



QUICK GUIDE

快速指南

PARTNERING FOR
ALKALINE BATTERY SEPARATOR
& MORE
碱性电池隔膜纸等产品合作

2020 Edition - 2020年版





Why is Alkaline Battery Separator Important?

为什么要使用碱性
电池隔膜纸？

HIGH PERFORMANCE

Separators & Substrates For Energy Storage
用于储能的高性能隔膜纸和衬底

Separators create a physical barrier between the positive and negative electrodes to prevent short-circuits between active battery components.

Ionic conductivity being desirable for the battery performance, separators therefore require a very sophisticated porous structure combined with strong mechanical strength to withstand high-speed battery manufacturing.

隔膜在正极和负极之间形成一层物理屏障，防止电池活性组件之间发生短路。

离子电导率是电池追求的性能指标，因此隔膜纸需要有非常复杂的多孔结构以及高机械强度才能实现高速电池的制造。

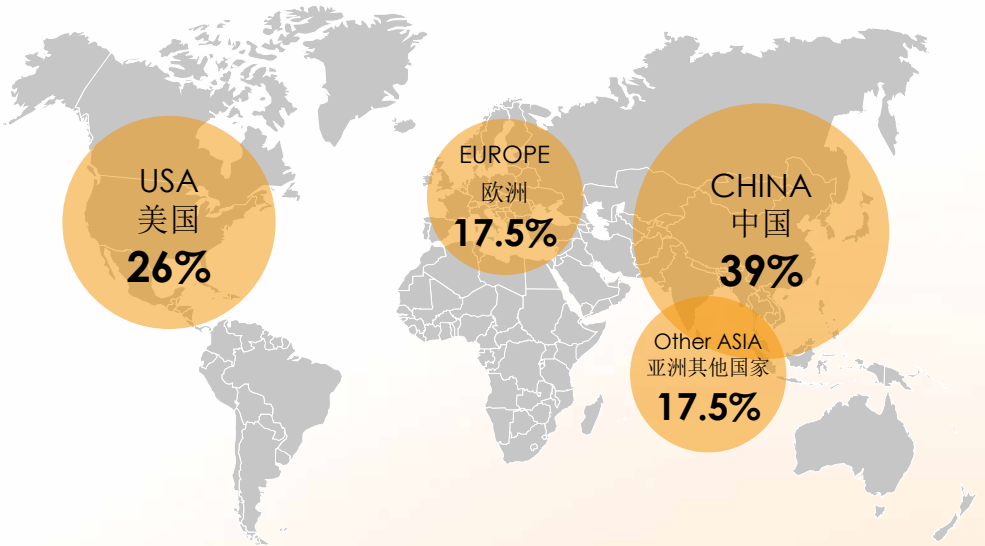


~23 Billion

Alkaline Batteries
Produced Worldwide
(SWM estimate)

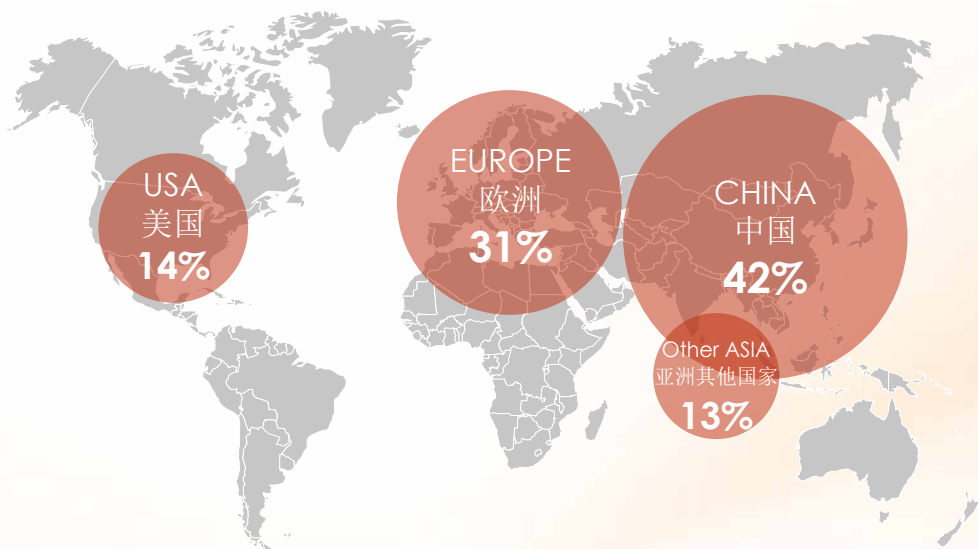
全球碱性电池产量
约230亿
(施伟策-摩迪估计)

Alkaline Production Worldwide
全球碱性电池产量





SWM Supplies Alkaline Batteries
Leading Brands and Private Labels Worldwide
施伟策-摩迪为全球碱性电池领先品牌和自有品牌供应产品



6 batteries out of 10
produced in the world equipped
with SWM battery separator papers.

全球每生产10节电池，就有6节配有施伟策-摩迪的电池隔膜纸。



Adapted Fiber Composition

经调整的纤维成分



PVA
Fibers



Wood Pulp or
Cellulose
Derivatives
(Rayon or Lyocell)



Inclined Wire
Paper Machine



Reels and
Bobbins Slitters



Mechanical
Characteristics
Dimensional
Stability



Absorption
Properties



Porosity
Barrier Effect
Thickness



Wide Range of
Dimensions
From 9 mm to 2000 mm
to adapt to different
technologies and designs

Dimensional stability is critical to resist electrolytes

Porosity (pore dimensions), **air permeability**, **consistency** in formation and thickness, **mechanical strength** are key attributes for battery performance

Bobbin quality and consistency are key properties for runnability

Inclined Wire Paper-Making Process and Extensive Converting Options

造纸机和分切选项



PVA
纤维

木浆或纤维素衍生物
(人造纤维或莱赛尔
纤维)

造纸机

卷轴和分切机

机械特性
尺寸稳定性

吸收性能

孔隙率
屏障效应
厚度

各种尺寸
从9mm到2000mm,
适应不同的技术和设计

尺寸稳定性对于抗
电解质至关重要

孔隙率(孔径)、透气性、结构和厚度均匀
性、机械强度是电池性能的关键特性

盘纸质量和均匀性
是运转性能的关键
特性



**Pore Size is a Key
Performance
Element**

孔径是
关键性能要素

OUR EXPERTISE

Adjusting Pore Dimensions to Your Needs

我们的专长

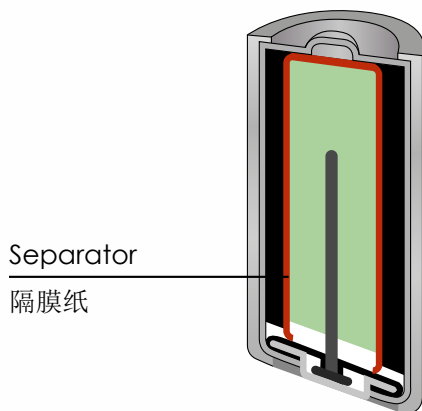
根据需要调整孔径

The separator collects and transfers electrolytes to the cathode rings, keeps its integrity and stops exchanges of contaminants between the electrodes during the storage process.

By reducing pore dimensions we prevent short circuits during storage as well as during the use of the battery.

隔膜纸收集电解质并将其转移至负极环，保持其完整性，并在存储过程中防止污染物在电极之间交换。

我们通过减小孔径，防止储存和电池使用期间发生短路。



Reduced Pore Size Grades Are Now Available

现可供应缩小孔径的规格纸张

Min pore size
最小孔径
12 - 6 μm



3.9 - 1.6 μm



Max pore size
最大孔径
40 - 17 μm



9 - 16 μm





Many Design Options of Tailor-Made Materials

多种特制材料
设计方案

**Density /
bulkiness
options**

密度/
膨松度选择

**Basis weight
Min 20 gsm
Max 100 gsm**

定量
最低20 gsm
最高100 gsm

**Fibers:
PVA, Cellulose,
Rayon and Lyocell.**

纤维: PVA、
纤维素、
人造丝及莱赛尔

OUR PORTFOLIO

我们的投资组合



**Surfactants
Options**
表面活性
剂选择



**SWM a Partner
for Development
and Networking**
施伟策-摩迪，发展和
网络交流的合作伙伴

INNOVATING / 创新

For Safer Lithium Ion Batteries / 为生产更安全的锂离子电池

In 2019 SWM joined the consortium Soteria Battery Innovation Group (BIG), an open innovation platform gathering companies dedicated to eliminating self-ignition in lithium ion batteries.

施伟策-摩迪于2019年加入Soteria电池创新集团（BIG）联盟，该联盟是一个开放性的创新平台，聚集了专注于消除锂离子电池自燃的公司。

“The power of the consortium comes from member companies like SWM, which brings key expertise in manufacturing high quality nonwovens that can be applied to making thin, uniform separators to improve the safety of lithium ion batteries in growing applications like electric vehicles and energy storage. We look forward to working closely together to further develop separators for the global energy and transportation industries”

“联盟的优势来自施伟策摩迪这样的成员公司。该公司带来了制造高品质无纺布的重要专业知识和技术，这些知识和技术适用于生产薄且均匀的隔膜纸，从而提高了电动汽车和储能等各种应用中锂离子电池的安全性。我们期待与您展开密切合作，为全球能源和运输业进一步开发隔膜纸。”



Brian Morin, CEO of Soteria BIG
Soteria BIG首席执行官 Brian Morin

SPONSORING / 赞助

Research in Supercapacitors / 超级电容器的研发

In May 2019 SWM was a sponsor member of the International Symposium on Enhanced Electrochemical Capacitors (ISEECap) which gathered researchers and experts from all over the world.



施伟策-摩迪是2019年5月举行的国际增强型电化学电容器研讨会（ISEECap）的赞助会员，该研讨会聚集了来自世界各地的研究人员和专家。

CONNECTING / 联合

Industry Key Players in China / 中国的行业领先者

Every two years, SWM organizes the China Alkaline Forum, a one-day event to bring together leading suppliers and alkaline battery manufacturers. The purpose of this event is to share information regarding the state of the industry.

The 2019 event was organized in partnership with Everzinc, Prince, Imerys, Hibar and Energy Blues.

施伟策-摩迪每两年举办一次中国碱性电池论坛，每次活动为期一天。该论坛将领先的供应商和碱性电池厂商召集在一起，旨在分享行业状况方面的信息。

2019年的活动是与以下组织合作举办的：Everzinc、Prince、Imerys、Hibar及Energy Blues。





About SWM 施伟策-摩迪 简介

SWM is a global provider of engineered fiber and resin based materials for demanding industrial applications. Our wetlaid nonwoven separators are produced in our state-of-the-art facility in Quimperlé, France.

As the energy market evolves, so does our product range. From primary alkaline batteries to super capacitor energy storage solutions, we focus on high-quality, reliable components that deliver performance and value to exact customer needs.

施伟策-摩迪是高标准工业应用中工程纤维和树脂基材料的全球供应商。本公司的湿法无纺布隔膜纸是在位于法国坎佩雷市的现代化设施中生产出的。

随着能源市场的发展，我们的产品范围也在不断变化。从碱性一次电池到超级电容器储能解决方案，我们一直专注于生产高品质、可靠的组件，针对具体的客户需求，为客户带来高性能、高价值的产品。



AN INTERNATIONAL FOOTPRINT

Manufacturer on 4 continents of SWM conduct business in over 90 countries, employ approximately 3,400 people worldwide and is quoted on the NYSE.

EC Directive 1907/2006 and REACH compliant.

A CENTER OF EXCELLENCE

Located in France where wet-laid nonwovens & papers are developed and produced.

A FOCUS ON PROXIMITY AND CUSTOMER INTIMACY

A sales force located in China. A storage capacity in China.

OUR FIELDS OF EXPERTISE

Wide range of paper solutions to adapt to various battery designs and processes. Adjustable barrier properties for Alkaline and Zinc air batteries.

国际布局

施伟策-摩迪在世界四大洲均已设厂，在90多个国家/地区开展业务，在全球拥有约3,400名员工，并在纽约证券交易所上市。

符合EC 1907/2006和REACH法规。

卓越中心

位于法国，负责开发和生产湿法无纺布和纸。

注重邻近性和客户亲密度

在中国设有销售团队；在中国有仓储能力。

我们的专业领域

针对各种电池设计和工艺提供多种纸张解决方案；对于碱性和锌空气电池，我们的产品具有可调节阻隔性能。





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