泰和新材 TAYHO

致力于成为全球 NO.1
锂离子电池芳纶解决方案技术服务商

Committed to be the NO.1 lithium-ion battery aramid solution service provider worldwide

SAFE3M™

高性能芳纶锂离子电池隔膜

HIGH-PERFORMANCE ARAMID LITHIUM-ION BATTERY SEPARATOR

烟台泰和电池新材料科技有限公司

Tayho Battery Materials Technology Co., Ltd.

地址：山东省烟台市经济技术开发区太原路1号

联系人：刘泽庆 13697879669

邮箱：liuzeqing@tayho.com.cn

泰和新材官方公众号

烟台泰和电池新材料科技有限公司

Tayho Battery Materials Technology Co., Ltd.

Pioneer and leader of aramid materials in China

中国芳纶材料的开拓者与领导者

作为一家全球化运营的化工新材料公司，泰和新材秉持“人才引领、创新驱动”的发展战略，致力于为用户创造价值，与客户共同成长，业务范围横跨绿色化工、先进纺织、高性能纤维、新能源材料等众多产业领域，已成为国际高性能纤维产业的龙头企业。

TAYHO ADVANCED MATERIALS GROUP CO.,LTD. is a global new chemical materials leading enterprise.
Development Strategy: talent leading and innovation-driven
Marketing Policy: creating value for customers and growing together with them.
Tayho is devoted to many industrial fields, such as green chemical, advanced textiles, high-performance fiber and green energy materials, etc.

6	24	5	4500+	2700+	002254
主营产品 Main products	权属企业 Ownership enterprises	产业园区 Industrial parks	占地面积(亩) Acres	全球员工数量 Number of employees worldwide	公司证券代码 Stock code

About TayHO

关于泰和新材

泰美达® 间位芳纶
Tametar® Meta-aramid

国内第一，全球第二
Top1 in China,Top2 in the world

泰普龙® 对位芳纶
Taparan® Para-aramid

国内第一，全球第三
Top1 in China, Top3 in the world

民士达® 芳纶纸
Metastar® Aramid paper

国内第一，全球第二
Top1 in China,Top2 in the world

芳纶隔膜产品
SAFEBM™ Aramid coating separator

致力于全球第一
To be Top1 in the world

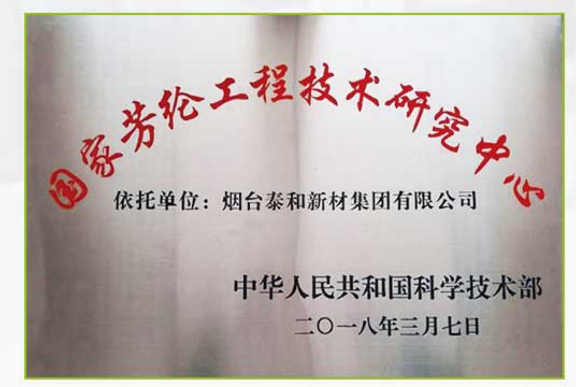
Aramid Products

芳纶产品

芳纶系列产品全球第二
Aramid ranks Top2 in the world.

Innovation Capability

创新能力



领先的创新平台
Leading innovation platform

- ◇ 国家芳纶工程技术研究中心
- ◇ 国家认定企业技术中心
- ◇ 山东省芳纶产业技术创新中心
- ◇ 博士后科研工作站

- ◇ National Aramid Fiber Engineering Technology Research Center
- ◇ National Enterprise Technology Center
- ◇ Aramid Fiber Industry Technology Innovation Center in Shandong Province
- ◇ Postdoctoral Research Workstation

尖端的科研装备
Cutting-edge scientific equipment

- ◇ 中试装置 42 套
- ◇ 研究实验室 15 个
- ◇ 分析检测室 11 个
- ◇ 分析检测仪器 300 余台

- ◇ 42 Pilot Sets
- ◇ 15 Research Labs
- ◇ 11 Analytical Labs
- ◇ More than 300 Analytical and Testing Instruments

丰硕的创新成果
Fruitful innovations

- ◇ 国家科技进步奖 3 项
- ◇ 省部级科技进步奖 16 项
- ◇ 授权专利 153 项
- ◇ 国家与行业标准 80 余项

- ◇ 3 National Science and Technology Progress Awards
- ◇ 16 Provincial and Ministerial Science and Technology Progress Awards
- ◇ 153 Authorized Patents
- ◇ More than 80 National and Industry Standards

Market Guarantee

市场保障

公司产品服务于包括纺织、医疗、信息、航空、国防、交通、环保、应急等几乎所有的国民经济各相关领域，为全球经济发展和国家战略实施提供关键性、基础性的支撑、保障和服务。

Tayho’ s products serve almost all areas related to the national economy, including textiles, information, aviation, transportation, safety protection, environmental protection, emergency, etc., providing key and basic support for the development of the national economy and the implementation of national strategies.

纺织服装
Textile and Apparel

信息通信
Information and Communication

新能源
Electric Vehicles

应急救援
Emergency Rescue

智能穿戴
Smart Wear

航空工业
Aero Industry

安全防护
Safety Protection

环境保护
Environmental Protection

SAFE3M™

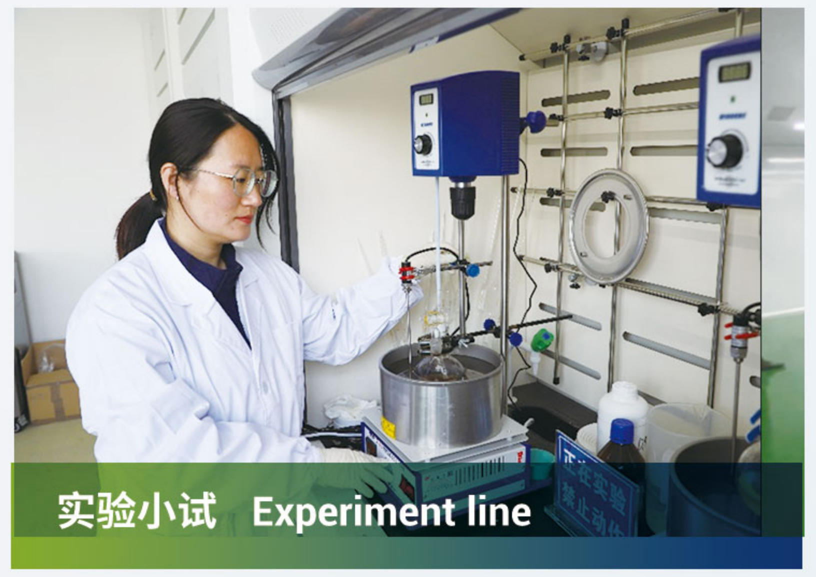
高性能芳纶锂离子电池隔膜
HIGH-PERFORMANCE ARAMID LITHIUM-ION BATTERY SEPARATOR

芳纶涂覆隔膜是一种新型耐热隔膜，具有比重小、耐高温、抗氧化、易浸润等优异的性能，能够显著提升电池的制成效率、安全性能、快充性能和循环寿命。

Aramid coated separator is a new type of heat-resistant battery separator.
With low density, high temperature resistance, oxidation resistance, and easy infiltration, it can significantly improve the production efficiency, safety performance, fast charge performance and long cycle life of the battery.

Advanced product

先进产品


实验小试 Experiment line


中试产线 Pilot production line


隔膜检测 Separator test lab


批量产线 Batch production line


电池组装 Battery assembly


电池检测 Battery detection

R&D Guarantee

研发能力

从实验小试到产业化中试、批量生产，从隔膜检测到电池组装、测试，提供一体化研发和保障能力。

To guarantee integrated research and development, as well as support capacity.

Product Advantages

产品优势

隔膜优势
Separator advantages

低面密度 **Light weight**	相同规格下，芳纶涂覆隔膜的涂层面密度比陶瓷隔膜小 50%	Surface density 50% lower than ceramic coated separator
强吸液性 **Strong liquid absorption**	芳纶涂覆隔膜较基膜提升 1 倍吸液率，利于提高电池生产效率和电池循环性能	Absorbing efficiency increased up to 2times after coating, which could increase battery production efficiency and cycle life
高破膜温度 **High melting temperature**	芳纶涂覆隔膜的破膜温度显著提升至 250~380°C	Film melting temperature up to 250~380℃
抗穿刺性好 **Good puncture resistance**	芳纶最大的优势之一是机械性能好，抗穿刺性能高于陶瓷隔膜，尤其是高温抗穿刺性能优异	Higher puncture strength than ceramic coated separator, especially at high temperatures

电池优势
Battery advantages

高/低温容量高 **High discharge capacity**	芳纶涂覆膜的低温放电容量比陶瓷涂覆膜高 10%，高温放电容量相对高 13%	Discharge capacity increased 10% at low temperature, and 13% at high temperature compared with ceramic coated separator
循环寿命长 **Long cycle life**	与陶瓷涂覆隔膜电池循环寿命测试对比，芳纶隔膜电池循环寿命提升 30% 以上，电池一致性更好	Battery cycle life increased 30%, with better uniformity
快速充电 **Fast charging**	与电解液亲润性高，有利于提高电池快充性能	Fast charging capacity increased due to good infiltration
高安全性能 **High safety performance**	热针穿刺 / 形变挤压测试，芳纶涂覆膜通过率 100%	100% pass rate at hot needle puncture and crush test

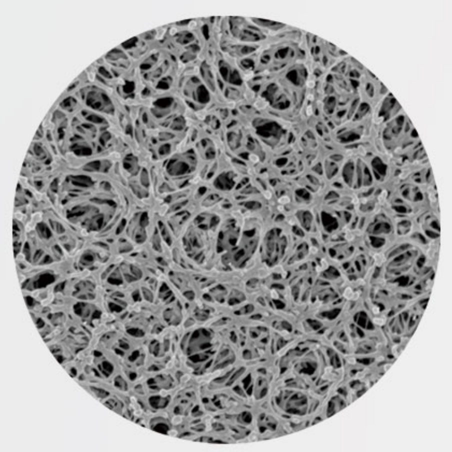
Aramid Separator

芳纶隔膜

产品商标为 SAFE3M™，目前有 THM 、THCM、 THCP 3款型号产品。

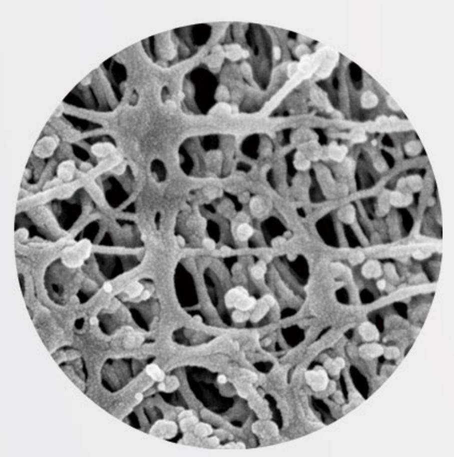
SAFE3M™ now has three types: THM\THCM\THCP

▶ THM



产品名称 Product name	产品规格 Product specification
纯间位芳纶涂覆隔膜 Meta-aramid coated separator	9+3 7+2+2 9+2+2 12+2+2

▶ THCM



产品名称 Product name	产品规格 Product specification
间位芳纶陶瓷涂覆隔膜 Meta-aramid & ceramic mix coated separator	9+3 7+2+2 9+2+2 12+2+2

▶ THCP

产品名称 Product name	产品规格 Product specification
对位芳纶陶瓷涂覆隔膜 Para-aramid & ceramic mix coated separator	9+3 7+2+2 9+2+2 12+2+2

基膜厚度范围5.0-16.0μm，涂层厚度0.5-4.0μm，可根据客户需求进行定制化开发。

Base film thickness is 5.0-16.0 microns, coating thickness is 0.5-4.0 microns; all can be customized according to customer's needs.

产品参数
SPECIFICATION

项目 Items		单位 Unit	基膜 Base	THM0722	THM0702	THCP0722
厚度 Thickness		μm	7.2	11.5	8.5	11.6
面密度 Surface density		g/㎡	4.1	6.8	5.4	7.8
孔隙率 Porosity		%	35.9	39.0	39.0	/
透气值 Air permeability value		s/100cc	112.4	172.1	166.0	180.6
拉伸强度 Tensile strength	MD	Mpa	244.9	215.9	224.0	184.7
	TD	Mpa	287.9	198.5	196.0	160.4
断裂伸长率 Elongation	MD	%	71.2	109.7	96.3	115.0
	TD	%	90.0	119.9	102.5	129.6
热收缩 Thermal shrinkage 105℃ 1h	MD	%	2.0	0.2	0.2	0.0
	TD	%	0.0	0.2	0.0	0.0
热收缩 Thermal shrinkage 130℃ 1h	MD	%	/	3.0	4.0	2.5
	TD	%	/	2.0	1.5	0.5
热收缩 Thermal shrinkage 150℃ 1h	MD	%	/	6.0	6.7	4.0
	TD	%	/	4.0	5.0	3.5
热收缩 Thermal shrinkage 180℃ 1h	MD	%	/	5.2	5.7	4.5
	TD	%	/	4.8	5.0	2.3
剥离强度 Peel strength		kN/m	/	0.097	0.095	0.078
穿刺强度 Puncture strength		N	3.5	4.3	4.1	3.8
破膜温度 Melting temperature		℃	130-140	210-260	210-260	≥250

注：检测标准：GB/T 36363-2018；本技术数据表中，所有数据均为典型值或平均值，不可用做技术规范。

Please note：The data in table are typical or average values, and cannot be used as technical specifications.

产品参数
SPECIFICATION

项目 Items		单位 Unit	基膜 Base	THM0922	THM0903	THCM0922
厚度 Thickness		μm	9.2	13.5	12.3	13.5
面密度 Surface density		g/㎡	5.4	7.9	7.4	9.3
孔隙率 Porosity		%	39.0	39.9	39.7	/
透气值 Air permeability value		s/100cc	145.4	200.5	200.9	198.0
拉伸强度 Tensile strength	MD	Mpa	277.9	200.6	204.4	182.5
	TD	Mpa	233.5	121.4	202.1	172.3
断裂伸长率 Elongation	MD	%	114.9	126.0	108.8	116.3
	TD	%	111.1	151.3	118.5	126.7
热收缩 Thermal shrinkage 105℃ 1h	MD	%	2.3	0.5	0.5	0.5
	TD	%	0.5	0.0	0.0	0.0
热收缩 Thermal shrinkage 130℃ 1h	MD	%	/	3.3	4.0	2.5
	TD	%	/	1.5	2.0	1.2
热收缩 Thermal shrinkage 150℃ 1h	MD	%	/	13.8	14.0	12.0
	TD	%	/	10.0	9.0	8.2
热收缩 Thermal shrinkage 180℃ 1h	MD	%	/	9.2	10.2	8.2
	TD	%	/	5.5	6.2	6.7
剥离强度 Peel strength		kN/m	/	0.117	0.191	0.100
穿刺强度 Puncture strength		N	4.7	5.3	5.5	5.0
破膜温度 Melting temperature		℃	130-140	210-260	210-260	≥250

注：检测标准：GB/T 36363-2018；本技术数据表中，所有数据均为典型值或平均值，不可用做技术规范。
Please note：The data in table are typical or average values, and cannot be used as technical specifications.

产品参数
SPECIFICATION

项目 Items		单位 Unit	基膜 Base	THM1222	THM1203
厚度 Thickness		μm	11.5	15.8	15.0
面密度 Surface density		g/㎡	6.9	9.3	8.3
孔隙率 Porosity		%	42.0	43.7	43.2
透气值 Air permeability value		s/100cc	175.8	237.6	207.3
拉伸强度 Tensile strength	MD	Mpa	271.3	220.3	236.8
	TD	Mpa	223.7	177.7	190.9
断裂伸长率 Elongation	MD	%	102.8	94.0	108.7
	TD	%	144.2	132.8	160.8
热收缩 Thermal shrinkage 105℃ 1h	MD	%	3.8	0.5	0.5
	TD	%	0.7	0.0	0.0
热收缩 Thermal shrinkage 130℃ 1h	MD	%	/	4.3	4.5
	TD	%	/	2.0	1.8
热收缩 Thermal shrinkage 150℃ 1h	MD	%	/	19.0	24.0
	TD	%	/	13.0	16.7
热收缩 Thermal shrinkage 180℃ 1h	MD	%	/	13.2	13.2
	TD	%	/	8.5	9.0
剥离强度 Peel strength		kN/m	/	0.120	0.126
穿刺强度 Puncture strength		N	5.3	6.2	6.1
破膜温度 Melting temperature		℃	130-140	210-260	≥250

注：检测标准：GB/T 36363-2018；本技术数据表中，所有数据均为典型值或平均值，不可用做技术规范。
Please note：The data in table are typical or average values, and cannot be used as technical specifications.

Applications

应用领域

突出的耐高温性能，满足 3c、动力、储能等各类锂离子电池对高安全性的需求。

Outstanding high temperature resistance, to meet the high safety needs of lithium-ion batteries for 3C products, EVs, energy storage systems and other types.

消费电子
3C Products

电动汽车
Electric Vehicles

储能电站
Energy Storage Systems

电池系统整体安全性解决方案

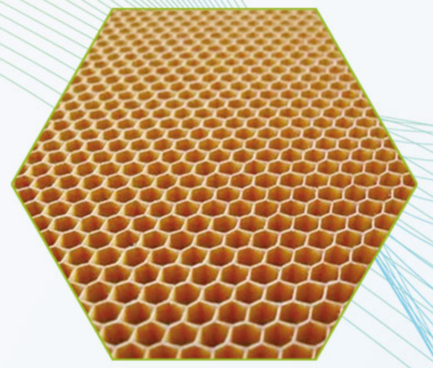
Battery System Overall Security Solution

电芯
Cell

芳纶隔膜
Aramid separator

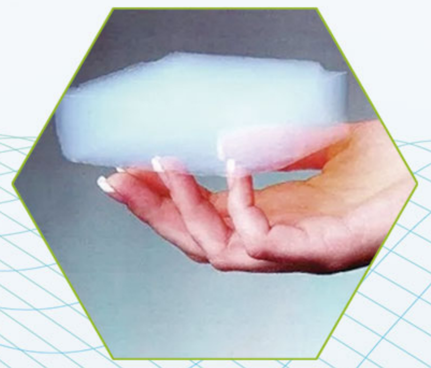
电池防护
Battery protection

芳纶防爆布
Aramid cloth



电池减重
Battery weight reduction

芳纶蜂窝
Aramid honeycomb



电池防火
Battery fire protection

芳纶气凝胶
Aramid aerogel

SAFE3M™ 为电池安全性提供芳纶整体解决方案，助力绿色安全出行和可持续发展。

SAFE3M™ provides aramid integrated solutions for battery safety, supporting safe travel and sustainable development.