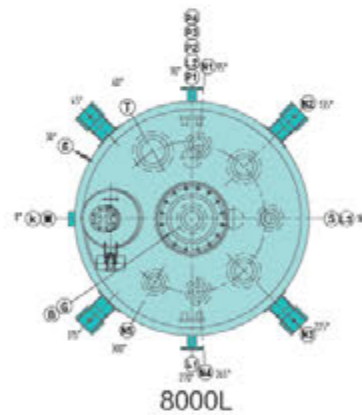
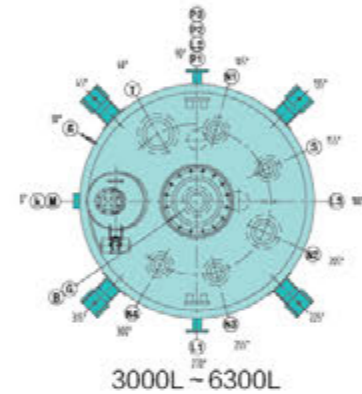
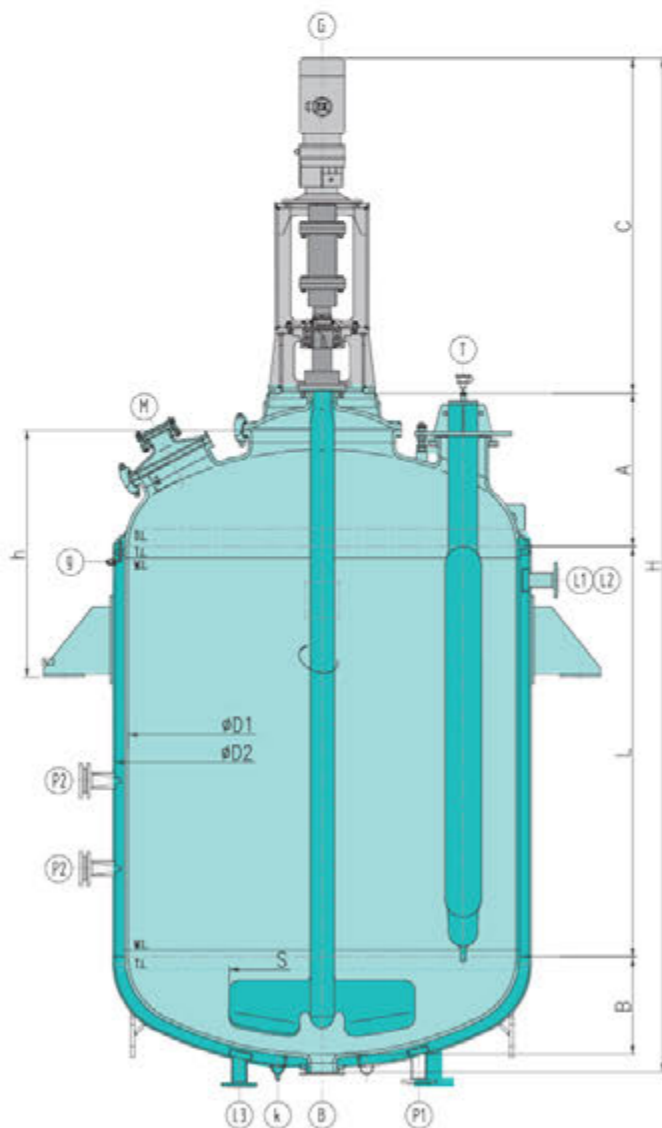
标准型搪玻璃闭式反应釜 CR Standard glass lined reactor (Close type) CR

■ CR 系列 (GB/T 25026-2010)

1. 设计压力: 罐内 FV~0.4 MPa 夹套 0.6 MPa
2. 搅拌桨: 两叶式、三叶后掠式、桨式、推进式等
3. 轴封: 干磨式机械密封
4. 减速机: 立式斜齿轮减速机

■ CR Series (GB/T 25026-2010)

1. Design pressure: Vessel FV~0.4MPa Jacket 0.6MPa
2. Agitator type: Two vane type, Impeller type, Paddle type, Turbine type etc
3. Shaft seal: Dry Contact type Mechanical seal
4. Reducer: Vertical helical geared motor



CR系列闭式反应釜主要参数表 CR series reactor (Close type) parameter

系列 Model No	CR系列 CR series										
公称容积 Capacity (L)	3000	4000	5000	6300	8000	10000	12500	16000	20000	25000	30000
D1 mm	1600	1600	1750	1750	2000	2200	2400	2600	2800	2800	3200
D2 mm	1750	1750	1900	1900	2150	2350	2550	2750	2950	2950	3350
L mm	1350	1830	1910	2265	2210	2330	2170	2410	2750	3550	3200
A mm	695	695	715	740	820	885	935	1020	1090	1110	1220
B mm	400	400	437.5	437.5	500	550	600	650	700	700	800
C mm	1325	1355	1540	1540	1580	1650	1650	2140	2230	2230	2700
H mm	3950	4460	4785	5160	5285	5600	5550	6410	6965	7785	8120
S mm	750	750	825	825	1000	1050	1100	1200	1300	1350	1550
h mm	960	960	1000	1000	1150	1200	1300	1400	1500	1500	1750
实际容积 Actual Capacity (m ³)	3.8	4.8	6.0	6.9	9.1	11.7	13.5	17.5	22.8	27.8	34.6
传热面积 Heat transfer area (m ²)	9.7	12.1	14.9	19.9	18.4	21.3	23.1	27.4	33.5	40.6	44.2
电机功率 Motor Power (kw)	5.5	5.5	7.5	7.5	11	11	15	18.5	22	22	30
设备重量 Weight (kg)	3200	3600	4500	5100	7000	8400	9800	12100	14300	17800	21000

管口规格表 Nozzle size

公称容积(L) Capacity	M	G	T	T2	S	N1	N2	N3	N4	N5	B	L1 L2 L3	P2 P3	P4	P5	g k
3000	400	100	200	/	100	100	100	100	100	/	125	50	50	/	/	G1/2"
4000	400	125	200	/	100	100	100	100	100	/	125	50	50	/	/	G1/2"
5000	400	125	200	/	100	100	150	100	100	/	125	65	65	/	/	G1/2"
6300	400	125	200	/	100	100	150	100	100	/	125	65	65	/	/	G1/2"
8000	400	125	250	/	150	150	150	150	150	150	125	80	65	65	/	G1/2"
10000	400	150	250	250	150	150	150	150	150	150	150	80	65	65	/	G1/2"
12500	450	150	250	250	150	150	150	150	150	150	150	80	65	65	/	G1/2"
16000	450	150	250	250	200	200	200	200	200	200	150	100	65	65	65	G1/2"
20000	500	150	300	300	200	200	200	200	200	200	150	100	65	65	65	G1/2"
25000	500	200	300	300	200	200	200	200	200	200	150	100	65	65	65	G1/2"
30000	500	200	400	400	200	200	200	200	200	200	150	100	80	80	80	G1/2"

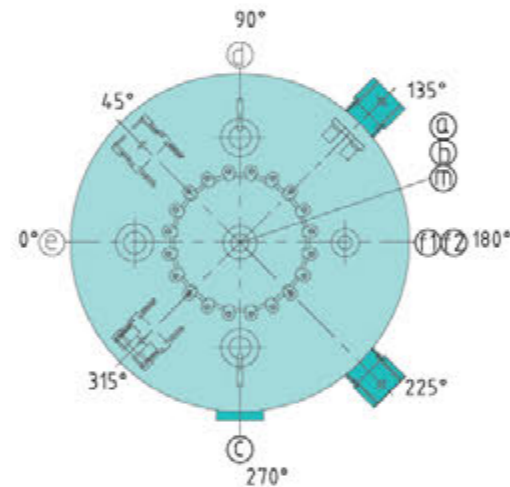
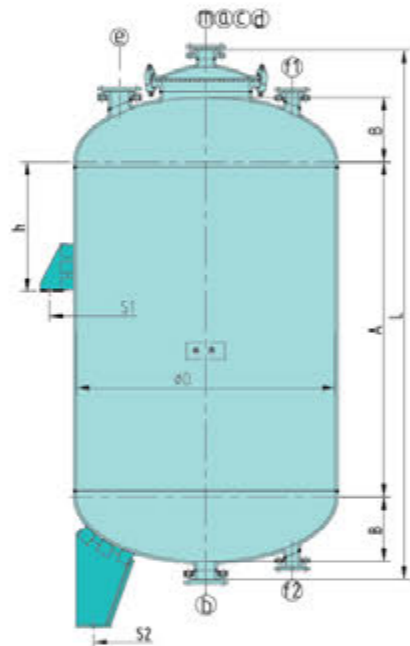
搪玻璃立式贮罐 VS Glass lined tank (Vertical type) VS

■ VS 系列 (HG/T 2374-2011)

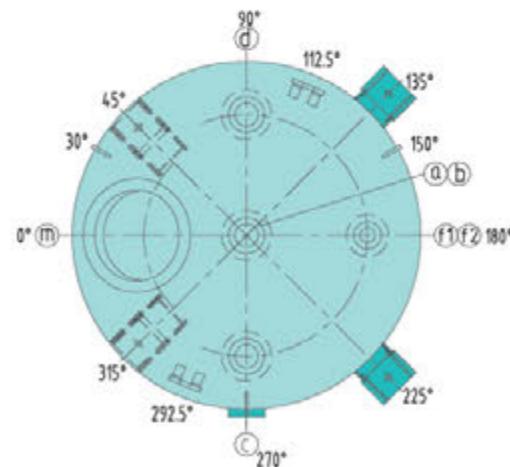
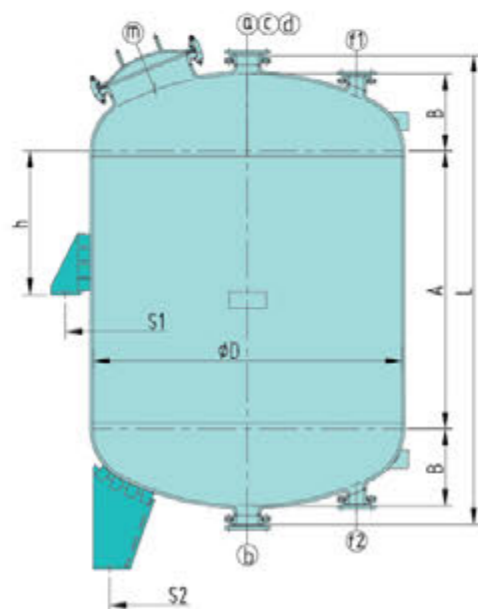
1. 设计压力: FV~0.6 MPa
2. 设计温度: 200℃
3. 介质温度: 0~150℃

■ VS series (HG/T 2374-2011)

1. Design pressure: FV~ 0.6 MPa
2. Design temperature: 200℃
3. Medium temperature: 0℃~ 150℃



1000L ~ 2000L



3000L ~ 35000L

VS 系列立式贮槽主要参数表 VS series glass lined tank (Vertical type) parameter

系列 Model No	VS 系列 VS series								
公称容积 Capacity (L)	D mm	A mm	B mm	L mm	h mm	S1mm	S2mm	实际容积 (L) Actual Capacity	设备重量 (kg) Weight
1000	1000	1100	250	1885	375	1230	850	1140	670
1500	1200	1100	300	2000	600	1430	1040	1700	840
2000	1200	1550	300	2450	600	1430	1040	2200	1000
3000	1500	1350	375	2280	700	1660	1340	3250	1440
4000	1500	2000	375	2925	700	1660	1340	4410	1770
5000	1600	2200	400	3185	700	1865	1440	5500	2320
6300	1750	2340	435	3395	750	2020	1590	7000	2990
8000	1900	2510	475	3660	800	2240	1750	8910	3580
10000	2200	2200	550	3500	800	2420	2000	11140	4400
12500	2400	2260	600	3660	850	2940	2200	13870	5600
16000	2400	3120	600	4520	850	2940	2200	17760	6800
20000	2600	3320	650	4820	900	3230	2400	22210	8490
25000	2800	3580	700	5180	1000	3430	2600	27790	9830
30000	3000	3730	750	5430	1100	3580	2800	33300	11800
40000	3200	4400	800	6200	1400	3730	3000	44000	15450

管口规格表 Nozzle size

公称容积(L) Capacity	m	a	b	c	d	e	f1	f2
1000	400	80	80	/	/	80	65	65
1500	400	80	80	80	80	80	65	65
2000	400	80	80	80	80	80	65	65
3000	400	80	80	80	80	/	65	65
4000	400	80	80	80	80	/	65	65
5000	400	100	100	100	100	/	65	65
6300	400	100	100	100	100	/	65	65
8000	400	100	100	100	100	/	65	65
10000	450	100	100	100	100	/	65	65
12500	450	100	100	100	100	/	65	65
16000	450	100	100	100	100	/	65	65
20000	450	100	100	100	100	/	65	65
25000	450	100	100	100	100	/	65	65
30000	500	100	100	100	100	/	65	65
40000	500	100	100	100	100	/	65	65

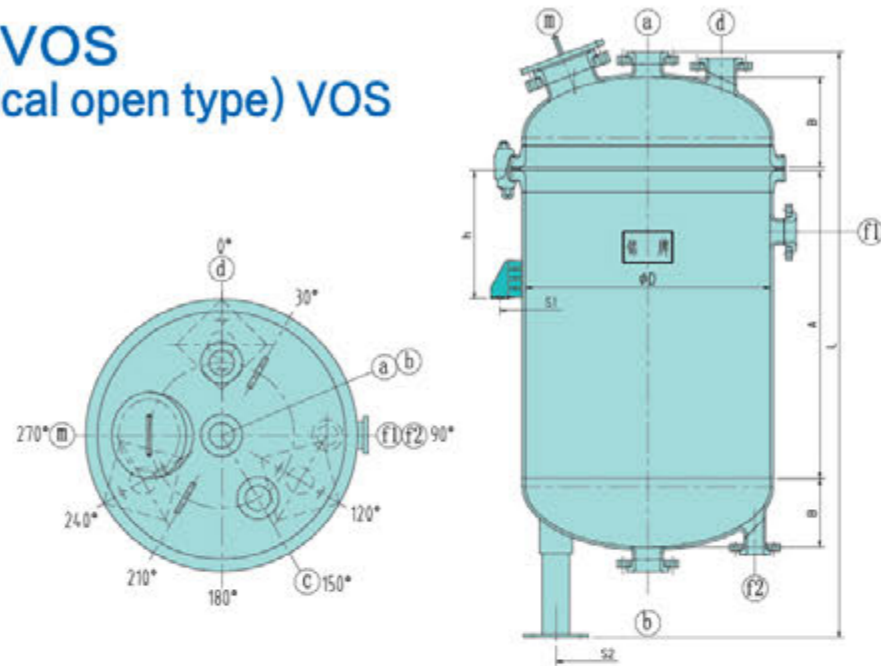
搪玻璃立式开式贮罐 VOS Glass lined tank (Vertical open type) VOS

■ VOS 系列 (HG/T 2373-2011)

1. 设计压力: FV~0.6 MPa
2. 设计温度: 200℃
3. 介质温度: 0~150℃

■ VOS series (HG/T 2373-2011)

1. Design pressure: FV~0.6 MPa
2. Design temperature: 200℃
3. Medium temperature: 0℃~150℃



VOS 系列立式开式贮罐主要参数表 VOS series glass lined tank (Vertical open type) parameter

系列 Model No	VOS 系列 VOS series								实际容积 (L) Actual Capacity	设备重量 (kg) Weight
公称容积 Capacity (L)	D mm	A mm	B mm	h mm	S1mm	S2mm	~L mm			
50	400	275	175	-	520	260	1080	61.3	150	
100	500	450	200	170	640	360	1245	121	210	
200	600	645	235	170	740	440	1520	240	280	
300	700	700	260	170	844	540	1661	363	380	
500	800	1015	270	170	944	640	1936	590	530	
1000	1000	1225	345	180	1230	850	2248	1112	860	
1500	1200	1225	395	180	1410	1040	2378	1674	1120	
2000	1300	1425	395	180	1515	1140	2603	2219	1470	
3000	1450	1630	480	200	1665	1290	3011	3336	1970	
4000	1600	1890	480	200	1865	1440	3258	4450	2560	
5000	1600	2465	505	200	1865	1440	3808	5560	2910	

管口规格表 Nozzle size

公称容积Capacity(L)	m	a	b	c	d	f1	f2
50	100	65	65	65	65	65	65
100	100	65	65	65	65	65	65
200	125	65	65	65	65	65	65
300	125	80	80	80	80	65	65
500	150	80	80	80	80	65	65
1000	400	80	80	80	80	65	65
1500	400	100	100	80	80	65	65
2000	400	100	100	80	80	65	65
3000	400	125	125	100	100	65	65
4000	400	125	125	100	100	65	65
5000	400	125	125	100	100	65	65

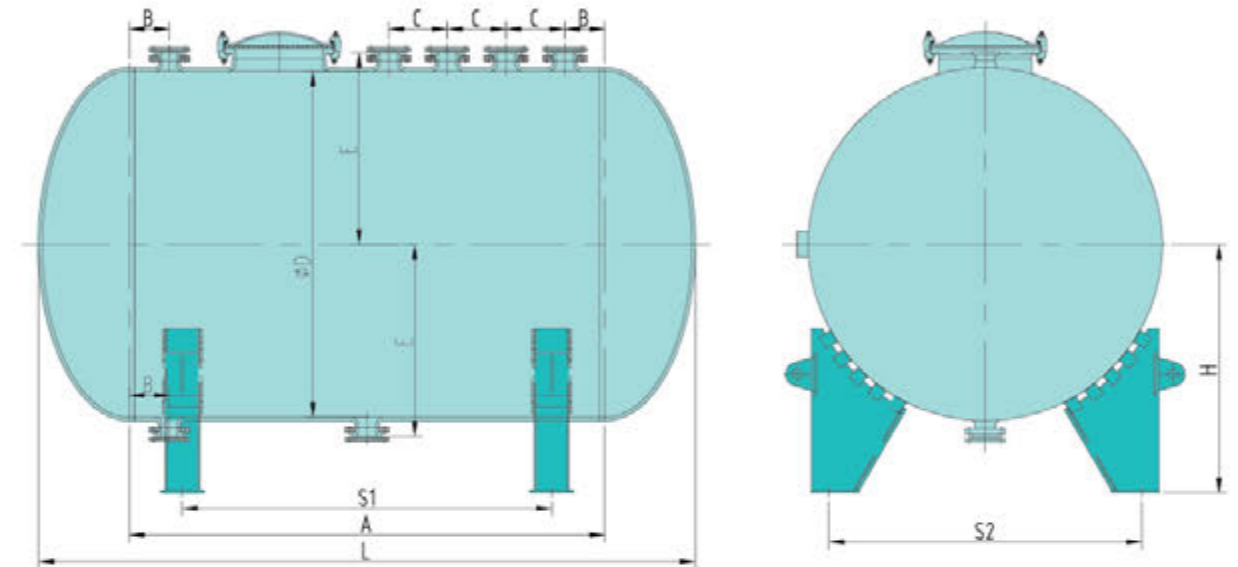
搪玻璃卧式贮罐 HS Glass lined tank (Horizontal type) HS

■ HS 系列 (HG/T 2375-2011)

1. 设计压力: FV~0.6 MPa
2. 设计温度: 200℃
3. 介质温度: 0~150℃

■ HS series (HG/T 2375-2011)

1. Design pressure: FV~0.6 MPa
2. Design temperature: 200℃
3. Medium temperature: 0℃~150℃



HS 系列卧式贮罐主要参数表 HS series glass lined tank (Horizontal type) parameter

系列 Model No	HS 系列 HS series												
公称容积(L) Capacity	D mm	A mm	L mm	H mm	B mm	C mm	E mm	S1 mm	S2 mm	人孔M Manhole mm	管口规格 数量×口径 Nozzle size qty×caliber	实际容积(L) Actual Capacity	设备重量(kg) Weight
1000	1000	1250	1770	750	125	250	585	950	800	400	4×80A	1150	800
1500	1000	1850	2370	750	145	260	585	1550	800	400	4×80A	1600	850
2000	1200	1700	2324	850	145	260	685	1400	1000	400	4×80A	2200	1100
3000	1300	2050	2728	900	160	270	735	1600	1100	400	6×80A	3200	1550
4000	1500	2050	2832	1000	160	270	835	1600	1250	400	7×80A	4500	2050
5000	1600	2190	3022	1100	160	270	885	1790	1400	400	7×80A	5500	2330
6300	1750	2340	3251	1225	180	310	965	1830	1500	400	7×100A	7000	2820
8000	1900	2480	3416	1300	180	310	1040	1900	1600	400	7×100A	8800	3530
10000	2000	2830	3966	1400	180	310	1090	2200	1700	450	8×100A	11000	4200
12500	2000	3730	4766	1400	180	310	1090	3000	1700	450	8×100A	13900	4600
16000	2200	3920	5060	1500	310	330	1200	3180	1800	450	8×100A	17750	6200
20000	2400	4100	5340	1600	310	330	1300	3350	1900	450	8×100A	22000	7900
25000	2600	4140	5484	1700	315	340	1410	3360	2000	450	8×100A	26560	9500
30000	2800	4260	5708	1800	315	340	1510	3400	2100	500	8×100A	31960	11000
40000	3000	4990	6540	1900	315	340	1610	4000	2200	500	8×100A	42330	13500

碳化硅列管式热交换器 SIC(silicon carbide) shell and tube type heat exchanger

- 创新的密封结构形式
- 无压紧力安装更安全
- 极高的传热系数
- 广泛的耐腐蚀性能
- 极高的抗磨强度, 经久的使用性能
- Innovative sealing structure type
- Safeties with non strict pressure install
- More higher heat transfer coefficient
- Widely corrosion resistance
- Extremely high wear resistance, durable use performance



■ 碳化硅特性 SIC Character

碳化硅管有反应烧结和无压烧结两种, 无压烧结在200℃以内, 几乎对目前已知的化学物质呈惰性。我公司采用的无压碳化硅管有极高的耐腐蚀性能, 并使用氢氟酸、溴素、硝酸、混酸以及有机氯产品进行了严格的测试。反应烧结碳化硅管除了氢氟酸, 高浓度硫酸和硝酸外, 对大部分化学物质有很好的抗磨性能。

Choice best SIC tube which is composed of reactive sintering and superfine SIC particle, it almost show inert to all known chemicals within 200degree, Our SIC tubes are highly resistant to corrosion and have been test with hydrofluoric acid, bromine, nitric acid, mixtures acid and chlorinated organic products

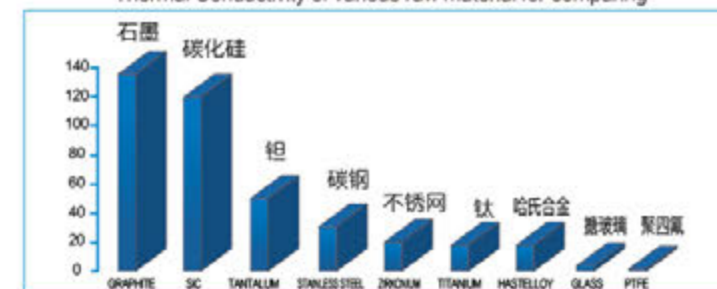
- 优良的机械性能: 每一根碳化硅管都经过压力测试, 确保其安全性和机械性能。
- 高耐磨性: 硬度相当高, 比碳化钨硬度高50%, 碳化硅管非常耐磨损, 可允许采用较高的介质流速, 以改善热交换效率。
- 抗渗透性好: 我公司使用的碳化硅管不含其他填充物, 因此, 即使在很高的温度和压力下, 完全能耐受各种液体或气体的腐蚀, 长期使用不会渗漏, 在高纯度运用场合能避免污染物料。
- 极高的热传导率: 碳化硅的导热系数接近纯石墨, 远高于其他耐腐蚀材料 (PTFE、玻璃、填充石墨、复合的特殊合金、贵金属等), 这意味着有更好的换热效率, 需要的换热面积和占用的空间会更小, 所能获得的最高传热系数高达 1400W/m²K。

■ 碳化硅管物理性能 SIC tubes physical properties

性能参数 Properties	单位 Units	数值 Value
成份 Composition		SiC
密度 Density	g/cm ³	3.1
粒度 Grain Size	μm	4-6
努氏硬度 Knoop Hardness	Kg/mm ²	2800
弯曲强度 Flexural Strength	MPa	380
压缩强度 Compressive Strength	MPa	3900
弹性模量 Elasticity Modulus	GPa	410
韦伯模量 Weibull Modulus	GPa	8
最大操作温度 (空气) Max operating temperature(Air)	℃	1650
20℃时平均比热 Mean Specific heat at 20 degree	kJ/kg · K	0.67
导热系数 Thermal Conductivity	W/m · K	105-125
渗透率 (20-1000℃) Permeability(20 to 1000℃)		在31MPa内能抵抗所有气体渗透 Proof against all gases up to 31MPa
20℃时电阻率 Electrical Resistivity at 20 degree	Ohm · cm	10 ² -10 ⁶

各类材料的导热系数对比

Thermal Conductivity of various raw material for comparing



■ 无压烧结碳化硅管耐腐蚀性能性能指标 Pressureless sintering of silicon carbide tube corrosion resistance performance

化学介质 Chemical medium	温度 Temperature (℃)	腐蚀速率 Corrosion rate mg/(cm ² · y)
98% H ₂ SO ₄	100	1.8
85% H ₃ PO ₄	100	< 0.2
53% HF	25	< 0.2
50% NaOH	100	2.5
45% KOH	100	< 0.2
70% HNO ₃	100	< 0.2
37% HCl	86	< 0.2
10% HF + 57% HNO ₃	25	< 0.2

- Excellent Mechanical Properties: Each SIC tube is tested to guarantee it's safety and mechanical reliability.
- High Resistance to erosion: Hardness is very high, 50% higher than tungsten carbide, SIC tubes is very resistant to erosion, it allows a higher fluid velocity to improve the heat exchange efficiency.
- High cleanliness and resistance to permeation: Sic tubes which our company used is pure, it didn't contains any other filler, it is totally resistant to all fluids and gases even at high temperature and pressure, it avoids contamination in high purity applications.
- High Thermal Conductivity: Thermal conductivity of SIC is similar to Graphite and much higher than other corrosion resistance materials (PTFE, glass, compound special alloys, noble metals).

■ 反应烧结碳化硅管耐腐蚀性能性能指标 Reaction sintered silicon carbide tube corrosion resistance performance

腐蚀介质 Chemical medium	温度 Temperature (℃)	腐蚀速率 Corrosion rate mg/(cm ² · y)
98% H ₂ SO ₄	100	59
65% HNO ₃	100	2.4
37% HCl	86	1.6
85% H ₃ PO ₄	100	9.2
50% NaOH	100	≥ 1000
45% KOH	100	≥ 1000
54% HF	RT	35
10% HF (65%) + HNO ₃ (65%)	RT	≥ 1000
10% HF (65%) + HNO ₃ (65%)	100	≥ 1000

附注: 样品浸没在高压釜中腐蚀介质中, 放置到烘箱中测试, 测试时间 2 周。失重 ≥ 1000, 几天内损坏; 100-999, 寿命一个月; 50-99, 寿命一年; 10-49, 长期使用, 特殊工况慎用; 0.3-9.9, 长期使用。≤ 0.2, 长期使用, 制品表面无任何腐蚀。

Note: sample immersion corrosion medium in the autoclave, place into the oven test, test for 2 weeks. Weightlessness ≥ 1000, damage within a few days; 100-999, one month; 50-99, one year; 10-49, use for a long time, special conditions careful; 0.3-9.9, use for a long time. ≤ 0.2, use for a long time, product surface without any corrosion.

■ 碳化硅换热器的结构特点 The structure characteristics of silicon carbide heat exchanger

换热器是有无压 φ 19 × 2mm 和 φ 14 × 1.5mm 以及反应 φ 25 × 4mm 和 φ 30 × 5mm 碳化硅管, PFA 模压管板以及壳体组成, 在碳化硅管两端均有独立的密封组件, 与物料接触只有 F4 件和碳化硅管。Standard length φ 19 × 2.5mm and φ 26 × 3mm silicon pipe can be used in any nominal diameter shell, there are O type seal of each pipe's end. Only PTFE and silicon tube contact with the material.

新型双管板结构 New double tube plate structure

双管板结构具有可靠性高, 寿命长的优点, 由以下部件组成:

- 1) 一个衬 PFA 主管板, 在化工物料一面, 安装 F4 密封件, 起到很好的抗防腐性能。
 - 2) 一个副管板, 含有密封组件 (弹性橡胶圈, 304 不锈钢套)。
- 主管板为碳钢或不锈钢基体, 衬 PFA 或 FEP, 衬层最小厚度为 3.5mm, 以保证耐腐蚀性能。
 - 密封组件包含一只 F4 型圈及一只弹性圈以及不锈钢套, 通过主副管板压紧在密封槽内, 以获得良好的永久的密封性能。

Double tube plate structure with high reliability, long life advantages, consists of the following parts

- 1) A primary board, used to install carborundum tube
 - 2) A vice board, contain seal assembly (o-rings, compression set).
- Primary board is carbon steel or stainless steel PFA or FEP lined min, Thickness 3.5mm, to ensure that the corrosion resistance
 - Seal component contains a "O" type circle and a compact set, through the vice tube sheet pressure. Within the seal groove, in order to obtain good sealing performance.

双管板设计的优点 The advantages of double tube plate design

- 碳化硅管不承受机械压力和拉力, 热应力通过密封组件释放
- 碳化硅管子与管板在冷热变化中实现可靠的密封, 长期使用零渗透
- 维护简便, 在现场维护不需要专用工具, 任何部件可快速更换
- 广泛的化学耐蚀性, 与介质接触部件均由耐蚀良好的材料制成
- 可按客户要求制作成水平或垂直的安装结构
- Carborundum tube not withstand mechanical compaction force and tension, the thermal stress is released through the o-rings
- Carborundum tube and sheet perfect sealing
- Good mechanical stability (There is no metal kernel with PTFE board)
- Easy maintenance, no need special tools, any parts can be replaced rapidly
- Chemical corrosion resistance, contact with the medium parts are made of corrosion resistant materials
- Can be produced according to customer requirements or vertical structure

更宽范围的材料选用 A wide range of material selection

根据工况条件和介质特性, 与腐蚀介质接触的部件, 可选用搪玻璃、304L 或者 316L 不锈钢, 特制的 PTFE 密封圈。我们的工程师会为您分析实际的问题, 并给出最佳的解决方案。

According to the working condition and the media features can chose glass lined, 304L or 316L stainless steel Zinc plated carbon steel or ETFE coated. PTFE o-rings or Fluorine rubber. Our engineer will provide you analysis of practical problems, and give the best solution.

常规换热器部件可选材料 Heat exchanger parts optional materials

部件 parts	腐蚀介质走管程 medium through
壳体 body	碳钢、搪玻璃, 衬 F4 Carbon steel galvanized, glass lined, F4
换热管 heat exchanger pipe	无压 φ 19 × 2mm φ 14 × 1.5mm 反应 φ 25 × 4mm φ 30 × 5mm
主管板 main pipe plate	CS/PFA、304L/PFA、304L/FEP
副管板 vice pipe plate	碳钢, 碳钢镀锌, 304L 或 316L Carbon steel galvanized 304L or 316L
封头 end cover	搪玻璃, glass lined 304L、316L、喷涂 PFA ETFE 模压 F4

■ 碳化硅换热器的主要参数 Main parameters

- 标准的法兰连接为 PN10 或者 ANSI 150 lbs, 若需要其他的法兰连接尺寸, 请在订单内标明。
- 腐蚀介质走壳程或管程均可实现, 如未标明, 以走管程为标准产品。
- 水平或垂直安装, 支座位置, 均可由客户指定。
- 换热器详细安装尺寸及图纸请咨询我公司技术部获得。
- Standard Flange PN10 or ANSI 150lbs, other standard size can be manufactured on request.
- Corrosive medium can through from the shell and the pipe, if there is no special indicate standard through pipe.
- Horizontal or vertical installation, support position, can be specified by the customer.
- Detailed installation dimensions and drawings please consult technical department.



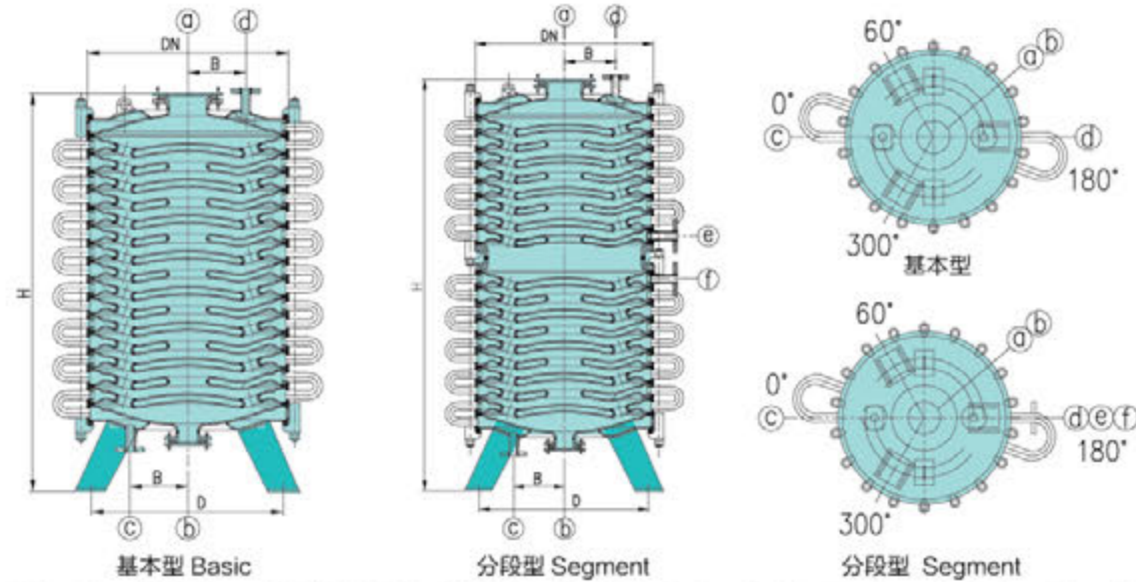
搪玻璃多孔片式冷凝器 W Glass lined plate condenser W

■ W 系列 (HG/T 4298-2012)

1. 设计压力: 器内FV-0.1 MPa 夹层0.3 MPa
2. 设计温度: 200°C

■ W series (HG/T 4298-2012)

1. Design pressure: Vessel FV-0.1MPa Jacket 0.3 MPa
2. Design temperature: 200°C



类别 Type	冷凝片数 Condensation pieces qty	搪玻璃环数量 Glass lined ring qty	冷凝面积m² Condensation area	DN mm	D mm	B mm	H mm	a mm	b mm	c,d mm	e,f mm	重量kg Weight
W-0.63	3	/	2.4	695	670	190	660	150	80	25	/	270
	5	/	4				800					360
	7	/	5				930					450
	9	/	6				1070					540
	11	/	7.5				1210					630
	13	/	9				1350					720
	15	/	10				1480					810
	17	1	11				1740					945
W-1	19	1	12	860	810	200	1880	150	100	32	/	1035
	5	/	6				850					615
	7	/	8				990					650
	9	/	10				1130					785
	11	/	12				1270					920
	13	/	14				1410					1055
	15	/	16				1540					1190
	17	1	18				1810					1390
	19	1	20				1950					1525
	21	1	22				2080					1660
	23	1	24				2220					1795
W-2	25	1	26	1050	860	255	2360	150	100	40	/	1930
	27	2	28				2630					2130
	29	2	30				2770					2265
	1	/	4				650					399
	2	/	6				720					509
	3	/	8				810					619
	4	/	10				890					729
	5	/	12				960					830
	6	/	14				1040					949
	7	/	16				1120					1059
	8	/	18				1200					1169
	9	/	20				1280					1279
	10	/	22				1360					1389
	11	/	24				1430					1499
12	/	26	1510	1609								
13	/	28	1590	1719								
14	/	30	1670	1829								
15	/	32	1740	1939								
16	1	34	1970	2099								
17	1	36	2050	2209								
18	1	38	2130	2319								
19	1	40	2210	2429								
20	1	42	2290	2539								
21	1	44	2360	2649								

搪玻璃新型片式冷凝器与普通型冷凝器性能参数对比表

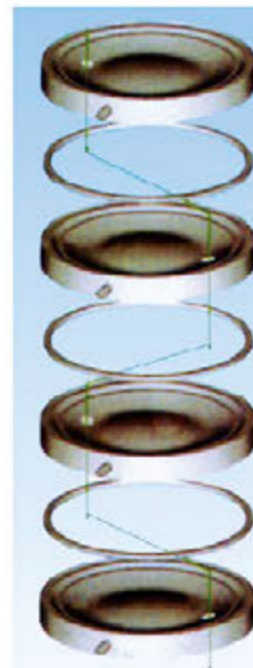
Glass lined plate type condenser and the ordinary type condenser performance table

对比项目 Contrast project	市场普通型 Market common type			新型(多孔) New type (More holes)		
	P0.5	P1	P2	W-0.63	W-1	W-2
热交换效率 Heat exchange efficiency	a	a	a	1.5a	1.5a	1.5a
水夹层高度 Height of water interlayer	54	58	64	19	21	25
水过流速度 Overflow speed of water	慢 Slow	慢 Slow	慢 Slow	很快 Very quick	很快 Very quick	很快 Very quick
有无折流板 With traverse baffle or not	无 N/A	无 N/A	无 N/A	有 Available	有 Available	有 Available
水垢沉积情况 With scale or not	易沉积 Easy deposition	易沉积 Easy deposition	易沉积 Easy deposition	不易沉积 Hard deposition	不易沉积 Hard deposition	不易沉积 Hard deposition
垫片型式 Type of gasket	A II	A II	A II	A I	A I	A I
垫片厚度(mm) Thickness of gasket mm	30	30	30	10	10	10
耐真空性能 Vacuum resistance	差 Poor	差 Poor	差 Poor	优 Excellent	优 Excellent	优 Excellent
质保期 Warranty	半年 Half year	半年 Half year	半年 Half year	1年 One year	1年 One year	1年 One year
搪玻璃釉 Enamel	普通釉 Ordinary glazed	普通釉 Ordinary glazed	普通釉 Ordinary glazed	进口釉 Imported glaze	进口釉 Imported glaze	进口釉 Imported glaze
设备总高 Total height	较高 High	较高 High	较高 High	较低 Lower	较低 Lower	较低 Lower

- 垫片 I 类材料为石棉纤维板外包四氟, II 类材料为丁腈橡胶外包四氟。

The gasket type I material is asbestos fiber and the corrugated ring outsourcing tetrafluoroethane, II class material for nitrile rubber outsourcing tetrafluoroethane.

普通型片式冷凝器



由于采用比进料口径小很多的单个开孔(交叉180°叠放组合),故设备流体阻力非常大,不适合在高真空场合下使用。流体在两片单孔之间易产生短路现象,冷凝片死区较多;冷却水流速慢,无折流板易短路,故换热效果很差。

垫片内垫层为厚度20mm橡胶,设备开停车时热胀冷缩变形大,易泄漏,尤其在真空使用时容易被吸入器内。

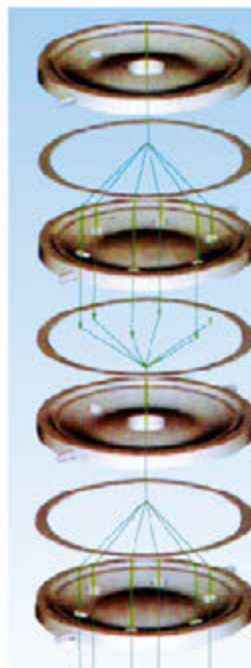
Common plate-type condenser

The smaller single home opening (reciprocal chiasmata 180°) can increase the fluid resistance, so the distribution of the gas is uneven and easy to cause bias current, thus it is not proper to use in vacuum.

It has great thickness and slow speed of cooling water, so it's easy to have scale with low heat exchange efficiency.

It usually uses the gasket above 20mm, the expansion and shrinkage are great and easy to be deformed with low pressure resistance, especially in the higher vacuum, it usually causes leakage.

新型片式冷凝器



采用多孔设计,设备流体阻力非常小,特别适合在高真空场合下使用(真空可达130Pa)。结构新颖,流体在冷凝片内产生强制对流,无死区;水夹层薄,独特的折流板设计,加快冷却水流速,无死区,不易结垢,故换热效果非常好。

一般情况使用F4石棉板垫片,当负压低于5mm汞柱时,垫片选用F4石棉板垫片,内夹不锈钢波纹板,设备开停车时,热胀冷缩变形小,不易泄漏,在真空时,杜绝垫片被吸入器内的现象。

New plate-type condenser

As for the disadvantages of common plate-type condenser, it implements research, improvement, experiment, trial run and test to obtain new design, and now it has promoted new plate-type condenser. The equipment can be used for higher vacuum dissolution device (the pressure is up to 130Pa), so which improves the decreasing and leakage of pressure.

It adopts six-hole design to reduce the thickness of condensing piece and promote the speed of cooling water. Compared with the common condenser with the same area, the heat transfer efficiency has increased above 50% and is hard to form scale.

It uses the gasket of 10mm with small expansion and shrinkage and high pressure resistance.

搪玻璃薄膜蒸发器 WFE Glass lined evaporator WFE (Wiped Film Evaporator)

■ WFE 系列 (HG/T 4299-2012)

1. 设计压力: 罐内 FV-0.25 MPa 夹套 0.6MPa

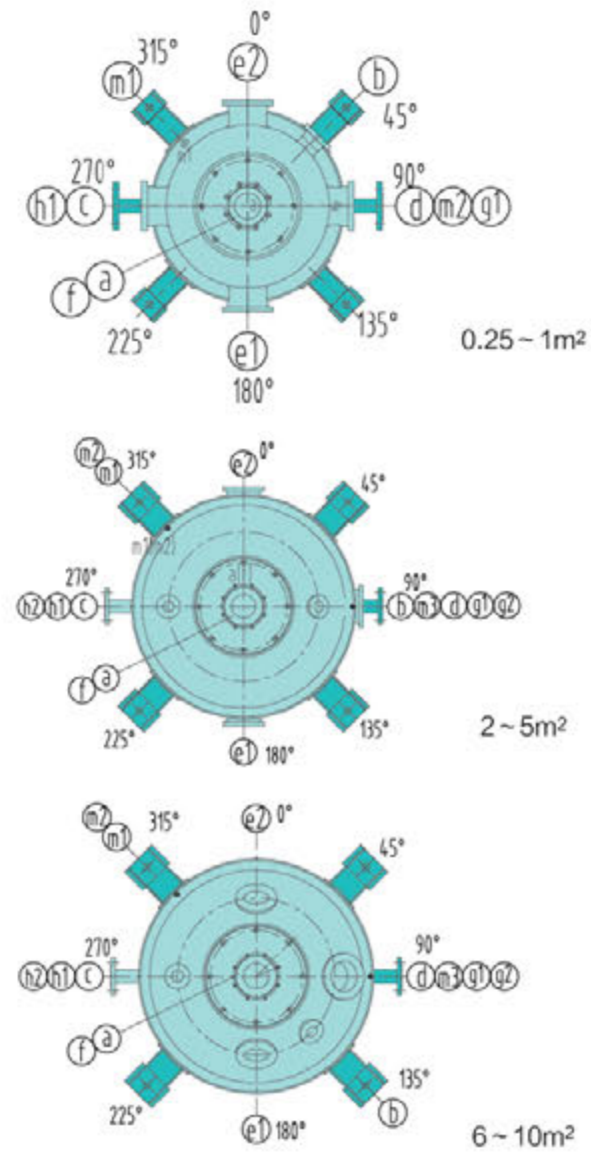
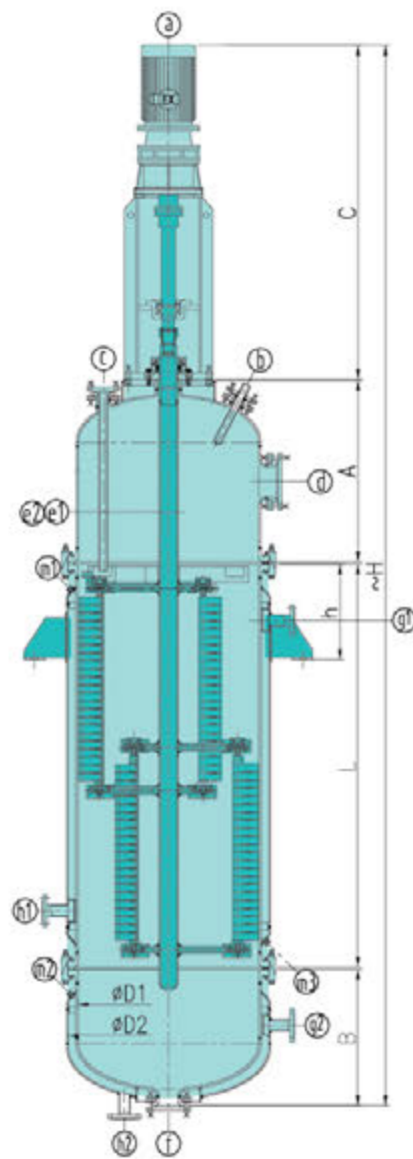
搪玻璃薄膜蒸发器内部与液态或气态物料直接接触的部位均为玻璃或PTFE等非金属材料, 特别适用于强腐蚀性介质蒸发、禁止金属离子析入的物料、高粘度物料处理、热敏性物料处理以及高沸点物料的蒸发处理等场合。

■ WFE series (HG/T 4299-2012)

1. Design pressure: Vessel FV-0.25 MPa Jacket 0.6MPa

Film Evaporator is designed to evaporate a liquid material by making it a thin film under vacuum and at lower temperature. Without thermal attack to the material to be treated.

Accordingly, this evaporator is best suited for refining, condensation, de-odorizing, etc. And for substances which are heat-sensitive.



WFE系列搪玻璃薄膜蒸发器主要参数表 WFE series Glass-Lined Film Evaporator parameter

系列 Model No	WFE系列 WFE series									
规格型号 Reactor size	0.25	0.5	1.0	2.0	3.0	4.0	5.0	6.0	8.0	10
D1 mm	219	300	500	600	600	800	900	900	1000	1200
D2 mm	325	400	600	700	700	900	1000	1000	1100	1350
L mm	650	800	900	1350	1850	1830	2010	2500	2800	3050
A mm	385	425	650	845	845	880	905	905	925	1310
B mm	185	205	265	545	545	650	680	680	705	760
C mm	900	1155	1225	1380	1380	1668	1653	1590	1890	1307
H mm	2150	2615	3070	4150	4650	5057	5280	5705	6350	6460
h mm	330	350	365	475	475	475	475	800	800	800
传热面积 Heat transfer area (m ²)	0.31	0.57	1.08	2.1	3	4.04	5.11	6	8.0	11.5
电机功率 Motor power (kw)	0.75	1.5	1.5	2.2	3.0	4.0	5.5	5.5	7.5	7.5
设备重量 Weight (kg)	245	385	626	1090	1380	1872	2370	3017	3500	5000

●表中所列的传热面积不包括下封头的传热面积。
Listed in the table of the heat transfer area not including the down head's heat transfer area.

管口规格表 Nozzle size

规格型号 Reactor size	a	b	c	d	e1	e2	f	g1	g2	h1	h2	m1	m2	m3
WFE-0.25	50	50	/	50	/	/	25	20	/	20	/	G1/2"	/	G1/2"
WFE-0.5	65	50	/	65	/	/	50	25	/	25	/	G1/2"	/	G1/2"
WFE-1.0	80	50	/	100	100	100	65	40	/	40	/	G1/2"	/	G1/2"
WFE-2.0	125	50	50	125	100	100	80	50	50	50	50	G1/2"	G1/2"	G1/2"
WFE-3.0	125	50	50	125	100	100	80	50	50	50	50	G1/2"	G1/2"	G1/2"
WFE-4.0	125	50	50	150	100	100	80	50	50	50	50	G1/2"	G1/2"	G1/2"
WFE-5.0	125	50	50	200	100	100	100	50	50	50	50	G1/2"	G1/2"	G1/2"
WFE-6.0	125	50	50	200	100	100	100	65	50	50	50	G1/2"	G1/2"	G1/2"
WFE-8.0	150	50	65	250	125	125	100	65	50	50	50	G1/2"	G1/2"	G1/2"
WFE-10	150	50	65	300	125	125	100	80	50	50	50	G1/2"	G1/2"	G1/2"

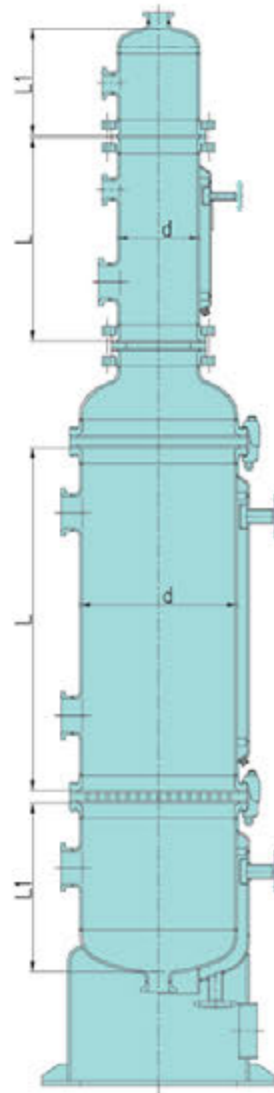
●可根据客户的特殊要求变更管口数量或规格。
Special size can be customized on request.

搪玻璃塔节 Glass lined columns

- 设计温度: 0℃ ~ +200℃
设计压力: 塔内FV~0.25MPa 夹套 0.6MPa
Design temperature: 0℃ ~ +200℃
Design pressure: column inner FV~ 0.25MPa Jacket 0.6MPa

DN	d mm	L max mm	L1 max mm	组装形式 Assembling form
200	219	3000	-	活套法兰 Loose flange
250	273	3000	-	
300	325	3000	500	
400	406	3000	750	
500	508	3000	1000	卡子安装 Clip assembling
600	600	4000	1400	
800	800	4500	2000	
1000	1000	4500	2500	
1200	1200	6000	4000	
1400	1400	6000	4000	
1600	1600	6000	4000	
1800	1800	6000	4000	
2000	2000	6000	4000	

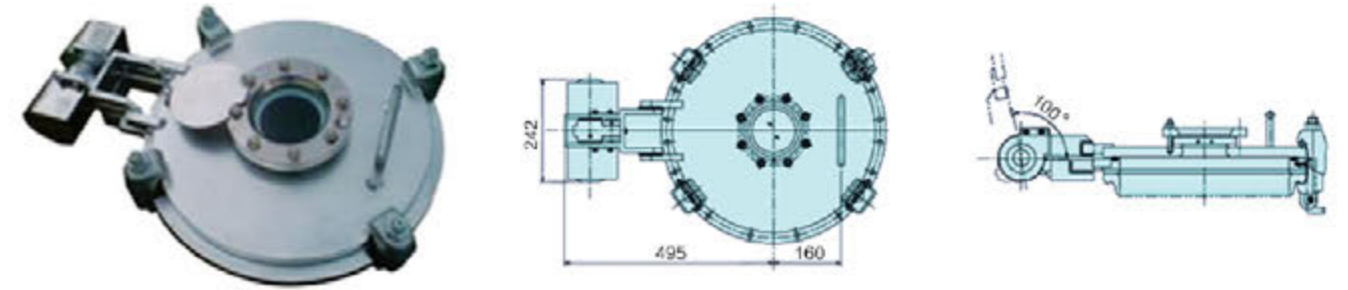
- 塔节管口及附件根据客户要求定制。
Column section nozzle and accessories can be customized.



弹簧平衡式开关装置 Spring balance switch device

此装置是为了方便地开关人孔盖而设计。通过调整内部弹簧的扭力，最大可以开关50kg的重量。由于人孔盖下面安装搪玻璃保护环，这种安全的设计有效地保护了人孔不受损坏。本开关装置采用国外最新型的设计，结构紧凑、外形美观，能有效地降低工人的作业强度。

This device has been developed for facilitating opening and closing of the manhole cover. Up to 50kg load of opening and closing load can be applied by adjusting the inside cone disc spring. Since the glass lined protection ring is provided, the manhole can be protected as well as a safety designed can be realized. This device can be also mounted on the existing equipment.



搪瓷放料阀 Glass lined feeding valve

- 设计温度: -25℃ ~ +200℃
设计压力: FV~0.6MPa
Design temperature: -25℃ ~ +200℃
Design pressure: FV~ 0.6MPa

手动型

手动放料阀规格

DN/DN1	H
80/50	620
100/80	625
125/80	630
150/100	630

序号	名称 Name
1	阀芯 valve element
2	阀座 valve seat
3	波纹填料 corrugated packing
4	阀体 valve body
5	阀杆 valve rod
6	温度传感器 temperature sensor
7	阀架 valve shelf
8	手轮 hand wheel

气动型

气动放料阀规格

DN/DN1	H
80/50	630
100/80	635
125/80	640
150/100	735

序号	名称 Name
1	阀芯 valve element
2	阀座 valve seat
3	波纹填料 corrugated packing
4	阀体 valve body
5	阀杆 valve rod
6	温度传感器 temperature sensor
7	气动薄膜执行器 pneumatic actuator

- 与物料接触部位表面均为搪玻璃，关闭时阀杆插入搪玻璃罐内，将积聚在罐底管口内的物料降到最少。根据需要可选配测温电阻、气动及手动不同出料口径放料阀。Special size and accessories can be supplied on request.

一体式快开视镜 Integrated quick sight glass



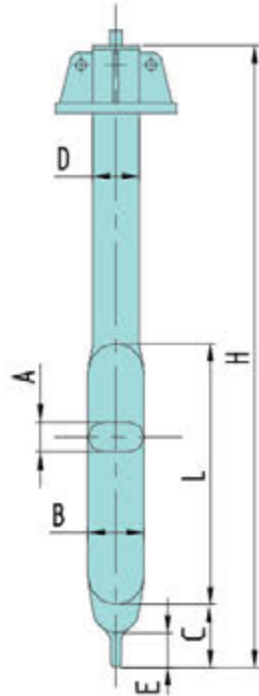
- 设计温度: 0℃ ~ 200℃
设计压力: FV~0.6MPa
规格: DN80 DN100 DN125 DN150
Design temperature: 0℃ ~ 200℃
Design pressure: FV~0.6MPa
Size: DN80 DN100 DN125 DN150

- 易清洗 Easy to clean
无死角 No dead end
可视性好 Good visibility
拆装简便 Simple disassembly

搪玻璃测温挡板 Glass lined sampling baffle

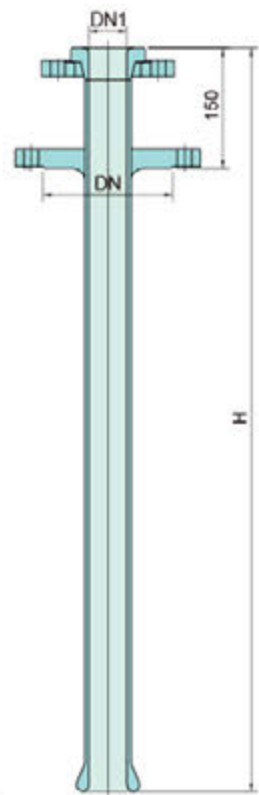
采用国外最新结构设计的全新测温挡板，将测温套管与搅拌挡板两者功能合二为一，与国内普通测温套管相比，具有显著增加搅拌效率、测温响应时间短等优点。

Glass lined sampling baffle is provided so that the temperature for a small amount of liquid can be measured.



反应釜规格 Reactor size	D mm	L mm	H mm	A mm	B mm	C mm	E mm
OR-50	38	160	560	38	38	10	10
OR-100	38	240	690	38	38	10	10
OR-200	50	400	950	32	72	120	60
OR-300	68	420	1020	42	83	130	60
OR-500	68	560	1210	42	83	130	60
OR-1000	108	600	1450	70	130	145	60
OR-1500	108	780	1635	70	130	145	60
OR-2000	108	950	1750	70	130	145	60
OR-3000	108	1000	2100	70	130	145	60
CR-3000	108	1000	1935	70	130	145	70
OR-4000	133	1413	2520	82	162	190	70
CR-4000	133	1413	2355	82	162	190	70
OR-5000	133	1475	2685	82	162	190	70
CR-5000	133	1475	2505	82	162	190	70
CR-6300	133	1655	2840	82	162	190	70
CR-8000	133	1750	2950	82	162	190	90
CR-10000	168	2175	3150	95	206	185	90
CR-12500	168	2175	3150	95	206	185	90
CR-16000	168	2175	3250	95	206	185	90
CR-20000	219	2300	3350	147	260	230	90

搪瓷投料管 Glass lined feeding pipe



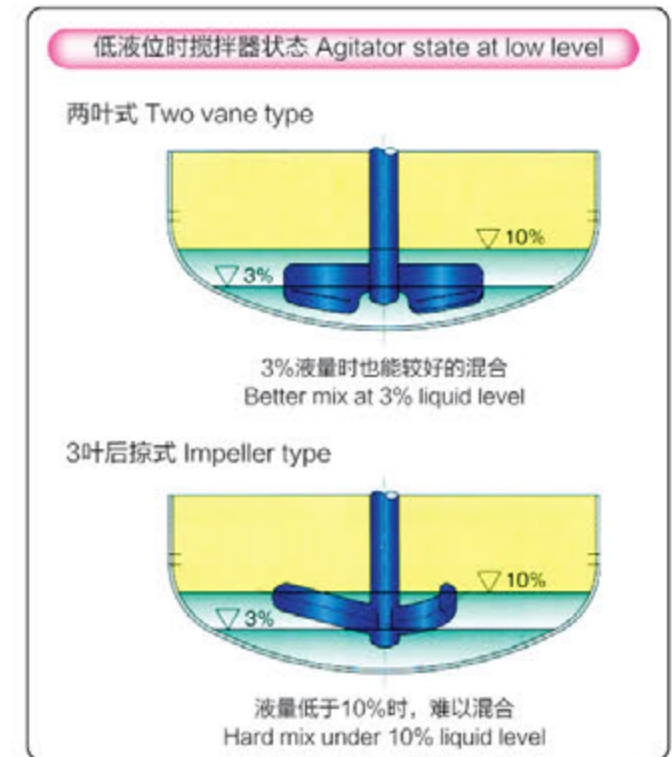
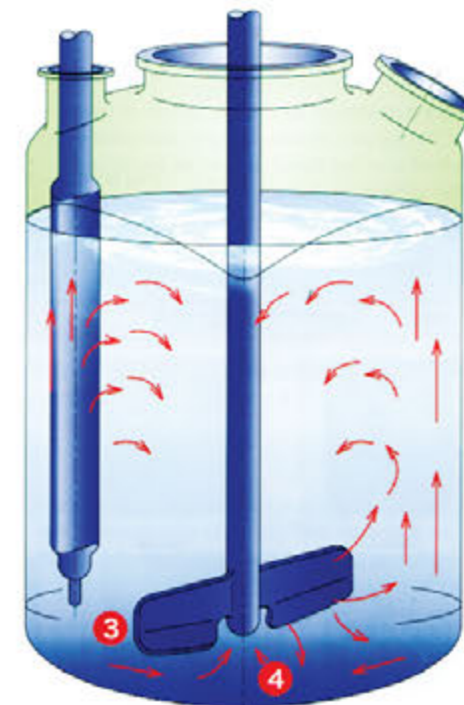
搪瓷投料管规格

类型	容积 (L)	规格(DN)	规格(DN1)	伸入长度(Hmm)
开式	50	50	25	550
	100	50	25	750
	200	80	40	800
	300	80	40	950
	500	80	40	1150
	1000	100	50	1300
	1500	100	50	1500
	2000	100	50	1550
	3000	100	50	1650
	4000	150	80	2050
闭式	5000	150	80	2350
	6300	150	80	2500
	3000	100	50	1650
	4000	150	80	2050
	5000	150	80	2350
	6300	150	80	2500
	8000	150	80	2700
	10000	200	100	2650
	12500	200	100	3000
	16000	200	100	3000
	20000	200	100	3000
	25000	200	100	3000

两叶式搅拌器 Two vane agitator

全新结构的两叶式搅拌器用来取代传统的三叶后掠式搅拌器并能适应其它新的需求

New structure of the two leaf agitator is used to replace the traditional 3 leaf after grazing agitator and can adapt to other new requirements



搅拌叶片形状

- 基本形状类似于四叶式搅拌器的下叶片
- 搅拌器叶片宽度大约为容器内直径的50%
- 搅拌叶片下缘设计成与釜底形状相吻合的后弯形
- 搅拌叶片下缘设计成不规则的四边形

优势

- 中低粘度的混合性能是叶轮式搅拌器的1.5~2倍
- 使固液混合所需动力为叶轮式搅拌器的50%~80%左右
- 当容器内仅有3%的容量时仍有较好的混合
- 在闭式反应釜中可替代叶轮式搅拌器
- 形状简单便于清洗
- 混合时间缩短
- 液滴分散均匀所需动力为叶轮式的80%左右
- 气液分散性能为叶轮式搅拌器的两倍

Agitator blade shape

- Basic shapes similar to the four leaf agitator blades
- Agitator width is about 50% the diameter of the reactor
- Mixing blade edge after designed in conformity with the kettle bottom shape of the curved
- Edge of mixing blade is designed to irregular quadrilateral

Advantage

- Low and medium viscosity of the mixed performance is 1.5~2 times that of the impeller stirrer
- The power for the solid liquid mixed to 50%~80% of the impeller stirrer
- When the reactor is only 3% of capacity still has a good mix
- In a closed reaction to replace impeller stirrer
- Shape simple easy to clean
- Mixing time shorten
- Power for the droplets dispersed evenly for about 80% of the impeller type
- Gas-liquid dispersion for twice the impeller stirrer

搅拌试验

两叶式与叶轮式比较

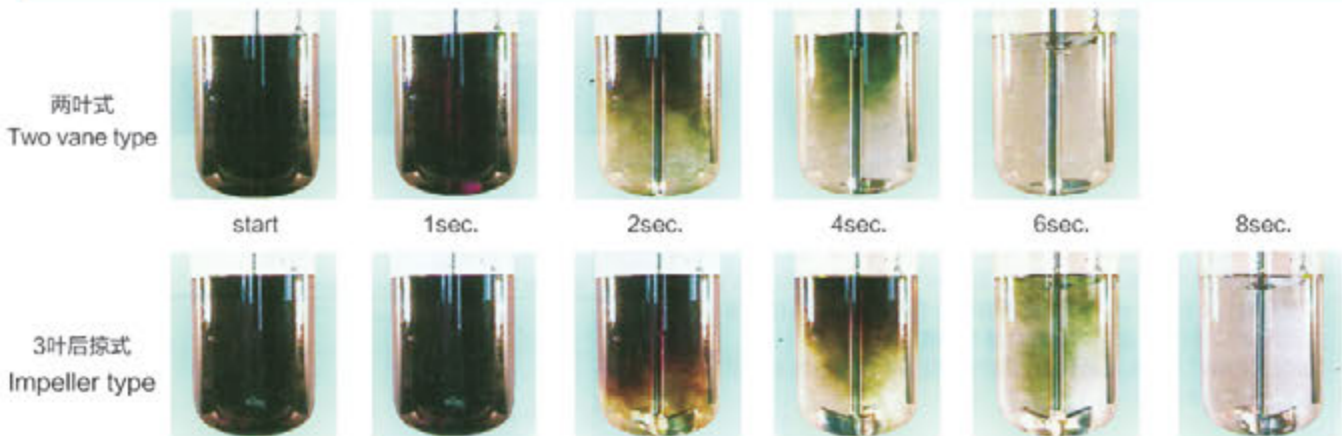
试验两种不同粘度液体中用硫代硫酸钠对碘淀粉溶液的脱色反应对比

Mixing test

Two vane and the impeller type to compare

Experiment two liquids with different viscosity with sodium thiosulfate to iodine contrast the decolorization of the starch solution reaction

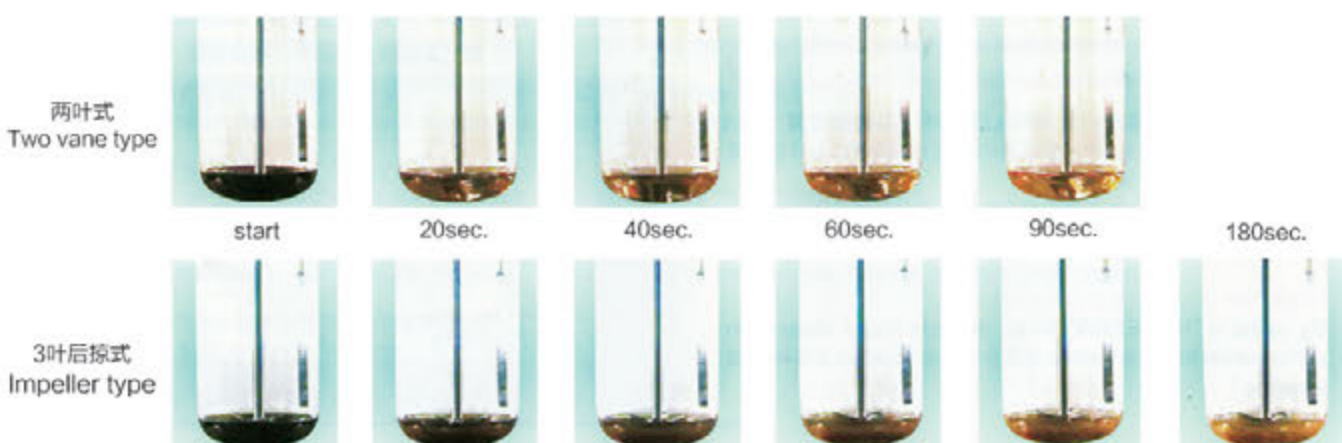
$\mu = 0.001 \text{ Pa}\cdot\text{s}$ (1cp) 100%液量 $P_v = 0.1 \text{ kW/m}^3$



$\mu = 0.5 \text{ Pa}\cdot\text{s}$ (500cp) 100%液量 $P_v = 0.5 \text{ kW/m}^3$



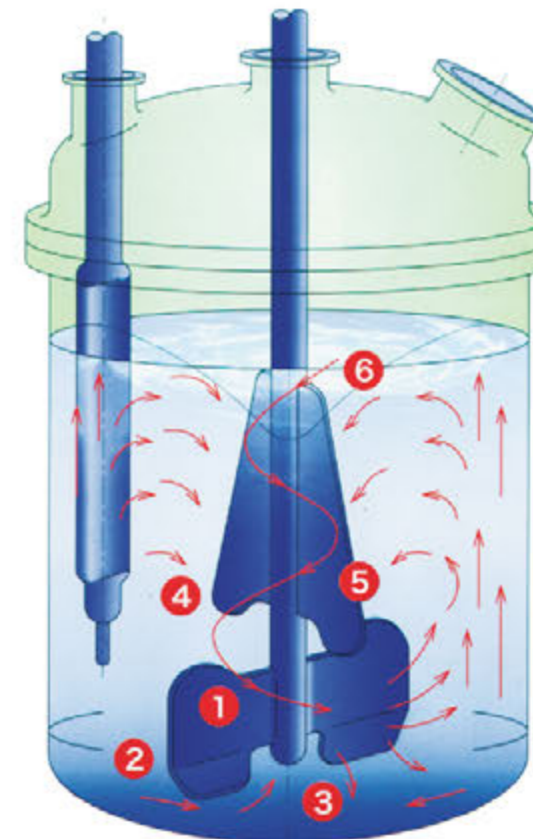
$\mu = 0.5 \text{ Pa}\cdot\text{s}$ (500cp) 10%液量 $P_v = 0.4 \text{ kW/m}^3$



四叶式搅拌器 Four vane agitator

四叶式搅拌器是具有独特流线型叶片组成的新一代高性能搅拌器

Four vane agitator is uniquely streamlined blade of a new generation of high-performance blender



上下叶片的搅拌力恰到好处平衡，促进了大范围的液体循环，并防止釜底部固体物料的滞留

Blade stirring force up and down the right balance, promote the wide range of liquid circulation, and to prevent retention of solid materials at the bottom of the reactor

下叶片特征

- 下叶片宽度为容器内径的60%
- 叶片下缘设计成弯曲状，以增加对釜底的搅拌力
- 叶片下部切割成不规则的四边形，增加搅拌器的抽吸效果
- 叶片上部设计成弧形以增加对容器壁的搅拌力

The upper blade characteristics

- The upper blade width is 60% of the reactor ID
- Edge of blade design into a curved shape, to increase the stirring force on the bottom of the reactor
- Lower leaves cut into irregular quadrilateral, increasing suction effect of agitator
- The upper blade designed curved to increase the mixing power the walls of the reactor

上叶片特征

- 上叶片长度为下叶片的两倍
- 较窄的上缘防止叶片形成过度的搅拌流，并促进下叶片形成循环流动

The top part of the blade characteristics

- Length of top part twice of the lower part
- On a narrow margin to prevent blade form excessive mixing flow, and promote the blade form circulating

优势

- 适合幅度很大的粘度范围
- 安全混合时间大幅度缩短
- 液位变化时仍能保持完美的气液混合特性，强烈的循环流动，增加了气液接触面积，加快了气体吸收
- 均匀的固体分散性能
- 以较小的动力消耗达到优良的混合效果
- 最大限度的减少结晶粒子的破碎
- 在釜内全部换热面上都有较高的传热指数和稳定的传热特性，温和平缓的液流最适合结晶反应

Advantage

- Suitable for large viscosity range
- shorten the mixing time
- Liquid level changes can still maintain perfect gas-liquid mixing characteristics, strong circulation flow, increase the gas-liquid contact area, to speed up the gas absorption
- Solid dispersion properties of uniform
- With smaller power consumption to achieve good mixing effect
- Minimize crystal particle breakage
- All inside the reactor has higher index of heat transfer of heat transfer surface and the stability of the heat transfer characteristics of mild gentle flow is most suited to the crystallization reaction

混合试验

① 两种液体混合试验

具有明显比重差异的两种液体混合性能对比

条件: $\rho_j / \rho_o = 1.54$

ρ_j : 谷物胶的比重

ρ_o : 色拉油的比重

转速: 250rpm

所需功率: 四叶式 ~1.5kW/m³

涡轮式 ~2.6kW/m³

Mixed test

① Two liquids mixed experiment

Significant proportion of two kinds of liquid mixing performance comparison

Conditions: $\rho_j / \rho_o = 1.54$

ρ_j : The proportion of grain glue

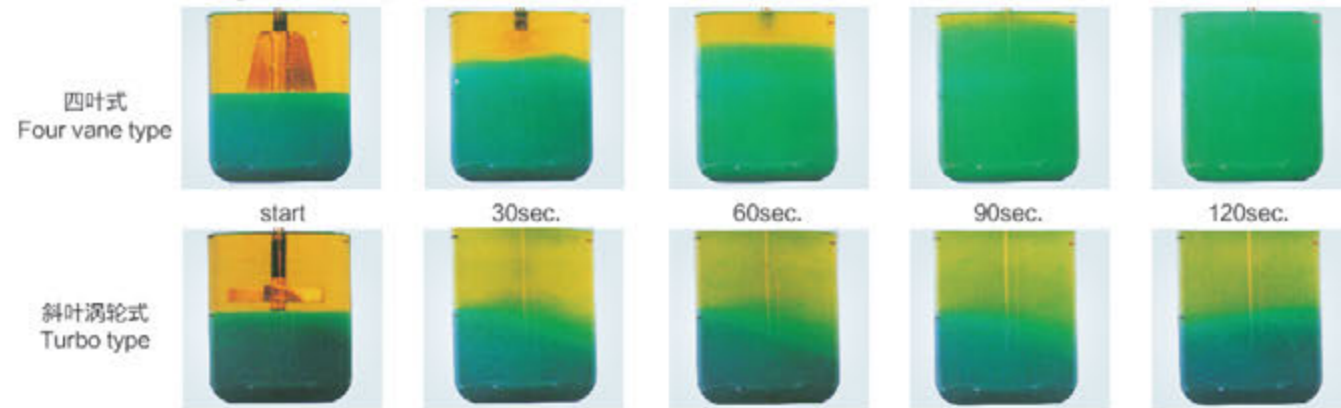
ρ_o : The proportion of salad oil

Speed: 250rpm

The required power: Four vane type ~1.5kW/m³

Turbo type ~2.6kW/m³

Mixing test of two liquids



② 脱色反应试验

高粘度溶液脱色化学反应

条件: μ (液体的粘度) = 5000cp(5Pa·s)

P (所需功率) = 2.0kW/m³

转速: 四叶式 ~300rpm

螺带式 ~150rpm

② Decolorizing reaction test

High viscosity solution bleaching chemical reaction

Conditions:

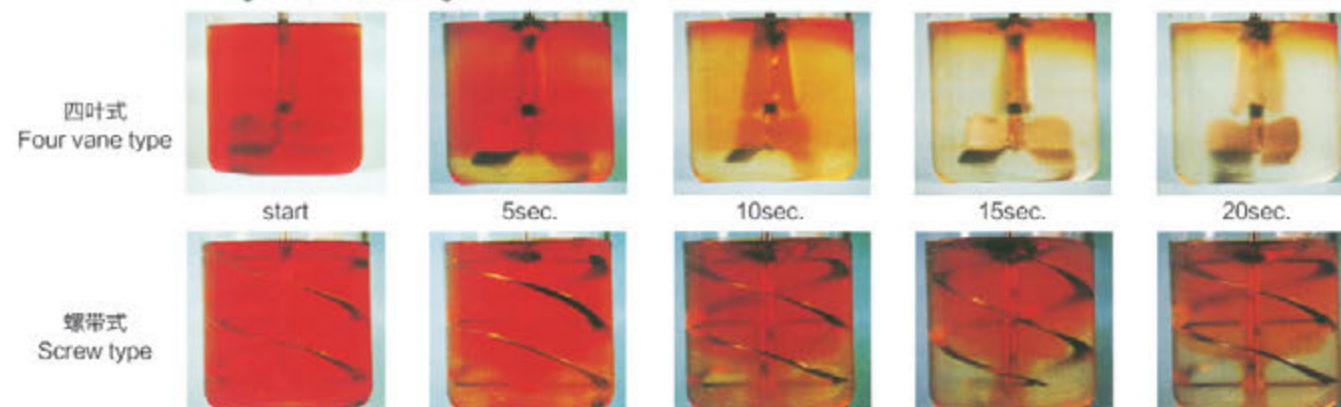
μ (The viscosity of the liquid) = 5000cp(5Pa·s)

P (The required power) = 2.0kW/m³

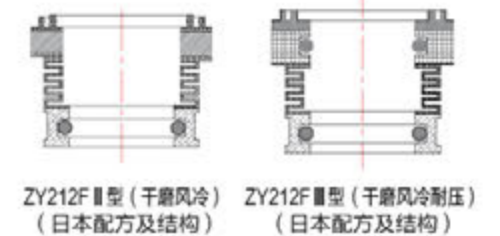
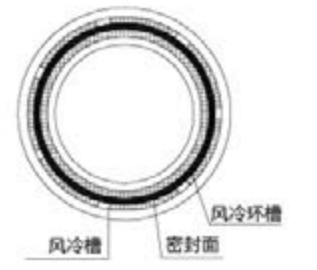
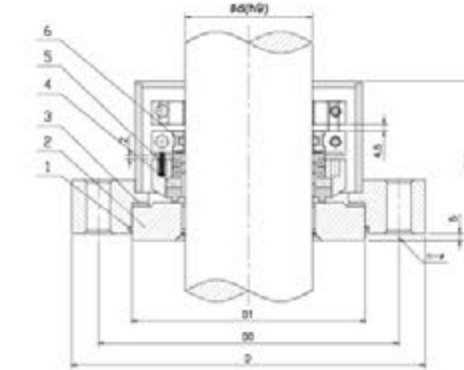
Speed: Four vane type ~300rpm

Screw type ~150rpm

Mixing test of decolorizing chemical reaction



ZY212F型干磨式机械密封 ZY212F Dry Milling model Mechanical Seal



产品特点:

PRODUCT FEATURES:

特殊配方的摩擦副无需润滑、冷却, 有机玻璃可拆卸式防尘装置, 易于清理、保养、安装。结构尺寸短可装进所有机架。与介质接触部材料均为非金属材料, 可耐强腐蚀。

The model is with special formula of friction without lubrication, cooling, organic glass removable dustproof device, easy cleaning, maintenance, installation. Structure size can be put into all the short. Contact with the media are non-metal material, resistant to strong corrosion.

适用范围

反应釜、薄膜蒸发器 (食品、药品等不能被污染企业首选)

使用参数

- 设计压力: -0.1~0.5MPa
- 设计温度: -40~150℃
- 设计转速: 2m/s
- 轴径: 30~220mm
- 介质: 强腐蚀工况

结构特点

- 干磨式设计没有密封液污染物料
- 独特的密封面材料配方保证长久可靠运行(日本配方及结构)
- 与介质接触部均为耐强腐蚀材料

易损件明细

1. 静环O型圈 (氟橡胶)
2. 静环 (ALO/SIC)
3. 静环垫片 (PTFE)
4. 动环组件 (填充四氟, 日本配方)
5. 弹簧 (304L、涂PE或PTFE)
6. 动环O型圈 (氟橡胶、包氟橡胶、全氟醚橡胶)

d	D1	D0	D	n-Φ	标准Standard
40	100	130	160	4-14	79.91
50	120	150	185	4-18	79.91
65	140	170	205	4-18	79.91
80	160	200	235	8-18	79.91
95	175	200	235	8-18	79
	175	225	265	8-18	91
110	200	225	265	8-18	79
	200	280	320	8-18	91
125	230	280	320	8-18	79.91
140	280	335	375	12-18	79.91

注: 连接法兰尺寸可根据客户需求做适当改动。

Note: the flange size can make the appropriate changes according to the customer demand.

APPLICATION SCOPE:

Vertical reactor for pharmacy and food industries

OPERATION APPLICATION SCOPE:

- Pressure: -0.1~0.5MPa
- Temperature: -40~150℃
- Rotating speed: 2m/s
- Shaft diameter: 30~220mm
- Medium: High corrosive working condition

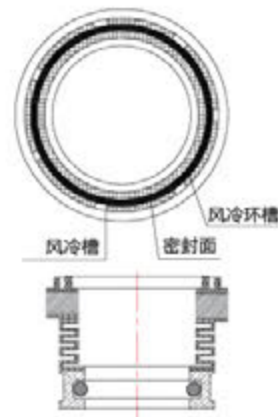
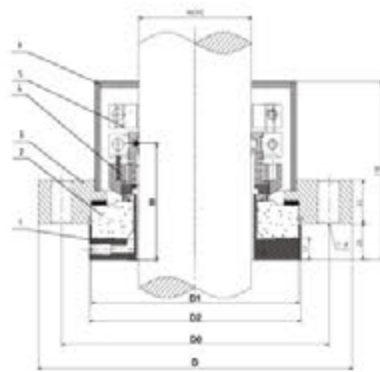
STRUCTURE FEATURE:

- Dry seal prevents material from polluting by seal liquid
- The particular material of the seal surface can keep dry seal working long and stably
- High corrosion resisting material is used for parts which contacts medium

WEARING PARTS LIST:

1. O ring of stationary seal ring
2. Stationary seal ring
3. Gasket of stationary seal ring
4. Bellows rotating seal ring
5. Coil spring
6. O ring for rotating seal ring

ZY212FJ型干磨洁净型机械密封 ZY212FJ Dry Milling Clean model Mechanical Seal



ZY212F II型 (干磨风冷)
(日本配方及结构)

产品特点: PRODUCT FEATURES:

特殊配方的摩擦副无需润滑、冷却，有机玻璃可拆卸式防尘装置，可收集清理摩擦产生的微量污染，通过反冲洗，可溶洗结晶。易于清理、保养、安装。结构尺寸短可装进所有机架。与介质接触部材料均为非金属材料，可耐强腐蚀。

The model is with special formula of friction without lubrication, cooling, organic glass removable dustproof device, easy cleaning, maintenance, installation. Structure size can be put into all the short. Contact with the media are non-metal material, resistant to strong corrosion.

适用范围
反应釜、薄膜蒸发器 (食品、药品等不能被污染企业首选)

- 使用参数**
- 设计压力: -0.1~0.5MPa
 - 设计温度: -40~120℃
 - 设计转速: 2m/s
 - 轴径: 30~220mm
 - 介质: 强腐蚀性工况

- 结构特点**
- 干磨式设计没有密封液污染物料
 - 独特的密封面材料配方保证长久可靠运行(日本配方及结构)
 - 与介质接触部均为耐强腐蚀材料

- 易损件明细**
1. 洁净盒 (波纤)
 2. 静环 (ALO/SIC)
 3. 静环压盖 (304)
 4. 动环组件 (填充四氟, 日本配方)
 5. 压紧环
 6. 防尘罩

d	D2	D1	D0	D	n-Φ	活套法兰 PN0.6Pa DN
40	110	100	130	160	4-14	65
50	128	120	150	185	4-18	80
65	148	140	170	205	4-18	100
80	178	160	200	235	8-18	125
95-1	178	175	200	235	8-18	125
95-2	202	175	225	265	8-18	150
110-1	202	200	225	265	8-18	150
110-2	258	200	280	320	8-18	200
125	258	230	280	320	8-18	200
140-1	258	230	280	320	8-18	200
140-2	312	280	335	375	12-18	250
160-1	258	230	280	320	8-18	200
160-2	312	280	335	375	12-18	250

APPLICATION SCOPE:
Vertical reactor for pharmacy and food industries

OPERATION APPLICATION SCOPE:

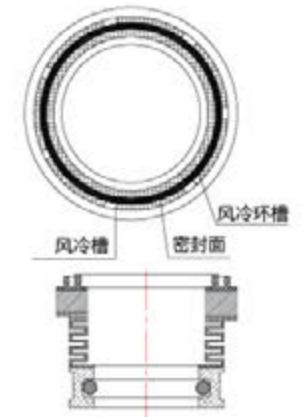
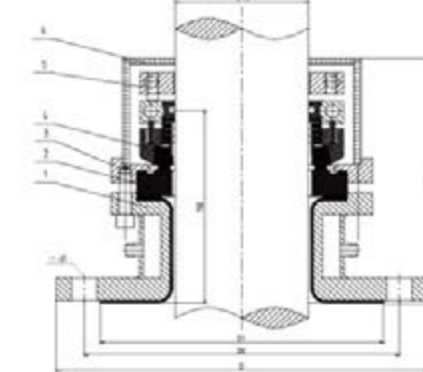
- Pressure: -0.1~0.5MPa
- Temperature: -40~120℃
- Rotating speed: 2m/s
- Shaft diameter: 30~220mm
- Medium: High corrosive working condition

STRUCTURE FEATURE:

- Dry seal prevents material from polluting by seal liquid
- The particular material of the seal surface can keep dry seal working long and stably
- High corrosion resisting material is used for parts which contacts medium

- WEARING PARTS LIST:**
1. Clean box
 2. Stationary seal ring
 3. Stationary seal lid
 4. Bellows rotating seal ring
 5. Coil spring
 6. Cover

ZY212FL/FJL型干磨冷却型/带收集型机械密封 ZY212FL/FJL Dry Milling Cold model Mechanical Seal



ZY212F II型 (干磨风冷)
(日本配方及结构)

产品特点: PRODUCT FEATURES:

特殊配方的摩擦副无需润滑、冷却，有机玻璃可拆卸式防尘装置，带冷却水套 (可减低温度对机封影响)。易于清理、保养、安装。结构尺寸短可装进所有机架。与介质接触部材料均为非金属材料，可耐强腐蚀。

The model is with special formula of friction without lubrication, cooling, organic glass removable dustproof device, easy cleaning, maintenance, installation. Structure size can be put into all the short. Contact with the media are non-metal material, resistant to strong corrosion.

适用范围
反应釜、薄膜蒸发器 (食品、药品等不能被污染企业首选), 可选带收集的。

- 使用参数**
- 设计压力: -0.1~0.5MPa
 - 设计温度: -40~180℃
 - 设计转速: 2m/s
 - 轴径: 30~220mm
 - 介质: 强腐蚀性工况

- 结构特点**
- 干磨式设计没有密封液污染物料
 - 独特的密封面材料配方保证长久可靠运行(日本配方及结构)
 - 与介质接触部均为耐强腐蚀材料

- 易损件明细**
1. 静环座 (带水套)
 2. 静环 (ALO/SIC)
 3. 静环压盖 (304)
 4. 动环组件 (填充四氟, 日本配方)
 5. 压紧环
 6. 防尘罩

d	D1	D0	D	n-Φ	标准Standard
40	100	130	160	4-14	79.91
50	128	150	185	4-18	79.91
65	148	170	205	4-18	79.91
80	178	200	235	8-18	79.91
95	178	200	235	8-18	79
	202	225	265	8-18	91
110	202	225	265	8-18	79
	258	280	320	8-18	91
125	258	280	320	8-18	79.91
140/160	312	335	375	12-18	79.91

注: 连接法兰尺寸可根据客户需求做适当改动。
Note: the flange size can make the appropriate changes according to the customer demand.

APPLICATION SCOPE:
Vertical reactor for pharmacy and food industries

OPERATION APPLICATION SCOPE:

- Pressure: -0.1~0.5MPa
- Temperature: -40~180℃
- Rotating speed: 2m/s
- Shaft diameter: 30~220mm
- Medium: High corrosive working condition

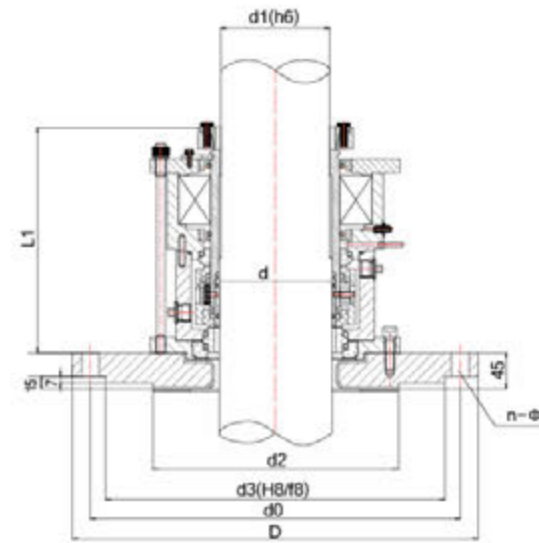
STRUCTURE FEATURE:

- Dry seal prevents material from polluting by seal liquid
- The particular material of the seal surface can keep dry seal working long and stably
- High corrosion resisting material is used for parts which contacts medium

- WEARING PARTS LIST:**
1. Stationary seal seat
 2. Stationary seal ring
 3. Stationary seal lid
 4. Bellows rotating seal ring
 5. Coil spring
 6. Cover

ZY461型机械密封 ZY461 Mechanical Seal

- 非平衡型
- 任意旋向
- 集装式设计
- Unbalanced
- Independent
- Cartridge unit



ZY461搪玻璃盖用(仿博格曼)

ZY461系列: 仿博格曼双端面机封, 结构合理, 防腐优越, 该系列密封与介质接触的零部件均采用非金属材料。是进口及国内2009等各种双端面机械密封的最佳替代品。

The ZY461 copy Germany Burgmann double seal, the material which corrosion fluid both corrosion resistance (enamel, SiC or PTFE), it's being used on carbon steel, stainless steel material, Glass, PP or PTFE lined equipment. JM461 could replace the non-reasonable structure 2009 etc. seals.

d	d1	d2		d3	d0		D		n-φ		L1
	博格曼型	博格曼型	2009型	博格曼型	博格曼型	2009型	博格曼型	2009型	博格曼型	2009型	博格曼型
40	38	102	122	110	145	145	175	185	4-18	4-18	184
50	48	138	158	176	210	180	240	220	8-18	8-18	195
60	58	188	188	204	240	210	275	250	8-18	8-18	203
80	78	212	188	234	270	210	305	250	8-22	8-18	240
95	93	268	212	313	350	240	395	285	12-22	8-22	240
100	98	268	212	313	350	240	395	285	12-22	8-22	240
110	105	306	268	422	460	295	505	340	12-22	8-22	266
125	120	306	268	422	460	295	505	340	12-22	8-22	266
140	135	306	322	422	460	350	505	395	12-22	12-22	282
160	150	306	322	422	460	350	505	395	12-22	12-22	282

注: 博格曼型为欧标, DIN28137, 需制作固定连接法兰座。
2009型为HG/T2105-2006标准, 选活套法兰。

Remark: Burgmann is DIN standard (DIN28137)
It should equip with fix flange seat 2009 type is
HG/T2105-2006 standard, it choose loose flange.

- 运行参数:
压力: ≤1.6 Mpa
温度: -30~200℃
线速度: ≤2m/s

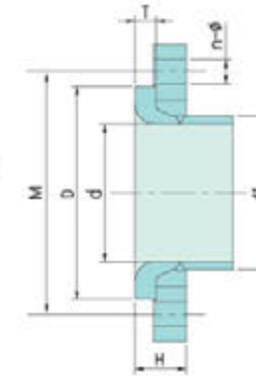
- Operation parameter:
Pressure: ≤1.6 Mpa
Temperature: -30~200℃
Rotating speed: ≤2m/s

- 材料组合:
密封端面: 石墨、碳化硅、碳化钨、氧化铝
辅助密封: 柔性石墨、PTFE、全氟醚橡胶
金属构件: 不锈钢

- Material compose:
The seal face: graphite, silicon carbide, tungsten carbide, alumina
Auxiliary seal: flexible graphite, PTFE, FFKM
Metal artifacts: stainless steel

搪玻璃管道及配件 Glass lined pipe fittings

- 设计压力: 1.0MPa
设计温度: -25℃~+200℃
Design pressure: 1.0MPa
Design temperature: -25℃~+200℃



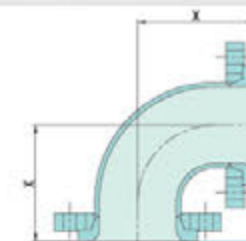
DN	d mm(搪前)	d1 mm	美标Class150			国标PN1.0			A mm	H mm
			D mm	M mm	n-φ mm	D mm	M mm	n-φ mm		
25	φ26.5	φ33.7	φ61	φ79.4	4-φ16	φ68	85	4-φ14	12	26
32	φ34.4	φ42.4	φ71	φ88.9	4-φ16	φ78	100	4-φ18	12	28
40	φ41.1	φ48.3	φ80	φ98.4	4-φ16	φ88	110	4-φ18	12	28
50	φ52.3	φ60.3	φ102	φ120.7	4-φ18	φ102	125	4-φ18	14	32
65	φ67.1	φ76.1	φ118	φ139.7	4-φ18	φ122	145	4-φ18	14	32
80	φ77.7	φ88.9	φ130	φ152.4	4-φ18	φ138	160	8-φ18	16	38
100	φ101.7	φ114.3	φ158	φ190.5	8-φ18	φ158	180	8-φ18	16	38
125	φ126.7	φ141.3	φ188	φ215.9	8-φ22	φ188	210	8-φ18	16	40
150	φ154.1	φ168.3	φ212	φ241.3	8-φ22	φ212	240	8-φ22	18	46
200	φ203.1	φ219.1	φ268	φ298.5	8-φ22	φ268	295	8-φ22	20	48
250	φ253	φ273	φ320	φ352	12-φ26	φ320	350	12-φ22	22	54
300	φ304.8	φ323.9	φ370	φ431.8	12-φ26	φ370	400	12-φ22	24	58
350	φ335.6	φ355.6	φ430	φ476.3	12-φ30	φ430	460	16-φ22	26	58
400	φ386.4	φ406.4	φ482	φ539.8	16-φ30	φ482	515	16-φ26	26	58
450	φ437.2	φ457.2	φ533	φ577.9	16-φ33	φ533	565	20-φ26	28	60

直管 Glass lined pipe



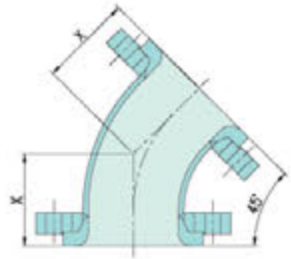
SIZE	Xmm	SIZE	Xmm	SIZE	Xmm
25	500	80	2000	250	3000
32	500	100	2000	300	3000
40	1500	125	2500	350	3000
50	1500	150	2500	400	3000
65	2000	200	2500	450	3000

90° 弯头 Glass lined elbow 90°



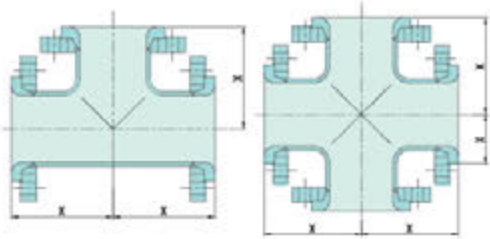
SIZE	Xmm	SIZE	Xmm	SIZE	Xmm
25	90	80	135	250	315
32	100	100	155	300	360
40	105	125	175	350	410
50	115	150	195	400	450
65	120	200	260	450	530

45° 弯头 Glass lined elbow 45°



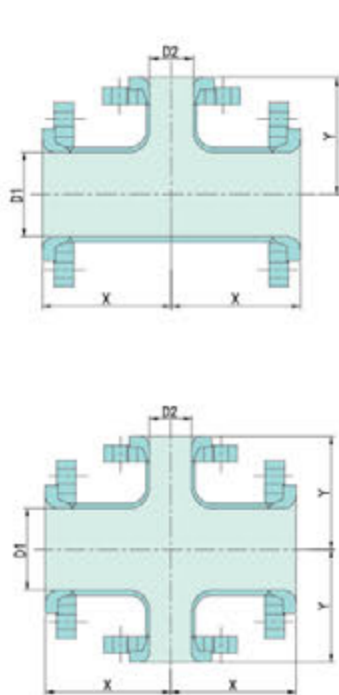
SIZE	Xmm	SIZE	Xmm	SIZE	Xmm
25	60	80	95	250	220
32	65	100	105	300	250
40	70	125	125	350	280
50	80	150	150	400	300
65	85	200	180	450	330

等径三通四通 Glass lined equal Tee and cross



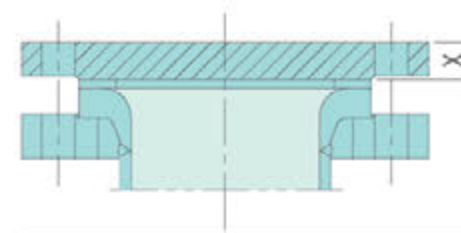
SIZE	Xmm	SIZE	Xmm	SIZE	Xmm
25	90	80	135	250	315
32	100	100	155	300	360
40	105	125	175	350	410
50	115	150	195	400	450
65	120	200	260	450	530

异径三通四通 Reducing tee and cross



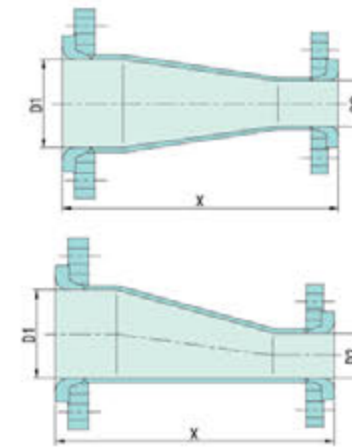
D1mm	D2mm	25	32	40	50	65	80	100	125	150	200	250	300	350	400
32	X mm	95													
	Y mm	95													
40		95	100												
		95	100												
50		115	115	115											
		100	105	110											
65		120	120	120	120										
		105	110	115	120										
80		135	135	135	135	135									
		115	120	125	130	135									
100		155	155	155	155	155	155								
		125	130	135	140	145	150								
125		175	175	175	175	175	175	175							
		140	145	150	155	160	165	170							
150		195	195	195	195	195	195	195	195						
		155	160	165	170	175	180	185	190						
200		260	260	260	260	260	260	260	260	260					
		185	190	195	200	205	210	215	220	225					
250		315	315	315	315	315	315	315	315	315	315				
		230	235	240	245	250	255	260	265	270	275				
300		360	360	360	360	360	360	360	360	360	360	360			
		235	240	245	250	255	260	265	270	275	280	300			
350		400	400	400	400	400	400	400	400	400	400	400	400		
		240	245	250	255	260	265	270	280	290	300	310	320		
400		450	450	450	450	450	450	450	450	450	450	450	450	450	
		260	265	270	275	280	285	290	300	310	320	330	345	355	
450		480	480	480	480	480	480	480	480	480	480	480	480	480	480
		290	295	300	305	310	315	320	325	335	345	355	370	380	380

盲法兰 Glass lined blind flange



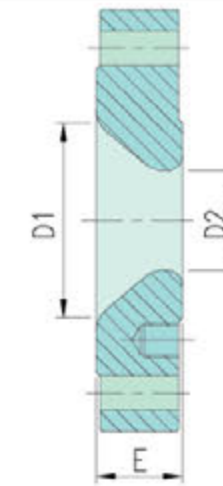
SIZE	Xmm	SIZE	Xmm	SIZE	Xmm
25	16	80	20	250	26
32	16	100	20	300	26
40	16	125	22	350	26
50	18	150	22	400	26
65	18	200	24	450	28

异径管 Glass lined reducer



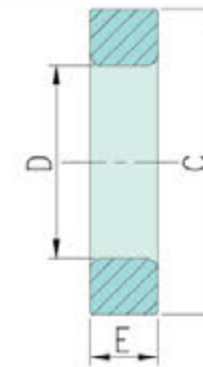
D1mm	D2mm	25	32	40	50	65	80	100	125	150	200	250	300	350	400
50	Xmm	140	140	140											
65		150	150	150	150										
80		160	160	160	160	160									
100		175	175	175	175	175	175								
125				200	200	200	200	200							
150					225	225	225	225	225						
200						250	250	250	250	250	250				
250							300	300	300	300	300	300			
300								325	325	325	325	325	325		
350									420	420	420	420	420	420	
400										450	450	450	450	450	450
450											480	480	480	480	480

渐缩法兰 Glass lined reducing flange



D1mm	D2mm	25	32	40	50	65	80	100	125	150	200	250	300	350	400
32	E mm	30													
40	D2mm	35	35												
50	E mm	35	35	35											
65	D2mm	35	35	35	35										
80	E mm	35	35	35	35	35									
100		45	45	45	45	45	45								
125		45	45	45	45	45	45	45							
150		45	45	45	45	45	45	45	45						
200		45	45	45	45	45	45	45	45	45					
250		45	45	45	45	45	45	45	45	45	45				
300		45	45	45	45	45	45	45	45	45	45	45			
350		45	45	45	45	45	45	45	45	45	45	45	45		
400		45	45	45	45	45	45	45	45	45	45	45	45	45	
450		45	45	45	45	45	45	45	45	45	45	45	45	45	45

调节环 Glass lined regulating ring



Dmm	25	32	40	50	65	80	100	125	150	200	250	300	350	400	450
Cmm	68	72	88	102	120	138	158	188	212	268	320	370	430	482	533
E mm	重量 kg Weight														
15	0.4	0.4	0.6	0.7	0.9	1.2	1.4	1.8	2.1	2.9	/	/	/	/	/
20	0.5	0.5	0.8	1.0	1.3	1.6	1.9	2.4	2.8	3.9	4.9	5.8	7.7	8.9	/
25	0.6	0.6	1.0	1.2	1.6	2.0	2.3	3.0	3.5	4.9	6.2	7.2	9.6	11.2	12.6
30	0.7	0.8	1.1	1.5	1.9	2.3	2.8	3.7	4.2	5.9	7.4	8.7	11.5	13.4	15.1
40	1.0	1.0	1.5	2.0	2.5	3.1	3.7	4.9	5.5	7.9	9.8	11.6	15.4	17.8	20.1
50	1.2	1.3	1.9	2.4	3.1	3.9	4.6	6.1	6.9	9.8	12.3	14.5	19.2	22.3	25.2

搪玻璃设备的安装、使用与保管 Glass lined equipment Installation, Operation and Storage

■ 搪玻璃设备的安装

1. 搬运时只允许罐耳受力（指非包装时），不允许滚动及用撬杠，避免震动、碰撞，严禁接管管箍、卡子等易损部件受力。
2. 吊装时必须在规定部位（如夹套接管、罐耳等）挂钢丝绳。（罐盖上的吊环只作吊罐盖使用），不能与任何物体相碰，稳吊轻放。
3. 组装前，检查人员应穿洁净软底胶鞋进入容器内检查搪玻璃层有无异常现象。
4. 在拧紧法兰螺栓时，应使用扭力扳手按沿对角线成对地逐渐拧紧、用力要均匀，不应一次完全拧紧，最大扭矩超过200NM时，应停止，检查影响密封的其它原因，避免因受力不均而造成搪玻璃层破裂而影响使用寿命。
5. 应先检查卡子是否完整，数量是否符合规定，安装时要保证距离均等，松紧适度确保运转安全及密封可靠。
6. 安装人员应穿洁净软底胶鞋进入容器内，将固定搅拌翼的包装物全部拆除，清理容器内所有杂物。拆除机械密封包装物，正确合理调整好机封压缩力，手动盘转搅拌翼，当运转灵活无异常时，才允许启动电机。
7. 公司搪玻璃容器一般使用的垫片材料为：无石棉纤维板夹不锈钢波纹板，外包PTFE膜。垫片厚度在不同部位可能会稍有不同，拆装时应做好位置标记，否则再次安装时可能会出现泄漏现象。
8. 严禁在搪玻璃罐外壁表面施焊；在夹套上焊接接管、罐耳、罐座时，一律使用电焊、并采取冷却设施，绝对不准使用气焊；在搪玻璃设备外围施焊时，应将搪玻璃表面、罐口、管口盖严，避免电焊渣飞溅，损坏搪玻璃面。

■ INSTALLATION

1. The lugs is only lifting place(unpackaged). Do not roll or use crossbar. Avoid vibrating or bumping. Pulling coupler and clamps is forbidden.
2. Wire rope must be hitched on setted palace such as nozzles of jacket and supports. Handle with care. Don't collide. The lift hooks on the head are only used to sling the head.
3. The inspector whose should be rubber-soft sole and clear, gets into the vessel to inspect if the glass-lined surface was damaged and if there were abnormal phenomena.
4. Along the diagonal line, tighten screw bolts gradually. Put forth your strength evenly so as to avoid damaging the glass-lined layer.
5. Firstly check the integration and quantity of clamps. When fixing, keep the distance between clamps equal, the degree of tightness fair in order to assure operating safely and sealing reliably.
6. Firstly, put the agitator into the vessel (put a soft mat on the bottom of the vessel before hand), Then lift the head and take its predetermined place, and covered the shaft the shaft sealing device, Lift up the agitator, connect it with the output shaft of the motor, and lock them with check nut or check bolt. Adjust the axiality and perpendicularity of shaft and seal up to technical specification. turn the agitator slowly. If there is no abnormal phenomena, and the agitator rotates freely, then try starting motor till everything is all right. (The time of running-in is not too long).
7. Select the gasket based on the medium category, concentration and temperature of the working medium. The performance and using method of the gasket should meet the technological requirements. We can provide the gasket, such as asbestos filled rubber and rubbers covered with PTFE.
8. Do not weld at the external surface of inner Vessel. When welding nozzles, lugs and supports, employ electro and tack cooling measures. Gas welding strictly prohibited. When welding the outside fittings of glass-lined surface and nozzles must be covered tightly to avoid damaging them by splashing welding slag.

■ 搪玻璃设备的使用

在使用中注意：

1. 严防任何金属硬物掉进容器，碰伤搪玻璃。
2. 尽量避免冷罐时加热料，热罐时加冷料，由于突然改变温度，形成内应力，影响使用寿命。
3. 操作运转在使用夹套设备时，应徐徐加压、升温，一般先通入0.1MPa（表压）压力蒸汽，保持15分钟后，再缓缓升压、升温（升压速度以每10分钟0.1MPa压力为宜），直到罐的操作压力为止，不管加热或冷却都应在允许温度范围之内进行，设备使用温度0~200℃，冷热冲击请参照第13页图A、图B（一般规定为热冲击120℃，冷冲击110℃）。超过上述使用温度范围，订货合同中注明，另行设计制造。
4. 出料：出料时，如出料阀、出料管堵塞，一律用非金属工具轻轻捅开，不得碰敲。
5. 在使用中严防夹套内进入酸液，以防止腐蚀夹套铁胎和“氢爆”现象发生。
6. 清洗：清洗罐内部时，不能使用金属器具，而且对粘附在罐内面上的物料必须清洗及时、彻底。

■ OPERATION

1. Prevent only metal and hard object from dropping into the vessel to damage glass-lined surface.
2. Since temperature changed suddenly, the service life of vessel is influenced by internal stress. So the user must try their best to avoid feeding hot material into hot reactor.
3. When operating a jacketed equipment, generally, first 0.1MPa(g) pass through it and maintain this pressure for 15 minutes, then raise pressure and temperature slowly till operating pressure. (It's suitable for raising pressure at 0.1MPa every ten minutes). Heating or cooling shall be within specified temperature, The operating temperature of the equipment is 0~200℃, Resistance to sudden cooling: 110℃, resistance to sudden heating: 120℃. If the temperature is beyond the limits, please give clear indication in order contract, we can do it specially.
4. Discharge: if outlet valve, outlet pipe are obstructed, use nonmetallic tool to poke, Don't bump and strike rudely.
5. Filling acid liquid into jacket is not permitted. So as to avoid corroding the tgre of jacket.
6. Cleaning: Do not use metal tool to clean the internal. The sticking material must be cleaned timely and thoroughly.

■ 搪玻璃设备的保管

保管应妥善，应置于库内，如置于室外时，应有防雨措施，严防雨淋，尤其寒冷地区，在冬季前必须清除罐内、夹套内、管内的积水，避免因结冰膨胀，引起玻璃面损坏，在保管时，应防止硬物摩擦、冲击、碰撞。

说明：本说明书中所列数据仅供参考，详细请参照竣工图。

■ STORAGE

Take good care of the equipment and keep it in store house. When equipment is stored outdoors, it should be covered avoiding drenched. In order to avoid freezing and crazing the glass-lining, the gathering water in shell, jacket, pipe must be clear away before winter comes particularly in cold district. Preventing friction, striking friction, striking and bumping in the storage period.

Note: The data in this specification only for reference, the detail see final drawings.