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# 奥联德 AOLIANDÉ 乙烯基整体电解槽

VINYL INTEGRATED ELECTROLYTIC CELL

誠 信 · 合 作 · 共 贏

INTEGRITY COOPERATION WIN-WIN



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## 公司简介 COMPANY PROFILE



河北奥联德化工设备有限公司是一家专业生产销售成套化工设备，成套玻璃钢产品生产线，同时生产 复合材料 SMC产品的公司，通过了ISO9001、ISO14001、ISO45001管理体系认证SGS认证等产品已销往世界各地，美国、加拿大，澳大利亚 巴西、日本、德国、俄罗斯，印度、马来西亚、印度尼西亚、埃及等国家，赢得广大新老客户的支持和信任好评。

● EPC化工设备系列：曼海姆法硫酸钾成套生产设备 硫酸钠生产设备 成套硫酸设备成套氯化钙生产设备。

● EPC成套玻璃钢产品生产线系列：微机控制成套玻璃钢管道，储罐缠绕生产线 成套玻璃钢格栅生产线 成套玻璃钢拉挤型材生产线 SF/FF油罐生产线。

● 玻璃钢产品系列：玻璃钢高、中、低压管道；玻璃钢储罐；玻璃钢塔；整体浇注超级电解槽；SF、FF双层油罐；玻璃钢冷却塔；玻璃钢模压SMC/BMC、拉挤系列产品及其他定制玻璃钢产品玻璃钢防腐等。

河北奥联德化工设备有限公司根据产品类别设立了曼海姆法硫酸钾化工设备设计 制造 安装，多种复合材料产品生产线设计 制造 安装 多种复合材料产品制造三个分公司，通过在专业和技术上的研发和升级并获得了多项专利。公司凭借先进的技术、精湛的工艺、可靠的质量和完善服务，不但有产品的供货能力，还具有有限元分析（材料、结构、产品的设计）项目总承包能力，我公司可为客户提供技术咨询、供货、运输、安装指导等一体服务。

● 主要应用领域：

硫酸钾、电力、水利、冶金、化工、制药、氯碱、海水淡化、印染、造纸、钛白、污水处理、固废焚烧处理、食品酿造、石油贮存、建筑、市政工程、公路设施、军工等领域。



Hebei Aoliande Chemical Equipment Co., Ltd. is a professional company that produces and sells complete sets of chemical equipment, complete sets of fiberglass product production lines, and composite material SMC products. The company has passed ISO9001, ISO14001, ISO45001 management system certification, SGS certification, and other products, which have been sold to countries around the world such as the United States, Canada, Australia, Brazil, Japan, Germany, Russia, India, Malaysia, Indonesia, Egypt, etc. Winning the support and trust of both new and old customers.



● EPC chemical equipment series: Mannheim process potassium sulfate production equipment, sodium sulfate production equipment, complete sulfuric acid equipment, complete calcium chloride production equipment.

● EPC complete set of fiberglass product production line series: microcomputer controlled complete set of fiberglass pipes, tank winding production line complete set of fiberglass grating production line complete set of fiberglass extruded profiles production line SF/FF oil tank production line.

● Fiberglass product series: Fiberglass high, medium, and low pressure pipelines; Fiberglass storage tanks; Fiberglass towers; Integrated casting super electrolytic cell; SF and FF double-layer oil tanks; Fiberglass cooling tower; Fiberglass molded SMC/BMC, extrusion series products, and other customized fiberglass products, including fiberglass anti-corrosion.

Hebei Aoliande Chemical Equipment Co., Ltd. has established three branches based on product categories: Mannheim process potassium sulfate chemical equipment design, manufacturing and installation, and various composite material product production lines design, manufacturing and installation. Through professional and technical research and development, upgrading, and obtaining multiple patents. With advanced technology, exquisite craftsmanship, reliable quality, and comprehensive services, our company not only has the ability to supply products, but also has the ability to perform finite element analysis (material, structure, product design) project general contracting. Our company can provide customers with integrated services such as technical consultation, supply, transportation, and installation guidance.

Main application areas:

Potassium sulfate, electricity, water conservancy, metallurgy, chemical industry, pharmaceuticals, chlor alkali, seawater desalination, printing and dyeing, papermaking, titanium dioxide, sewage treatment, solid waste incineration treatment, food brewing, petroleum storage, construction, municipal engineering, highway facilities, military industry and other fields.



## Supertank® Electrolytic cell Benefits

# 超级电解槽的优点

### Guaranteed Long-Term Impermeability, Free of Corrosion

Designed with a monolithic impermeable internal tank manufactured with multiple layers of fiber-reinforced premium vinyl ester resin. The specifications for this internal tank have been validated by proven impermeability and corrosion-free service for over 40 years in the chemical processing industries worldwide.

#### 长期不渗透和无腐蚀

使用优质乙烯基树脂多层纤维加强的整体不渗透内槽的优异性能已被全世界化工行业40多年的无渗透性和无腐蚀性所证明。

### Manufacturer's 20 Year Warranty

ANCOR TECMIN KNT guarantees **Supertank®** cells for continuous service without leaks, free of corrosion and structural flaws, operating under normal conditions as specified for each Project.

#### 制造商20年的质量保证

安泰可耐特保证在项目规定的条件下运行时，超级电解槽能够无腐蚀无结构整体缺陷的连续工作

### Swift, Accurate and Less Costly Installation

**Supertank®** cells include features that allow reduction of 25% or more in time needed for cell erection, alignment and leveling, compared to time required with conventional polymer concrete cells. Dimension tolerances for **Supertank®** cells are consistently tight, simplifying installation in the most demanding applications, including plants with automated crane systems.

#### 迅速准确低成本的安装

同传统的常规的高分子混凝土电解槽相比，超级电解槽因其设计含有特殊之处，在槽体安装、排列和对齐时间上能够减少25%，甚至更多。



### Minimum Cleaning Time and Water Consumption

The rounded internal shape, optional sloped cell floors, and smooth, flat finish of the internal tank, facilitate water sweeping and drainage of heavy sludge, with reduced water usage and accelerating return to service after each cleaning.

#### 最短的清洗时间和最低的水耗

内部的圆角处理、斜底（可选择的），光滑平整的内表面，在冲洗淤泥时既能冲洗彻底，又可减少用水量，使每次冲洗后，加速恢复使用。

### Minimum Maintenance Cost

The robust, virtually impervious internal tank that is chemically bound to the **Hyperbonded®** polymer concrete structural core during molding is tolerant to operating abuse. Its smooth, non-stick surfaces minimize adhesion of contaminants.

#### 维护成本低廉

卓越的密封的内槽和结构层的连接是在模具上完成的，能够容忍操作中的划伤和压痕。其光滑不粘的表面最大程度的减少了污染物的粘连。

### Maximum Operational Safety

The structural core of **Supertank®** cells is bolstered with sturdy external seismic reinforcement blocks confining its floor supports, and includes a robust, internal bidirectional, pultruded FRP bar mesh reinforcement which positively maintains integrity should the cell fail due to catastrophic events. **Supertank®** cell installation protocols call for lateral wall collaboration between cells, thus reducing stress levels of cell around 40% under normal operating conditions.

#### 最大程度的操作安全

超级电解槽的结构层由稳固的外部抗震加强块来作衬垫，它约束了底部的支撑，再加上内部强有力的双向挤拉的FRP加强条网，能够在槽体遇到灾难性事件时积极的防止其分体。在进行安装时要求横向的槽壁联合，这样在正常的操作状态下减少约40%的应力。

### Key Accessories Integrated with Supertank® Cell Engineering

ANCOR TECMIN KNT designs and manufactures cell thermal insulation, capping board and electrolyte agitation systems that can be incorporated in the cells, enhancing overall safety, cathode quality and tank house productivity.

#### 关键部件在槽体设计时一同考虑

安泰可耐特在进行槽体设计时，就连同热保温、封盖和电解搅拌系统作为整体来考虑，这样加强了整体的安全性，阴极质量和槽室的生产能力。



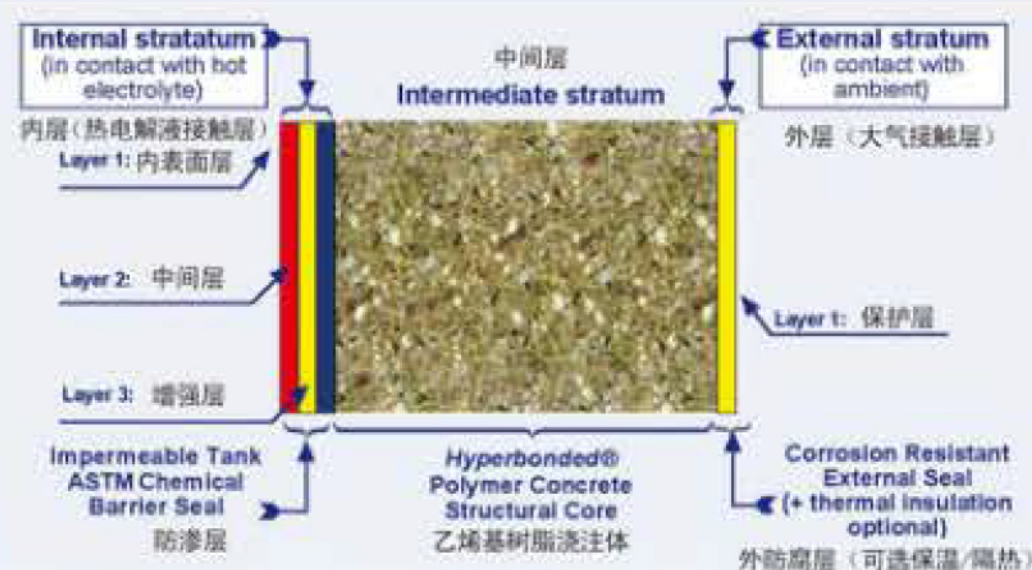
# Typical Cell Construction Features

## 槽体结构

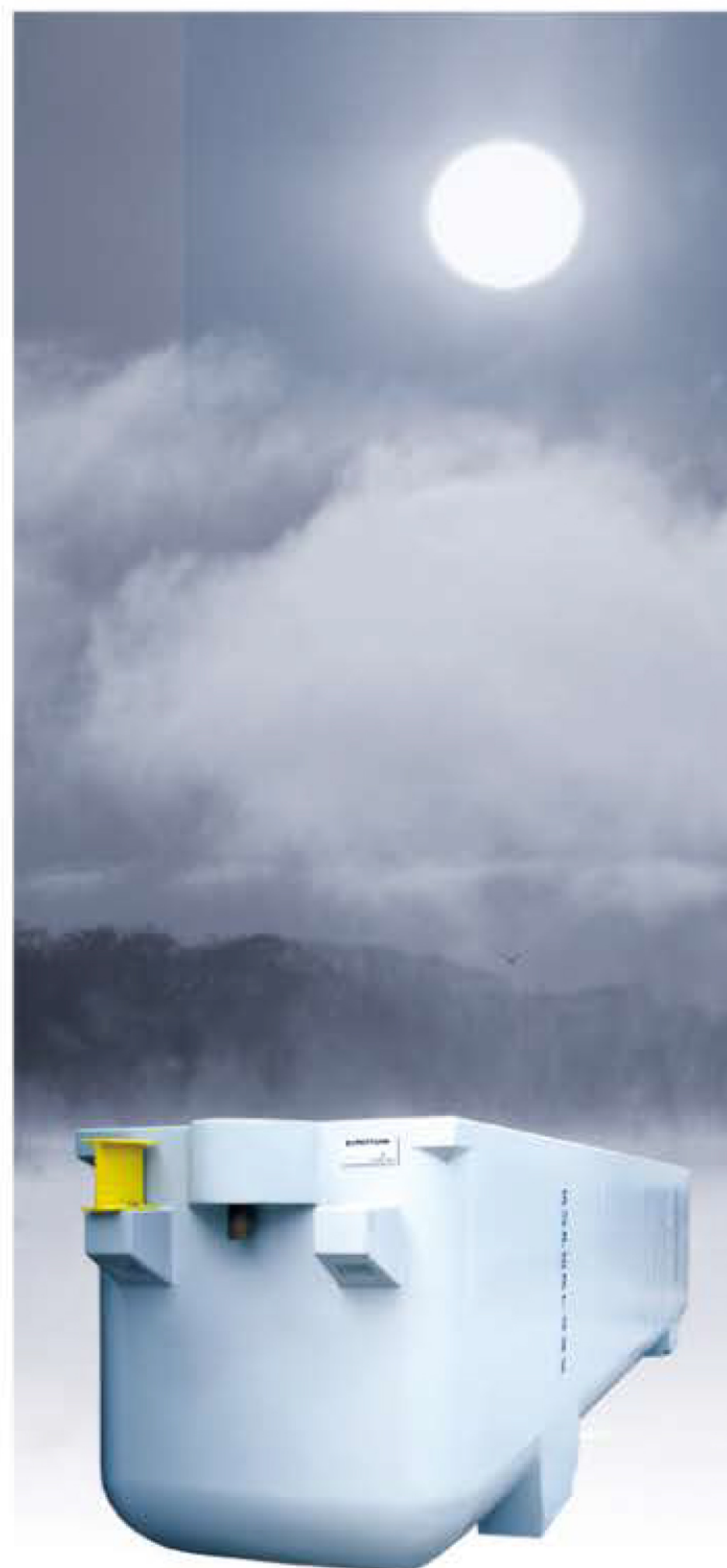
### Supertank® Cell Wall Cross Section

(Three-strata\* system of polymer composite material)

#### 超级电解槽槽体结构



\*US Patents No 6,730,195B2/No 6,572,741B1/No 6,143,219  
 美国专利号: 6,730,195B2/No 6,572,741B1/No 6,143,219  
 Chilean Patent No 43.921  
 智利专利号: 43.921

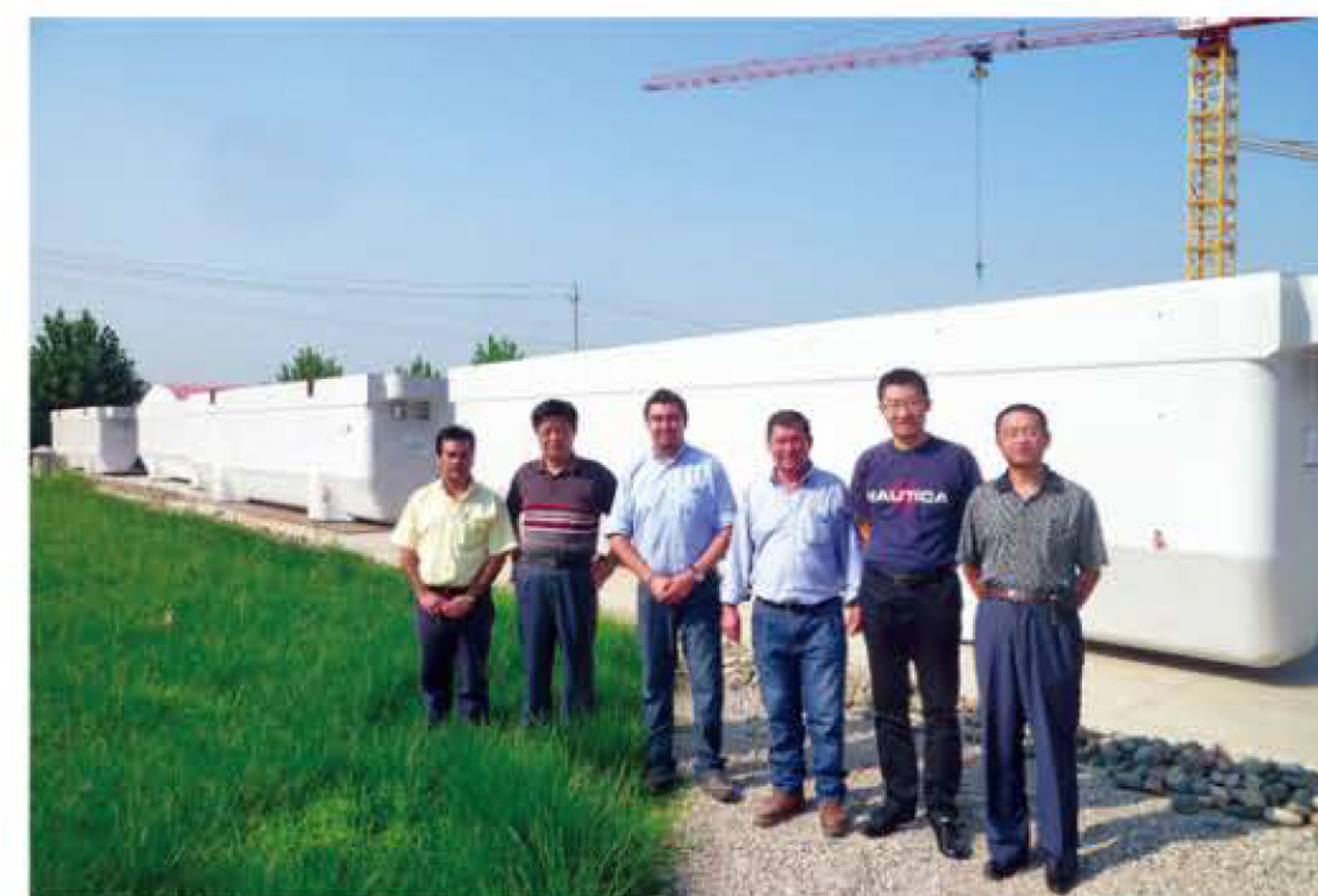


**Supertank®** electrolytic cells are manufactured with a proprietary "tri-stratum polymer composite material". This material consists of three monolithically bound layers.

- (1) An electrolyte FRP seal or chemical barrier
- (2) A structural core made with **Hyperbonded®** polymer concrete (aggregate reinforcement grading according to US Pat. #6143219), and
- (3) An external FRP seal.

超级电解槽槽体由独有的三层组成一体的结构组成

- (1) 耐腐蚀层
- (2) 由聚合物混凝土增强团料组成的结构层
- (3) 外表层





The polymer concrete structural core and both FRP seals are manufactured to ensure a high quality chemical bond between the three strata, forming a cohesive, monolithic composite material with very high chemical and mechanical strength. The formulation and properties of this composite material have been tailored for best performance electrolytic cells.

聚合物混凝土结构层和玻璃钢是用来保证在三层结构之间粘接牢固，形成一种整体的复合材料，使其拥有良好的耐腐蚀性能和优良的力学强度。这种复合材料的成型和性能，是专门为电解槽的良好性能而定制的。

The electrolyte seal complies with the sections of norms DIN 18.820-3 and ASTM C582 regarding chemical barriers for FRP tanks. These forms have been validated by more than 40 years of successful industrial experience. This seal typically consists of three layers of fiberglass impregnated with vinyl ester resin (see diagram above).

内表面层是符合DIN 18.820-3 和 ASTM C582关于玻璃钢储罐防腐层的要求的。这些标准已被40年以上的工业实践所证实是有效的。这内表面层是有三层浸渍过特殊乙烯基树脂的玻璃纤维组成的。

The external seal is manufactured with same care and quality as the electrolyte seal, although with only one FRP layer it does not comply with the above standards.

外表面层因受到格外重视也具备了高品质。

Both seals can be inspected according to norm ASTM D4097 Class IV. As an option the seals may be pigmented white, gray or other color favorable to refinery operation or purchase preference.

不论是内表面层还是外表面层，均符合ASTM D4097 IV级要求的，根据要求，这层可作为白色、灰色或其他有益于冶炼厂或客户喜爱的颜色。

The **Hyperbonded®** polymer concrete material offers improved mechanical strength and excellent chemical and electric resistance, compared to conventional polymer concrete. It has also been formulated to reduce thermal dilatation that induces high mechanical stress in electro-refining cells. Typical properties as follows.

同常用的聚合物混凝土来比，**Hyperbonded®**聚合物混凝土材料提高了力学强度和优异的耐化学性能和电阻。可降低在电解槽内因高机械应力引起的热膨胀。见性能表。

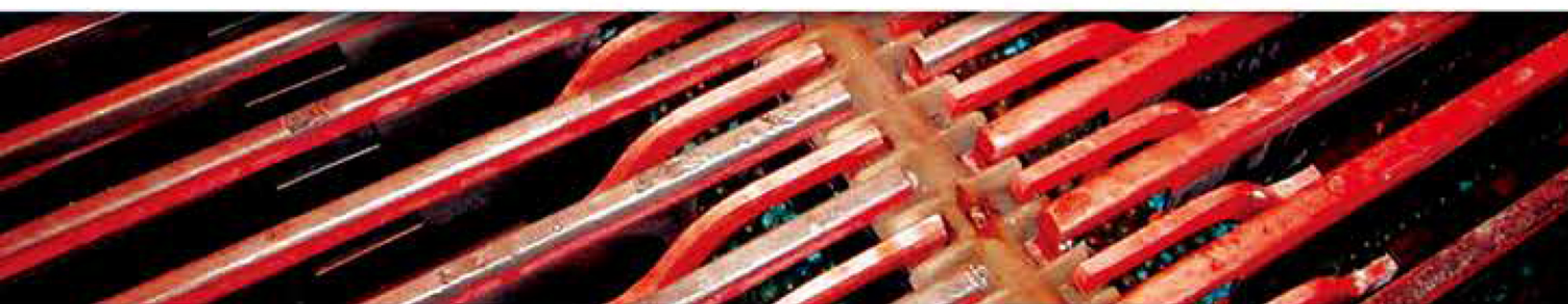
槽体物理性能表 Physical Properties Table

性能 Property	指标 Index
压缩强度 Compression strength	70 ~100 Mpa
弯曲强度 Flexural strength	22~27Mpa
剪切强度 Shear strength	≥4.5Mpa
密度（标准压实） Density (standard hammered )	2150~2250 kg/m <sup>3</sup>
体积电阻率 Volume resistance	≥3.4*10 <sup>11</sup> Ω·cm
介电强度 Dielectric strength	≥3.6KV/mm
热导性 Thermal conductivity	≥1.2W/m·K
比热 Specific heat	≥800J/kg·K
热膨胀系数 Thermal expansion coefficient	<20*10 <sup>-6</sup> m/m/°C





## Supertank 超级电解槽



**Complete series of capping board designs with advanced polymer composites.**

## 完整先进的系列复合聚合物封盖设计技术

ANCOR TECMIN KNT designs and manufactures high current density capping board systems "tailored" to most nonferrous electrolytic cell systems, including any type or shape of bus bar, either for single or double electric contact, molded in one piece of cell length or assembled in sections.

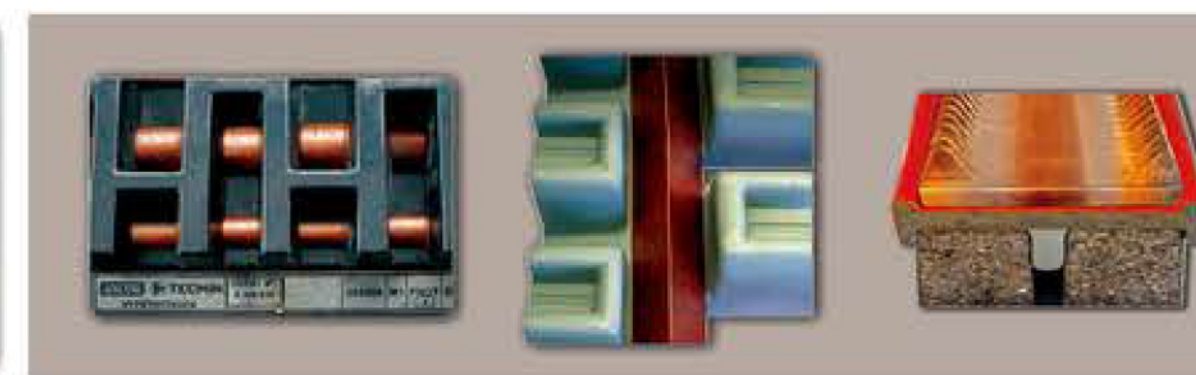
安泰可耐特设计和制造为各种型号的非金属电解槽定制的高电流高密度封盖，包括任何型号和形状的导电条（母线）——将一节或两节电接触模制成整槽长度的一体或可组装的若干节。

Depending on specific design, geometries for single or double electrical contact and other operation requirements, ANCOR TECMIN KNT materials are molded as two-strata or three-strata composite systems, and structurally reinforced incorporating single or bi-directional pultruded FRP bar armatures, to achieve high performance and years of durable, trouble-free service.

基于特殊设计，一节或两节电接头的几何形状和其他操作要求，安泰可耐特先模压成两片或三片复合物，然后进行结构增强，并镶嵌单向或双向的挤拉的玻璃钢电枢条，以达到高电流接触性能要求以及经久耐用和免维护的目的。



Improved Electric Contacts, Even With High Current Densities  
Assured by ANCOR TECMIN KNT experience and professional design capabilities supplying capping boards for refineries and electrowinning plants, new and refurbished, worldwide.



高电流密度下接触性能一致得到提高  
由专业的安泰可耐特封盖体系设计保证任何电解槽和导电条的安装

Durable, Trouble-Free Performance

Assured by precision-molded parts with advanced composite materials, developed and field-tested for high density currents.

经久耐用免维护

由采用先进的复合材料压制而成的精确配件和在现场通过的高电流测试来保证

Tailored Capping Board Systems

For all type of requirements, from hand-made parts for pilot plants, to high-volume manufacturing for tankhouses producing hundreds of thousands tons per year of copper or zinc. ANCOR TECMIN KNT has design, engineering and manufacturing expertise to produce efficiently for projects of any size.

定制的封盖体系

安泰可耐特拥有独有的先进的复合材料的设计、工程和生产经验来生产具有独到之处的革新后的封盖的定位销，可在客户自己的电解槽内进行试车和评估。

Advanced Capping Board Systems Within the Scope of Maintenance Budgets

Without requiring major capital expenditure projects. ANCOR TECMIN KNT has developed proprietary technology enabling to manufacture molds for volume production directly from 3D drawings. Short runs or prototypes of new capping board models for replacement of existing boards in average size tank houses are especially competitive.

可承受的综合封盖体系

安泰可耐特拥有专有的技术直接从3维图纸以低成本来生产模压配件所需的模具。安泰可耐特用来替换现有的封盖的模型和小批量生产将以平均尺寸计算，成本非常有竞争力，常用的标准材料和工艺的模具成本将抵消封盖的革新费用。