让阳光 更高效

MAKE SUNLIGHT MORE EFFICIENT

旗滨光能

KIBING SOLAR

创造绿色未来

Create a Green Future

光伏玻璃营销中心/Solar Glass Marketing Center：

浙江宁海旗滨新能源管理有限公司

Zhejiang Ninghai Kibing New Energy Management Co., Ltd.

光伏玻璃生产基地/Solar Glass Production Bases：

湖南郴州·福建漳州·浙江宁波·云南昭通·马来沙巴

Hunan Chenzhou · Fujian Zhangzhou · Zhejiang Ningbo · Yunnan Zhaotong · Malaysia Sabah

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2023年3月版

旗滨光能

KIBING SOLAR

01

About
Kibing Group
关于旗滨集团

2020 高铝电子玻璃旗鲨系列问世

The Launch of High Alumina Electronic Glass HYSHARP Series

2019 药用玻璃项目启动

Start Pharmaceutical Glass business

2018 开启高铝电子玻璃时代

Start Electronic Glass business

2017 进军光伏光电新材料领域

Start Solar Glass business

2016 产业延伸发展

Business Extension and development

2015 收购三星康宁子公司

Acquisition of a subsidiary of Samsung Corning

2013 收购浙玻

Acquisition of Zhejiang glass

2011 旗滨上市

Listed on Shanghai Stock Exchange

2005 收购原株洲玻璃厂

Acquisition of Zhuzhou Glass

1988 旗滨诞生

Founded in 1988

KIBING

旗滨集团简介

Introduction of Kibing Group

株洲旗滨集团股份有限公司（以下简称“旗滨集团”）成立于2005年，2011年在上海证券交易所A股上市（证券简称：旗滨集团，证券代码：601636），是一家集优质浮法玻璃、节能建筑玻璃、低铁超白玻璃、光伏光电玻璃、电子玻璃、中性硼硅药用玻璃研发、生产、销售于一体的创新型国家高新技术企业。

旗滨集团自2005年收购原株洲玻璃厂进入玻璃行业以来，大力引进全球顶尖技术研发专家团队，购置国际先进设备，不断优化工艺流程，创新玻璃技术，迅速发展成为国内大型玻璃全产业集团之一。

经过10余年的持续耕耘和快速发展，旗滨集团总资产超过200亿元，总员工超过11000人，拥有湖南醴陵、福建漳州、广东河源、浙江绍兴、浙江长兴、浙江平湖、马来西亚森美兰州七大浮法玻璃生产基地，在湖南郴州、浙江宁波、福建漳州、云南昭通、马来西亚沙巴州等地，扩建、新建多个光伏玻璃生产基地，拥有广东河源、浙江绍兴、浙江长兴、湖南醴陵、天津、马来西亚六大节能建筑玻璃生产基地，此外，还在湖南醴陵新建电子玻璃生产基地，在湖南郴州、福建漳州等地，新建中性硼硅药用玻璃生产基地。

Kibing Group, founded in 2005, listed in the main board at Shanghai Stock Exchange Center in 2011(Stock Code: 601636), is the glass R&D, production and marketing integrated innovative national high-tech enterprise, specialising in float glass, energy-saving architectural glass, ultra-clear glass, photovoltaic glass, electronic glass and neutral borosilicate pharmaceutical glass.

Since Kibing Group formally entered the glass industry in 2005, Kibing Group has been vigorously introducing the top research and development team, purchasing cutting-edge instruments in the world. With the continuous optimization of process flows and glass manufacturing techniques, Kibing Group has grown into one of the largest industrial complexes in the domestic glass manufacturing industry. After years of continuous hard work and rapid development, up to now, Kibing Group has total assets of more than RMB 20 billion and total employees of more than 11,000 people.

Kibing owns seven float glass production bases in Liling City, Hunan Province, Zhangzhou City, Fujian Province, Heyuan City, Guangdong Province, Shaoxing City , Zhejiang Province, Changxing County, Huzhou City, Zhejiang Province, Pinghu City, Zhejiang Province, and Malaysia. Also, Kibing Group has expanded and built several photovoltaic glass production bases in Chenzhou City, Hunan Province, Ningbo City, Zhejiang Province, Zhangzhou City,Fujian Province, Zhaotong City, Yunnan Province and Pahang in Malaysia. Besides, In Heyuan City, Guangdong Province, Changxing County, Huzhou City, Zhejiang Province, Liling City, Hunan Province, Tianjin City, Malaysia and other places, Kibing Group has invested heavily in the construction of six energy-saving architectural glass production bases. In addition, Kibing Group also built new electronic glass production bases in Liling City, Hunan Province, and neutral borosilicate pharmaceutical glass production bases in Chenzhou City,Hunan Province, Zhangzhou City, Fujian Province, and other places.

02

About
Kibing Solar
关于旗滨光能

2022

纵深突破，全球化资源市场优化配置

Further expansion in upstream/downstream industrial chains

在福建漳州、浙江长兴、湖南醴陵、湖南郴州、天津等地投资兴建屋顶分布式光伏电站项目；
在云南昭通、马来西亚沙巴州等地新建光伏玻璃生产线，投资战略硅砂资源，进军全球光伏市场

Invest in the construction of rooftop distributed solar power station projects in Zhangzhou,Fujian, Changxing,Zhejiang, Liling,Hunan, Chenzhou,Hunan, Tianjin, etc.;
Build new solar glass production lines in Zhaotong,Yunnan and Sabah, Malaysia, invest in strategic silica sand resources, and enter the global solar market

2021

多点开花，全面布局光伏玻璃产业

More solar glass bases and deep processing lines are constructed

在湖南郴州、福建漳州、浙江宁波，投资新建、扩建光伏玻璃生产基地，并配套完善的深加工体系，加快集团光伏玻璃产业布局

To extend and develop solar glass business, more solar glass bases and deep processing lines are constructed in Chenzhou,Hunan, Zhangzhou,Fujian, and Ningbo,Zhejiang

2020

持续扩大光伏玻璃产业

Continue to expand the solar glass business

在湖南郴州投资扩建光伏玻璃生产基地，加快促进集团光伏玻璃产能及质量提升

Invested in the expansion of the solar glass production base in Chenzhou, Hunan, to speed up the upgrade of capacity and quality of solar glass

2017

开启光伏玻璃新时代

Start Solar Glass business

推进郴州旗滨光伏光电项目建设进度，全面进军光伏市场

Accelerate the solar glass construction progress of Chenzhou Kibing and start solar glass business

KIBING

旗滨光能简介

Introduction of Kibing Solar

旗滨光能隶属于旗滨集团，是一家集光伏玻璃、战略资源、新能源产业研发、生产、销售为一体的创新型国家高新技术企业。

旗滨光能依托母公司产业链优势，为加速实施“做强做大”的战略规划，对现有工艺进行改进优化以及技术深度融合，延伸光伏玻璃产业布局。先后在湖南郴州、浙江宁波、福建漳州、云南昭通、马来西亚沙巴州等地扩建、新建光伏玻璃生产基地，不断提升集团光伏玻璃产能和质量。凭借优异的产品性能和服务品质，旗滨光能已经成为国内优质的光伏玻璃生产企业之一。

旗滨光能以“创造绿色未来”为使命，深耕光伏新能源产业，专业研究团队潜心研发，寻求产品性能的持续提升，致力于“让阳光更高效”，为光伏产业多贡献一份力量。未来我们也将通过持续变革创新，激发更大的创新创造能力，将旗滨打造成具有时代特征、时代意义，并为市场广泛认同的卓越品牌；同时，着眼于长远的未来，以不懈创新、团结奋进，成就具有扎实功底的、经得起市场风雨考验的、长盛不衰的百年企业。

Kibing Solar, a subsidiary of Kibing Group, mainly concentrates on solar glass , Strategic Resource and new energy business.

In order to fulfill the strategy of Becoming Stronger and Bigger, Kibing Solar has improved and optimized the existing technics with the advantages of the existing industrial chain, and deepened the integration of technologies, and extended the layout of the solar glass industry, building its solar glass bases in Chenzhou Hunan, Ningbo Zhejiang, Zhaotong Yunnan, Sabah Malaysia to expand the capacity and improve quality. Kibing Solar has become one of the domestic high-quality solar glass manufacturers in products and service.

With the mission of Creating a Green Future, Kibing Solar is deeply engaged in the solar new energy industry. The professional research team is devoted to seeking continuous improvement of product performance, and is committed to Making Sunlight More Efficient. In the future, we will also stimulate greater innovation and creativity through continuous reform and innovation, and build Kibing into an excellent brand, century-old enterprise and forerunner of the Times with wide market recognition and acknowledgement.

03

Industrial Distribution

产业布局

光伏玻璃基地

Photovoltaic Glass Base

湖南·郴州

Hunan·Chenzhou

湖南旗滨光能科技有限公司

Hunan Kibing Solar Technology Co., Ltd.

湖南旗滨光能科技有限公司成立于2016年11月，位于湖南省郴州市资兴市资五产业园，首期投资7.8亿元，建设1000T/D的一窑两线高档超白光伏玻璃生产线，能够生产多种厚度、多种规格的高档超白太阳能光伏玻璃产品。

二期项目建设一条1200T/D 一窑六线高透基片生产线及八条配套光伏组件高透基板材料加工线，总建筑面积约15万㎡，项目已于2022年4月8日点火投产。二期项目达产后，预计年产值50亿元，年税收2.5亿元。

Hunan Kibing Solar Technology Co., Ltd. was established in November 2016 and is located in Ziwu Industrial Park, Zixing City, Chenzhou City, Hunan Province. The primary investment is 780 million RMB to construct a high-grade extra-clear glass production line of one furnace two line with 1000Tons/Day. Which can produce high-grade extra-clear float glass products of various thicknesses and specifications.

The second stage investment is 3 million RMB to construct a 1200Tons/Day’s high-grade extra-clear glass production line of one furnace six line with eight deep processing lines which covers an area of 150 thousand square meters. The project has been started on April 8,2022. After that, Hunan Kibing Solar is expected to have an annual output value of 5 billion RMB and an annual tax of 250 million RMB .

福建·漳州
Fujian·Zhangzhou

漳州旗滨光伏新能源科技有限公司
Zhangzhou Kibing Photovoltaic New Energy Technology Co., Ltd.

漳州旗滨光伏新能源科技有限公司成立于2020年11月，位于福建省东山县，注册资本为10亿元。计划新建两条1200T/D超白玻璃及深加工生产线，生产和销售光伏光电基板材料。目标是将漳州旗滨光伏新能源科技有限公司建设成为在福建地区具有积极影响力的新能源玻璃制造企业。

Zhangzhou Kibing Photovoltaic New Energy Technology Co., Ltd. was established in November 2020 and is located in Dongshan County, Fujian Province, with a registered capital of 1 billion RMB. Zhangzhou Kibing plans to build two new 1200 Tons/Day' s extra-clear glass production line with several deep processing lines to produce and sell high-grade extra-clear glass. At the same time, Zhangzhou Kibing Photovoltaic New Energy Technology Co., Ltd. also plans to let itself to be an influential PV glass manufacturer in Fujian province.

浙江·宁波
Zhejiang·Ningbo

宁波旗滨光伏科技有限公司
Ningbo Kibing Photovoltaic Technology Co., Ltd.

宁波旗滨光伏科技有限公司成立于2021年2月，位于浙江省宁波市宁海县宁波南部滨海新区金港创业基地，注册资金10亿，占地面积约759亩，总投资30亿，总建筑面积约69万平方，项目共建设2条1200T/D光伏高透基板材料项目，并配套深加工生产线。

Ningbo Kibing Photovoltaic Technology Co., Ltd. was established in February 2021 and is located in the Jingang Entrepreneurship Base, Binhai New Area, South Ningbo, Ninghai County, Ningbo City, Zhejiang province with a registered capital of 1 billion, covering an area of about 759 mu (equals to 506000 sq. meters). There is a total investment of 3 billion to construct two high-grade extra-clear glass production lines of 1200 Tons/Day with deep processing lines which covers an area of about 690,000 square meters.

云南·昭通

Yunnan·Zhaotong

昭通旗滨光伏科技有限公司

Zhaotong Kibing Photovoltaic Technology Co., Ltd.

昭通旗滨光伏科技有限公司成立于2021年12月，位于云南省昭通市昭阳区经开区，项目计划总投资约 51.8亿元，投资新建4 条 1200T/D 光伏高透基材项目，建设周期预计三年，分期建设。

Zhaotong Kibing Photovoltaic Technology Co., Ltd. was established in December 2021 and is located in Industrial Park, Zhaoyang District, Zhaotong City, Yunnan Province. There is a total investment of 5.18 billion RMB to construct four 1200 Tons/Day high-grade extra-clear glass production lines. The construction will be carried out in stages within about 3 years .

马来·沙巴

Malaysia·Sabah

沙巴旗滨光伏新材料（马来西亚）有限公司

SBH Kibing Solar New Materials (M) SDN. BHD.

沙巴旗滨光伏新材料（马来西亚）有限公司成立于2022年1月，位于马来西亚沙巴州，项目计划总投资约 31.2亿元人民币，新建2条1200t/d光伏玻璃生产线，预计建设周期16 个月。

SBH Kibing Solar New Materials (M) SDN. BHD. was established in January 2022 and is located in Sabah, Malaysia. A total of 3.12 billion RMB is invested to construct two 1200 Tons/Day photovoltaic glass production lines with a construction stages about 16 months.

战略资源基地
Strategic Resource Base

湖南·郴州
Hunan·Chenzhou

资兴旗滨硅业有限公司
Zixing Kibing Silicon Materials Co.,Ltd.

资兴旗滨硅业有限公司成立于2016年12月，位于湖南省资兴市州门司镇，公司自有大型石英矿山，主营业务为超白石英砂的生产与销售。公司建成年产30万吨高品质超白石英砂加工生产线，生产模式采用物理选矿加浮选的方法，工艺及设备先进，产品广泛应用于中性硼硅药用玻璃素管、光伏光电玻璃、高铝玻璃、特种陶瓷、耐磨材料及高级填料等领域。

Zixing Kibing Silicon Materials Co.,Ltd. was established in December 2016 and is located in Zhoumensi Town, Zixing City, Hunan Province. With its own large-scale quartz mine, it mainly concentrate on the production and sales of extra-white quartz sand. There is a 300,000 Tons/Year high-quality extra-white quartz sand processing production line with advanced technology and equipment. The production mode is physical beneficiation and flotation and the products are widely used in Neutral Borosilicate Pharmaceutical glass tube, Solar glass, High Alumina glass, special ceramics, wear-resistant materials and advanced fillers and other fields.

湖南·郴州
Hunan·Chenzhou

湖南旗滨光能科技有限公司资兴分公司
Hunan Kibing Solar Technology Co., Ltd. Zixing Branch

湖南旗滨光能科技有限公司资兴分公司成立于2021年3月，位于湖南省资兴市唐洞街道资五产业园江高路9号。项目总投资6亿元人民币，总用地面积约140亩，建设2条高品质环保超白石英砂生产线，年产量达58万吨，年产值约3亿元，提供就业岗位约150多个。产品广泛应用于中性硼硅药用玻璃、光伏光电玻璃、超白玻璃、高铝玻璃等领域。同时，依托资兴市丰富的矿产资源，为旗滨集团在郴州地区的光伏光电及高端医药玻璃提供产业配套的超白石英砂原料供应基地。

Hunan Kibing Solar Technology Co., Ltd. Zixing Branch was established in March 2021 and is located at No. 9 Jianggao Road, Ziwu Industrial Park, Tangdong Street, Zixing City, Hunan Province. There is a total investment of 600 million RMB and the total land area is about 140 mu(equals to 93333sq. meters) to construct two high-quality environmentally friendly extra-white quartz sand production lines which can reach an annual output of 580,000 Tons and annual output value of about 300 million RMB, provide more than 150 jobs. Products are widely used in Neutral Borosilicate glass, Photovoltaic glass, extra-clear glass, High Alumina glass and other fields. At the same time, benefiting from the rich mineral resources of Zixing City, it provides an industrial supporting extra-white quartz sand raw material supply base for photovoltaic optoelectronics and high-end medical glass for Kibing Group in Chenzhou.

云南·昭通

Yunnan·Zhaotong

彝良旗滨硅业有限公司

Yiliang Kibing Silicon Materials Co.,Ltd.

彝良旗滨硅业有限公司成立于 2021 年，位于云南省昭通市，项目计划总投资约 10.8亿元人民币（分期投入），项目建设周期预计 3 年，分期建设。

Yiliang Kibing Silicon Industry Co., Ltd. was established in 2021 and is located in Zhaotong City, Yunnan Province with a total investment about RMB 1.08 billion (invested in stages).The construction period of the project is expected to be 3 years and the construction will be carried out in stages.

马来·沙巴

Malaysia·Sabah

沙巴旗滨硅材料（马来西亚）有限公司

SBH Kibing Silicon Materials (M) SDN. BHD.

沙巴旗滨硅材料（马来西亚）有限公司成立于2022年 1月，位于马来西亚沙巴州，项目计划总投资约 8.5亿元人民币。公司在马来西亚沙巴州建设石英砂生产基地，一是保证旗滨马来西亚光伏玻璃生产线项目的用砂需求和稳定供应；二是降低对外购硅砂的依赖，有效控制和降低产品生产成本，提升产品质量；三是充分利用当地砂资源，布局海外光伏玻璃生产基地的硅砂资源战略储备，进一步增强集团国内光伏玻璃硅砂资源供应保障。

SBH Kibing Silicon Materials (M) SDN. BHD. was established in January 2022 and is located in Sabah, Malaysia with a total investment of 850 million RMB. Building a quartz sand production base in Sabah, Malaysia is a key project with notable strategic importance: Firstly, to ensure prompt and stable supply of sand for the Kibing Solar’ s solar glass production line. Secondly, to reduce the dependence on external purchases of silica sand, and effectively control and reduce products production costs. The third is to make full use of the local sand resources, lay out the strategic reserves of silica sand resources in overseas solar glass production bases, and further enhance the supply guarantee of the domestic solar glass silica sand resources of Kibing Solar.

新能源基地
New Energy Base

湖南·郴州
Hunan·Chenzhou

24 MWp
24MWp
装机容量
Installed Capacity

2.4 千万度
24 million kW·h
年度发电总量
Total Annual Power Generation

2.4 万吨
24000 tons
年度CO_2节能减排量
Annual CO_2 Energy Saving and Emission Reduction

* 说明：年有效发电小时数 997小时
PS：the annual effective power generation hours are 997 hours

湖南·醴陵
Hunan·Liling

50 MWp
50MWp
装机容量
Installed Capacity

5.0 千万度
50 million kW·h
年度发电总量
Total Annual Power Generation

5.0 万吨
50000 tons
年度CO_2节能减排量
Annual CO_2 Energy Saving and Emission Reduction

* 说明：年有效发电小时数 997小时
PS：the annual effective power generation hours are 997 hours

福建·漳州
Fujian·Zhangzhou

25 MWp
25MWp
装机容量
Installed Capacity

2.8 千万度
28 million kW·h
年度发电总量
Total Annual Power Generation

2.8 万吨
28000 tons
年度CO_2节能减排量
Annual CO_2 Energy Saving and Emission Reduction

* 说明：年有效发电小时数 1116 小时
PS：the annual effective power generation hours are 1116 hours

天津
Tianjin

11.88 MWp
11.88MWp
装机容量
Installed Capacity

1.6 千万度
16 million kW·h
年度发电总量
Total Annual Power Generation

1.6 万吨
16000 tons
年度CO_2节能减排量
Annual CO_2 Energy Saving and Emission Reduction

* 说明：年有效发电小时数 1317 小时
PS：the annual effective power generation hours are 1317 hours

浙江·长兴
Zhejiang·Changxing

32.14 MWp
32.14MWp
装机容量
Installed Capacity

3.4 千万度
34 million kW·h
年度发电总量
Total Annual Power Generation

3.4 万吨
34000 tons
年度CO_2节能减排量
Annual CO_2 Energy Saving and Emission Reduction

* 说明：年有效发电小时数 1067 小时
PS：the annual effective power generation hours are 1067 hours

04

Description of Products

产品介绍

04-1 新一代超白光伏 面板玻璃

New Generation Extra Clear Solar Glass

超白光伏玻璃是一种超透明低铁玻璃，也称低铁玻璃、高透明玻璃。它是一种高品质、多功能的新型高档玻璃品种，透光率可达91.5%以上，具有晶莹剔透、高档典雅的特性，有玻璃家族“水晶王子”之称。超白玻璃同时具备优质浮法玻璃所具有的一切可加工性能，具有优越的物理、机械及光学性能，可像其它优质浮法玻璃一样进行各种深加工。无与伦比的优越质量和产品性能使超白玻璃拥有广阔的应用空间和光明的市场前景。

集团充分研究光伏产品特性并独创推出新一代超白光伏玻璃，通过不断融合先进技术、优化产品工艺，原片性能、钢化性能、镀膜性能及耐候性能均得到了极大的提升。

Extra clear solar glass is a kind of Extra-transparent low-iron glass, also known as low-iron glass and high-transparency glass. It is a new type of high-quality and multi-functional high-grade glass with a light transmittance of more than 91.5%. Extra clear glass also has all the processing properties of high-quality float glass, and has excellent physical, mechanical and optical properties, and can be processed in various deep processes. Unparalleled superior quality and product performance make extra clear glass have broad application and bright market prospects.

Based on the complete study on the solar product, Kibing Solar has launched the new generation extra clear solar glass. Through continuous integration of advanced technology and optimization of production process, the performance of raw glass sheet, mechanical strength, coating and weather resistance have been greatly improved.

玻璃规格 / Specifications

厚度范围：1.6mm-4.0mm

厚度偏差：2.0mm±0.15mm；3.2mm±0.2mm

厚薄差：2.0mm，≤0.2mm；3.2mm，≤0.25mm

宽度范围：3000-3660mm
（轻松兼容182、210等大型组件）

镀膜玻璃透过率：≥94.3%

Thickness range: 1.6mm-4.0mm

Thickness deviation: 2.0mm±0.15mm;3.2mm±0.2mm

Thickness difference: 2.0mm,≤0.2mm;3.2mm,≤0.25mm

Width range: 3000-3660mm
(easily compatible with 182, 210 and other large modules)

Coated glass transmittance: ≥94.3%

钢化性能 / Tempering Properties

旗滨新一代超白光伏玻璃钢化性能参数

Tempering Properties of New Generation Extra Clear Solar Glass

玻璃厚度 Glass thickness	1.6mm	2.0mm	3.2mm
钢化程度 Tempered or not	半钢化 Heat-strengthened	半钢化 Heat-strengthened	钢化 Tempered
最大规格 Max size	1400×2500mm	1400×2500mm	1400×2500mm
弓形度 General bow	≤0.20%	≤0.20%	≤0.20%
波形度 Local bow	≤0.25mm/300mm	≤0.25mm/300mm	≤0.25mm/300mm
边部翘曲 Edge warp	≤0.4mm/300mm	≤0.4mm/300mm	≤0.4mm/300mm
表面应力 Comprehensive stress	≥80MPa	≥80MPa	≥120Mpa
颗粒数 Fragmentation test	/	/	60-90粒 60-90pcs
落球测试 Impact test	标准227g钢球1m Standard 227g steel ball from 1m height	标准1040g钢球0.7m Standard 1040g steel ball from 0.7m height	标准1040g钢球1.2m Standard 1040g steel ball from 1.2m height
静压测试 Static pressure test	2000pa	3000pa	4000pa

镀膜性能 / Coating Performance

旗滨新一代超白光伏玻璃镀膜性能参数
Coating Properties of New Generation Extra Clear Solar Glass

测试项目 Test item	测试条件 Test condition	标准（△T） Standard (△T)	结果 Result
耐酸性能 Acid resistance	JC/T2170-2013(2017)/6.8	＜1%	合格 Qualified
耐中性盐雾性能 Neutral salt spray resistance	JC/T2170-2013(2017)/6.9	＜1%	合格 Qualified
耐热循环性能 Thermal cycling stability	JC/T2170-2013(2017)/6.10	＜1%	合格 Qualified
耐湿冻性能（HF10） Humidity-freeze Test	JC/T2170-2013(2017)/6.11	＜1%	合格 Qualified
耐湿热性能（DH1000） Damp-heat test	JC/T2170-2013(2017)/6.12	＜1%	合格 Qualified
耐紫外性能 UV Test	JC/T2170-2013(2017)/6.13	＜1%	合格 Qualified
PCT加速老化性能 PCT accelerated ageing resistance	120°C，99%RH，48h	＜1%	合格 Qualified
紫外热循环性能 UV thermal cycling performance	200W/㎡，-40°C和85°C，100次循环 200W/㎡, -40°C and 85°C, 100 cycles	＜1%	合格 Qualified
耐沾污性能 Stain resistance	6G，23°C，50%RH，24H，5次循环 6g, 23°C, 50%RH, 24h, 5cycles	＜1%	合格 Qualified

04-2 新一代超白光伏 背板玻璃
New Generation Extra Clear Rear Solar Glass

超白光伏背板玻璃是双玻光伏组件的背面用玻璃。双玻光伏组件顾名思义就是指由两片玻璃和太阳能电池片及胶膜材料组成复合层，电池片之间由导线串、并联汇集到引线端所形成的光伏电池组件。双玻组件兼具背面可以发电、生命周期长、高防火等级、耐候耐磨耐腐蚀等优点，而且玻璃是无机环保材料，对户外环境更加友好。随着技术的不断进步，双玻光伏组件越来越普及，且成为组件行业的重要发展方向。

新一代超白光伏背板玻璃产品为我司独立研发，拥有自主知识产权，并且申请专利保护的产品。产品质量稳定，目前已经通过各项测试认证，并稳定向多家组件企业供货。

The New Generation Extra Clear Rear Solar Glass is the back side glass for bifacial solar modules. Bifacial solar modules which made up with two pieces of glass, solar cells and encapsulation materials, and the cells are connected in series or parallel to the lead end. There are several advantages of bifacial solar modules such as power generation on the back, long life cycle, high fire resistance, weather resistance, wear resistance and corrosion resistance, and glass is an inorganic environmentally friendly material. With the continuous advancement of technology, bifacial solar modules are becoming more and more popular, and have become an important development direction of the module industry.

The New Generation Extra Clear Rear Solar Glass is independently developed by Kibing Group, having independent intellectual property rights, and with patent protection. With stable quality, it has passed various tests and certifications, and has been supplied to major module manufacturers continuously.

玻璃规格 / Specifications

厚度范围：1.6mm-4.0mm

厚度偏差：2.0mm±0.15mm；3.2mm±0.2mm

厚薄差：2.0mm，≤0.2mm；3.2mm，≤0.25mm

宽度范围：3000-3660mm
（轻松兼容182、210等大型组件）

对玻璃钻孔采用行业领先的激光钻孔工艺，孔位精准，不易形成毛刺等边部缺陷；同时兼具白色丝印和黑色丝印工艺，釉层平整，位置精准，满足客户对釉料的各种性能要求

Thickness range: 1.6mm-4.0mm

Thickness deviation: 2.0mm±0.15mm; 3.2mm±0.2mm

Thickness difference: 2.0mm, ≤0.2mm; 3.2mm, ≤0.25mm

Width range: 3000-3660mm
(easily compatible with 182, 210 and other large modules)

The industry-leading laser drilling process is used for precise glass drilling and to avoid edge defects such as burrs. At the same time, it has both white silk screen printing and black silk screen printing technology, the glaze layer is flat and the position is precise, which can meet the various performance requirements of customers for the glaze.

主要性能参数 / Main Parameters

旗滨新一代超白光伏背板玻璃主要性能参数
Main Parameters of New Generation Extra Clear Rear Solar Glass

钻孔 Hole drilling		孔径3.0≤D≤30mm，公差±1mm Diameter 3.0≤d≤30mm,tolerance ±1mm
原片透光率 Glass raw sheet transmittance		超白光伏玻璃：非镀釉区域应≥91.5% NON ceramic printing area ≥91.5%
釉层基础性能 The basic performance of ceramic printing	硬度 Hardness	≥4H
	附着力 Adhesion	≤1级
	反射率 Reflectivity	镀釉层反射率≥75%（波长380-1100nm） Reflectance of printing≥75%(wave length 380-1100nm)
	厚度 Thickness	15-35μm
与封装材料（EVA/POE）粘结力 Adhesion to EVA/POE		≥60N/cm

04-3 超白压延太阳能玻璃
Extra Clear Patterned Solar Glass

集团可提供优质超白压延太阳能玻璃，并配套完善的深加工体系。集团生产的超白压延太阳能玻璃具有高透过率、高机械强度、高平整度、低含铁量等优异特点，是理想的太阳能光电、光热转换系统封装材料，并已经在光伏行业得到了丰富的应用。

Kibing Solar provides high-quality extra clear Patterned Solar Glass. With characteristics such as high transmittance, high mechanical strength, high flatness, and low iron content, extra clear solar pattern glass is the ideal packaging material for photoelectric conversion systems and has been widely used in the solar industry.

玻璃规格 / Specifications

厚度范围：1.6mm-4.0mm

厚度偏差：2.0mm±0.15mm；3.2mm±0.2mm

厚薄差：2.0mm，≤0.2mm；3.2mm，≤0.25mm

最大规格：1400*2500mm
（轻松兼容182、210等大型组件）

原片透过率：≥91.8%

Thickness range: 1.6mm-4.0mm

Thickness deviation: 2.0mm±0.15mm;3.2mm±0.2mm

Thickness difference: 2.0mm,≤0.2mm;3.2mm,≤0.25mm

Maximum size: 1400*2500mm
(easy compatible with 182, 210 and other large modules)

Raw glass sheet transmittance: ≥91.8%

镀膜性能 / Coating Performance

镀膜玻璃透过率：单镀≥94.0%，双镀≥94.3%

并同样通过各种镀膜性能测试（如PCT加速老化、耐酸、耐盐雾、耐热循环、耐湿热、耐湿冻等各种耐候性测试项目）。

The transmittance of coated glass is ≥94.0% for single coating and ≥94.3% for double coating.

It also passes various coating performance tests (such as PCT accelerated ageing, acid resistance, salt spray resistance, heat resistance cycle, humidity and heat resistance, humidity and cold resistance, and other weather resistance test items).

钢化性能 / Tempering Properties

旗滨光能新超白压延光伏玻璃钢化性能参数

Tempering Properties of Extra Clear Patterned Solar Glass of Kibing Solar

玻璃厚度 Glass thickness	1.6mm	2.0mm	3.2mm
钢化程度 Tempered or not	半钢化 Heat-strengthened	半钢化 Heat-strengthened	钢化 Tempered
最大规格 Max size	1400×2500mm	1400×2500mm	1400×2500mm
弓形度 General bow	≤0.20%	≤0.20%	≤0.20%
波形度 Local bow	≤0.25mm/300mm	≤0.25mm/300mm	≤0.25mm/300mm
边部翘曲 Edge warp	≤0.4mm/300mm	≤0.4mm/300mm	≤0.4mm/300mm
表面应力 Comprehensive stress	≥70MPa	≥70MPa	≥90Mpa
颗粒数 Fragmentation test	/	/	≥40粒 ≥40pcs
落球测试 Impact test	标准227g钢球1m Standard 227g steel ball from 1m height	标准1040g钢球0.6m Standard 1040g steel ball from 0.6m height	标准1040g钢球1m Standard 1040g steel ball from 1m height
静压测试 Static pressure test	2000pa	2400pa	2400pa

04-4 BIPV光伏玻璃及薄膜TCO光伏玻璃

BIPV Glass and Thin Film TCO Photovoltaic Glass

BIPV光伏玻璃 / BIPV Glass

BIPV，即光伏建筑一体化，是一种将太阳能发电（光伏）产品集成到建筑上的技术。BIPV项目实现了光伏组件与建筑的集成，光伏组件以一种建筑材料的形式出现，光伏方阵成为建筑不可分割的一部分。如光电瓦屋顶、光电幕墙和光电采光顶等。由于BIPV不占用额外的地面空间，并且兼具建筑的功能和美观需求，是未来建筑+光伏发展的新趋势。BIPV光伏玻璃形式多样，尺寸灵活，兼具高透过率和高强度等优良性能，是BIPV光伏组件的重要组成材料。

BIPV, or Building Integrated Photovoltaic, is a technology that integrates solar power (photovoltaic) products into buildings. The BIPV project realizes the integration of photovoltaic modules and buildings. The photovoltaic modules appear in the form of a building material, and the photovoltaic array becomes an integral part of the building. Such as photovoltaic tile roofs, photovoltaic curtain walls and photovoltaic lighting roofs. Since BIPV does not does not take additional ground space so it can meet both the functional and aesthetic needs of the building, it is a new trend in the future development of building + photovoltaics.BIPV photovoltaic glass has various forms, flexible dimensions, and has excellent properties such as high transmittance and high strength. It is an important material for BIPV photovoltaic modules.

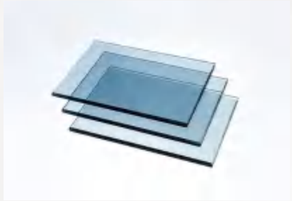
薄膜TCO光伏玻璃 / Thin Film TCO Photovoltaic Glass

薄膜光伏组件，是一种把碲化镉、铜铟镓硒或砷化镓等，通过共蒸法或者溅射法沉积在超白浮法光伏玻璃或者柔性材料基板上形成的新型组件。薄膜光伏组件具有重量轻便、弱光响应好、温度系数低、适用于各种复杂综合场景等优势。薄膜TCO光伏玻璃，具有对太阳光的高透过率和高导电率，是薄膜光伏组件的重要组成材料。

Thin film photovoltaic module is a new type of module formed by depositing cadmium telluride, copper indium gallium selenide or gallium arsenide on ultra-white float photovoltaic glass or flexible material substrate by co-evaporation method or sputtering method. Thin-film photovoltaic modules have the advantages of light weight, good weak light response, low temperature coefficient, and suitable for various complex and comprehensive scenarios. Thin-film TCO photovoltaic glass has high transmittance and high conductivity to sunlight, and is an important material for thin-film photovoltaic modules.

集团拥有丰富的色白玻原片及深加工工艺，并拥有深厚的TCO在线镀膜工艺技术和人才储备，可满足光伏建筑一体化项目（BIPV）和薄膜光伏组件对玻璃的多样化需求，为各种光伏项目提供一站式玻璃解决方案。

The group has a wealth of original color and white glass and deep processing technology, and has a deep TCO online coating process technology and talent pool, which can meet the diversified needs of building integrated photovoltaic projects (BIPV) and thin-film photovoltaic modules for glass. The project provides one-stop glass solutions.



05

Product Advantages

产品优势

01 | 高透过率

新一代超白光伏镀膜玻璃在380-1100nm波段透过率可达94.3%以上，通过光谱曲线优化，可以适配各类高效电池响应曲线，获得更高组件功率输出

01 | High transmittance

The new generation extra clear ARC glass is with more than 94.3% transmittance in 380-1100nm wavelength. Through the optimization of the spectral curve, it can be adapted to the response curve of various high-efficiency batteries and obtain higher module power output.

02 | 高强度

新一代超白光伏玻璃表面平整度良好，钢化性能更优，机械强度提升卓越，可为电池组件提供高效的保护

02 | Good performance in mechanical strength

The new generation of extra-clear photovoltaic glass has good surface flatness, better tempering performance, and excellent improvement in mechanical strength, which can provide efficient protection for battery components.

03 | 易轻薄化

新一代超白光伏玻璃原片厚度可低至零点几毫米，板面平整度高。且轻微的气泡、划伤等缺陷都非常明显，原片质量要求更高，更适合新型组件开发需求

03 | Easy to be light and thin

Kibing extra clear PV glass thickness can be less than 1mm, with high flatness, which is suitable for the development of PV module.

04 | 尺寸灵活

新一代超白光伏玻璃原片最大板宽可达4880mm，深加工最大规格为1350×2500mm，通过优化切裁可轻松兼容182和210等大尺寸组件

04 | Flexible size

The max width of raw sheet can be around 4880mm, and the max size of deep procession is 1350×2500mm. Through optimized cutting, it can be easily compatible with large-size module with 182 and 210 cell design.

05 | 强耐候性

新一代超白光伏玻璃在锡面镀膜，可有效阻挡玻璃本体中钠离子的迁移，可以提高玻璃表面以及玻璃镀膜的耐候性，保护电池组件在户外复杂环境下的稳定性，确保电池组件稳定的发电效率

05 | Strong weathering resistance

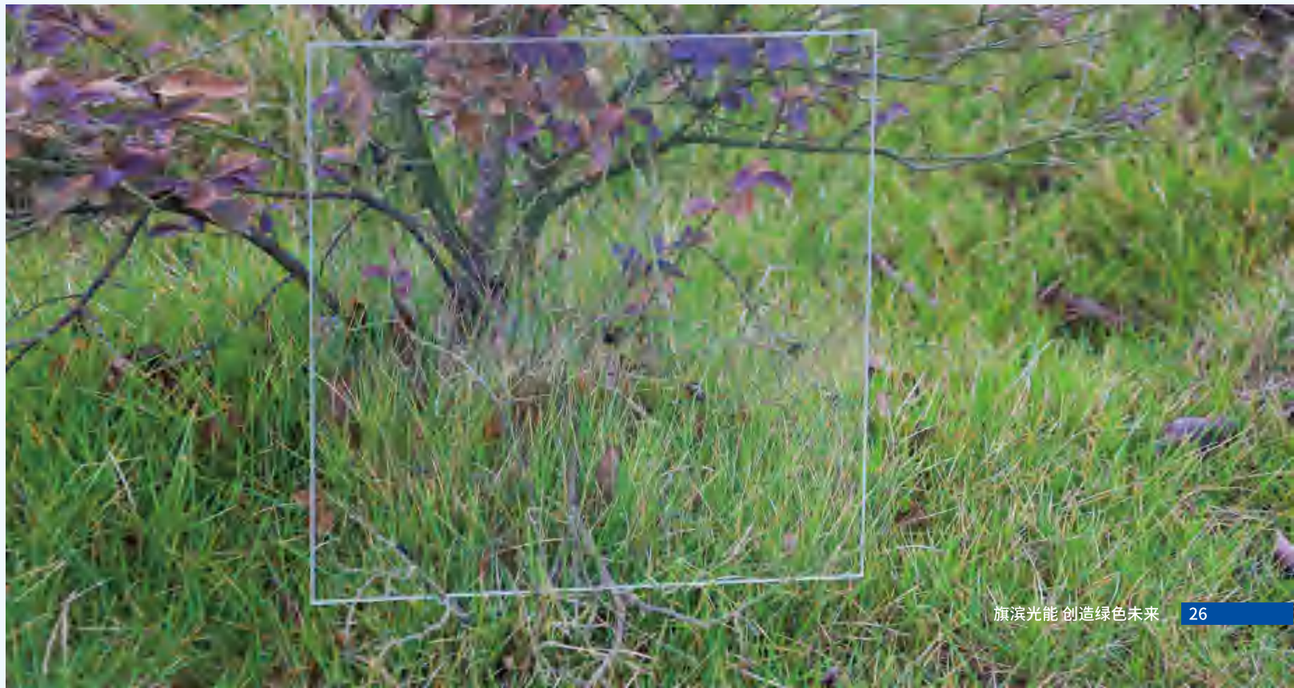
Kibing extra clear Solar ARC glass is coated on tin side, which can effectively block the migration of sodium ions in glass, can improve the weather resistance of the glass surface and the glass coating, protect the stability of the battery module in the outdoor complicated environment, and ensure the stability of the battery module Power generation efficiency

06 | 不易积灰

新一代超白光伏玻璃采用浮法工艺成型，玻璃表面平整光滑，不容易积灰，始终保持良好的外观和较高的透过率，减少灰尘对组件发电量的影响

06 | Dust not easy to be accumulated

Kibing extra clear PV glass is formed by float technics. The glass surface is flat and smooth, and dust is not easy to be accumulated. It always maintains a good appearance and high transmittance, reducing the impact of dust on the power generation of the module.



06

STRENGTHS
综合实力

专业的技术团队
Professional Technical Team

新一代超白光伏玻璃核心团队，由一支多年从事超白光伏玻璃企业管理、产品研发、生产实操、财务决策和市场开发的高级人才团队组成，掌握先进的超白光伏玻璃研发、生产核心技术，积累了丰富的成功经验。

The Kibing’s core team is composed of experienced professionals in glass production, business management, R&D, finance, and market development.

高质量的超白硅砂
High-quality Extra Clear Silica Sand

集团在湖南、云南、马来西亚等地拥有高品质硅砂生产基地，为超白光伏玻璃的生产提供了稳定可靠的原料保障。硅砂从破碎、精选、尾泥处理等工序起，到经过强力磁选设备、循环水处理等硬件设施，再到专业的硅砂运输车队运输，全程均受严格的数据监控，确保石英砂从开采、熔化、深加工到成品储藏等过程严格执行集团高质量统一生产标准方案。

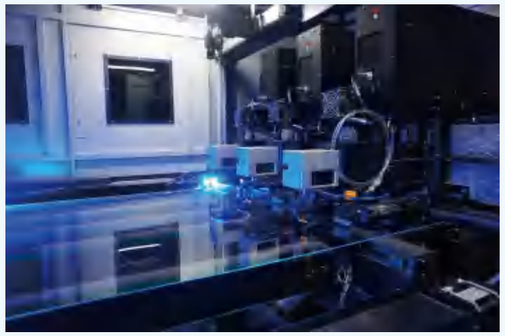
With the extra clear silica sand mine bases in Hunan and Malaysia, Kibing Group provides a stable and reliable raw material supply for the glass production. The whole process is subject to strict data monitoring from crushing, selecting, tailing treatment and other process, to hardware facilities such as powerful magnetic separation equipment, circulating water treatment, and to professional silica sand transportation fleet transportation. To ensure that the process of mining, melting, deep processing and storage of finished products strictly comply with the group's high-quality unified production standard.

先进的生产设备及优良的制程控制
Advanced Production Equipment and Excellent Process Control

集团从国外引入先进的生产设备，从原片生产、磨边、镀膜、钢化到包装，由集团最新一代全自动在线缺陷检测系统全程监控，极大提升了生产流程自动化水平及玻璃生产质量。

Kibing Group has introduced advanced equipment from abroad. The online defect detecting system has been introduced to monitor the overall production process, from glass raw sheet, edging, coating, tempering to packaging, which greatly improves the production automation and quality.

镀膜机
Coating machine



云管理激光钻孔机
Cloud management laser machine

先进的超薄钢化炉
Advanced tempering machine for extra-thin deep processing

丝印机
Ceramic printing machine

原子吸收光谱仪
Automatic absorption spectrometer (AAS)

X荧光光谱仪
X-Fluorescent spectrometer

多方位的光伏玻璃生产基地
Solar glass production bases

旗滨光能依托母公司产业链优势，为加速实施“做强做大”的战略规划，先后在湖南郴州、浙江宁波、福建漳州、云南昭通、马来西亚沙巴州等扩建、新建光伏玻璃生产基地，并配备完善的深加工体系，不断提升集团光伏玻璃产能和质量。

Taking the advantages of the parent company's industrial chain, Kibing Solar has expanded existing and built new solar glass production bases in Chenzhou, Hunan, Ningbo,Zhejiang, Zhangzhou,Fujian, Zhaotong,Yunnan, and Sabah,Malaysia, so as to continuously upgrade production capacity and quality, thus to accelerate the pace of realizing the “Going Strong and Big” strategy.

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沙巴旗滨光伏新材料（马来西亚）有限公司
SBH Kibing Solar New Materials (M) SND. BHD.

NO. 1-2-1B, 2ND FLOOR, BLOCK B, KOLAM CENTRE PHASE II, JALAN LINTAS, LUYANG 88300 KOTA KINABALU SABAH MALAYSIA

完善的体系资质证书
Perfect system qualification certificate

旗滨光能光伏玻璃产品质量满足GB15763.2-2005、GB/T 30984.1-2015、JC/T 2170-2013、EN12150、ASTM-E-903(891)-96 等标准。

质量管理体系完善，已申请并获得ISO9001：2015、ISO14001：2015、ISO45001：2018、ISO50001：2018等体系认证和CCC、PCCC、CE、CPVT、RACAH、ROHS等第三方产品认证和测试报告。

Kibing Solar's photovoltaic glass products meet the standards of GB15763.2-2005, GB/T 30984.1-2015, JC/T 2170-2013, EN12150, ASTM-E-903(891)-96 and other standards.

Kibing Solar has a complete quality management system, and has applied for and obtained ISO9001: 2015, ISO14001: 2015, ISO45001: 2018, ISO50001: 2018 and other system certifications and third-party product certifications such as CCC, PCCC, CE, CPVT, RACAH, and ROHS. testing report.