

# 日本半导体材料现状

## Semiconductor Materials in Japan

郭翔宇 Xiangyu Guo, [xiangyu.guo@htisec.com](mailto:xiangyu.guo@htisec.com)

2024年8月23日

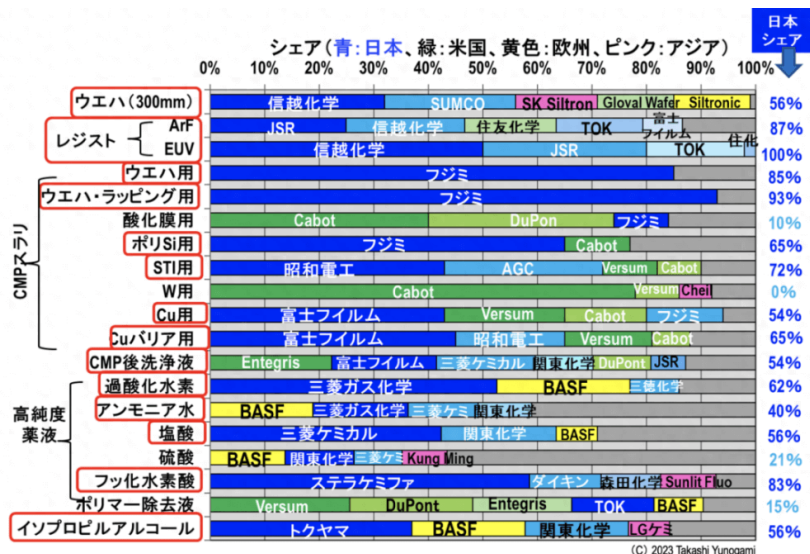
本研究报告由海通国际分销，海通国际是由海通国际研究有限公司，海通证券印度私人有限公司，海通国际株式会社和海通国际证券集团其他各成员单位的证券研究团队所组成的全球品牌，海通国际证券集团各成员分别在其许可的司法管辖区内从事证券活动。关于海通国际的分析师证明，重要披露声明和免责声明，请参阅附录。(Please see appendix for English translation of the disclaimer)

1. 概述
2. 光刻胶
3. 硅晶圆
4. 环氧塑封料

# 1 概述：日本半导体材料市场份额占比很高

- 据SEMI数据，日本公司在全球半导体材料市场占据约52%的份额，而北美和欧洲分别占据约15%。在制作芯片的19主要材料中，日本有14种材料的占有率是全球第一，例如半导体硅片（信越、胜高）、光刻胶（东京应化、信越、JSR）、CMP（Fujimi）、环氧塑封料（住友电木）等重要材料，日本在这些领域占有很高的市场份额。

图：日企占半导体前道工序材料的市场份额



表：日企占半导体前道工序材料的市场份额

材料	份額
300毫米晶圆	56%
光刻胶	87%
ArF	100%
EUV	85%
用于晶圆抛光	93%
用于氧化膜	10%
用于多晶硅	65%
用于浅沟槽隔离	72%
用于W-CMP	0%
用于Cu-CMP	54%
用于Cu Barrier	65%
CMP研磨液	54%
CMP后清洗液	62%
过氧化氢	40%
氨水	56%
盐酸	21%
硫酸	83%
氟化氢	15%
聚合物除去液	56%
合成异丙醇	

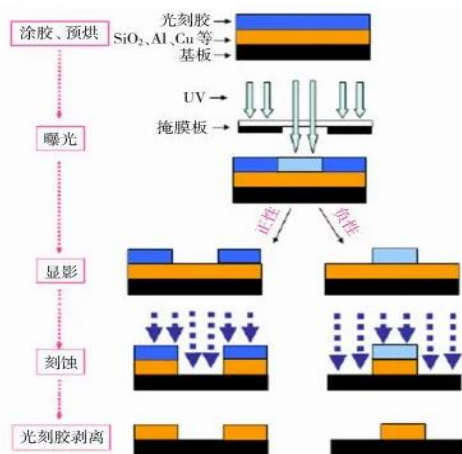
For full disclosure of risks, valuation methodologies and target price formation on all HTI rated stocks, please refer to the latest full report on our website at [equities.htisec.com](https://www.htisec.com)

1. 概述
2. 光刻胶
3. 硅晶圆
4. 环氧塑封料

## 2.1 光刻胶：图形复刻加工技术中的关键性材料

- 光刻胶是图形复刻加工技术中的关键性材料。光刻胶是利用光化学反应经光刻工艺将所需要的微细图形从掩模版转移到待加工基片上的图形转移介质，由成膜剂、光敏剂、溶剂和添加剂等主要化学品成分和其他助剂组成，在紫外光、深紫外光、电子束、离子束等光照或辐射下，其溶解度发生变化，经适当溶剂处理，溶去可溶性部分，最终得到所需图像。

图：光刻胶的应用过程



表：光刻胶在半导体工业中的应用

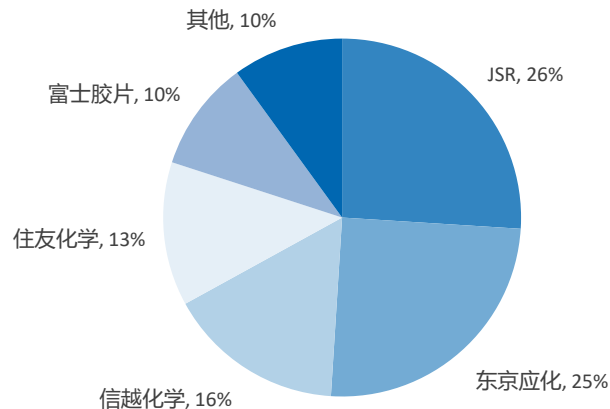
光刻胶体系	光刻波长	技术节点及用途
聚乙烯醇肉桂酸酯系负性光刻胶	紫外全谱（300-450nm）	3um以上集成电路和半导体器件
环化橡胶-双叠氮负性胶	紫外全谱（300-450nm）	2um以上集成电路和半导体器件
酚醛树脂-重氮萘醌正性胶	G线（436nm）	0.5um以上集成电路
酚醛树脂-重氮萘醌正性胶	I线（365nm）	0.25-0.5um以上集成电路
248nm正/负性胶	KrF(248nm)	0.13-0.25um集成电路
193nm正/负性胶	ArF(193nm干法) ArF(193nm沉浸法)	130-65nm集成电路 7-65nm集成电路
EUV正性胶	EUV(13.5nm)	7nm以下集成电路

For full disclosure of risks, valuation methodologies and target price formation on all HTI rated stocks, please refer to the latest full report on our website at [equities.htisec.com](http://equities.htisec.com)

## 2.2 光刻胶：日系厂商市场份额占比达90%

- 根据日本财务省2022年4月的数据，目前日系厂商在世界光刻胶市场上的份额占比约为90%，分别为JSR 26%，东京应化25%，信越化学16%，住友化学13%，富士胶片10%。而在最先进的EUV光刻胶市场上，东京应化、信越化学、JSR、住友化学则占据了几乎全部的市场份额。

图：光刻胶市场份额



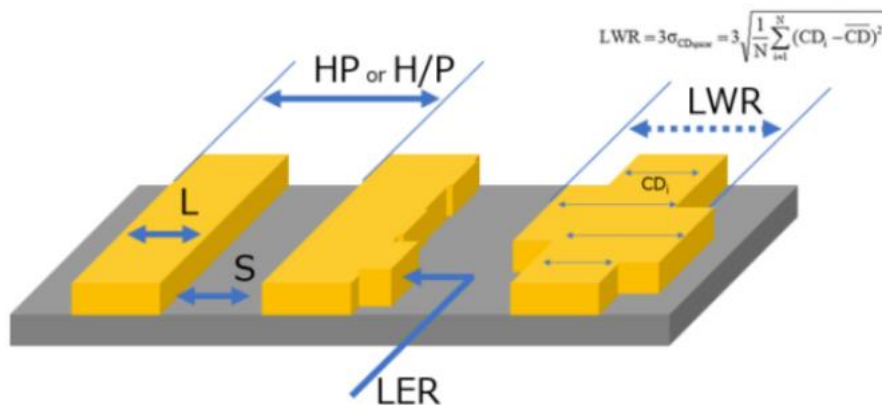
数据来源：各公司公告，海通国际

For full disclosure of risks, valuation methodologies and target price formation on all HTI rated stocks, please refer to the latest full report on our website at [equities.htisec.com](http://equities.htisec.com)

## 2.3 光刻胶：无机光刻胶或为未来方向之一

- 一直以来半导体工业使用的光刻胶均为聚合物光刻胶，这些光刻胶也被称为化学增幅型光刻胶（Chemically Amplified Resists: CAR），其原理是吸收光并产生质子（酸），从而改变聚合物在蚀刻溶液中的溶解度。然而，聚合物光刻胶在10nm级别时遇到了问题。到目前为止，几十nm级的线条图案规则都是基于使用发射波长为160 nm左右的浸入式ArF光源的光刻技术，这在聚合物材料的光吸收和反应范围内。然而，在EUV下，波长是13.5nm，传统的有机聚合物对这些超短波难以产生良好的反应。另外，当线宽幅度达到10nm左右时，即使做出图案，也会发生抗蚀墙壁面塌陷或者粘连不稳定等问题。直观地讲，在10纳米水平上，要在“缓慢溶解”的系统中保持半导体内的LWR、LER等互连相关值的稳定性和低变异性极为困难。

图：刻蚀用语图示



L/S: 线/间距 · 抗蚀墙宽度/墙与墙的间距

H/P或HP: 半间距 · 相邻抗蚀墙的间距

LER: 线边缘粗糙度 · 抗蚀墙壁两侧的粗糙度

LWR: 线宽度粗糙度 · 抗蚀墙壁的宽度变化

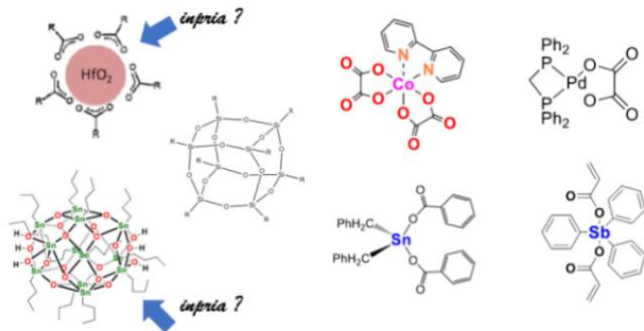
数据来源：CINNO，海通国际

For full disclosure of risks, valuation methodologies and target price formation on all HTI rated stocks, please refer to the latest full report on our website at [equities.htisec.com](http://equities.htisec.com)

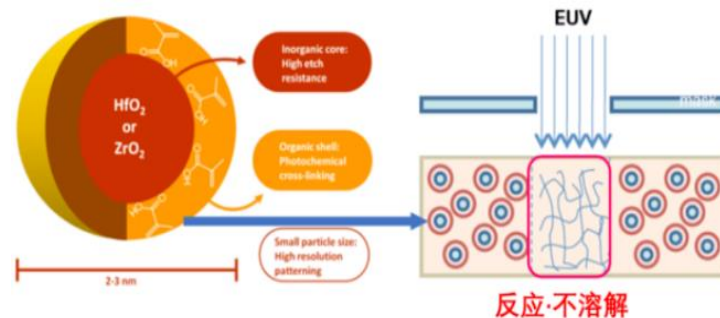
## 2.3 光刻胶：无机光刻胶或为未来方向之一

- 为了解决这个问题，ASML转向了Inpria公司生产的一种含无机材料的光刻胶。这种光刻胶具体成分不详，但根据研究显示是一种有机-无机混合物，核心是铪-锆纳米粒子。铪和锆吸收短波的效率较低，而对短波的反应效率较高，并且因为材料含有无机物并呈现刚性，蚀刻后的蚀刻墙壁面不会塌陷（能够保持较高的纵横比）。此外，它不像CAR那样依赖于酸的扩散，因此LER等不容易恶化。Inpria公司已被日本公司JSR全资收购，目前该无机光刻胶依然处于验证阶段。

图：无机光刻胶材料组



图：无机光刻胶反应原理



数据来源：CINNO，海通国际

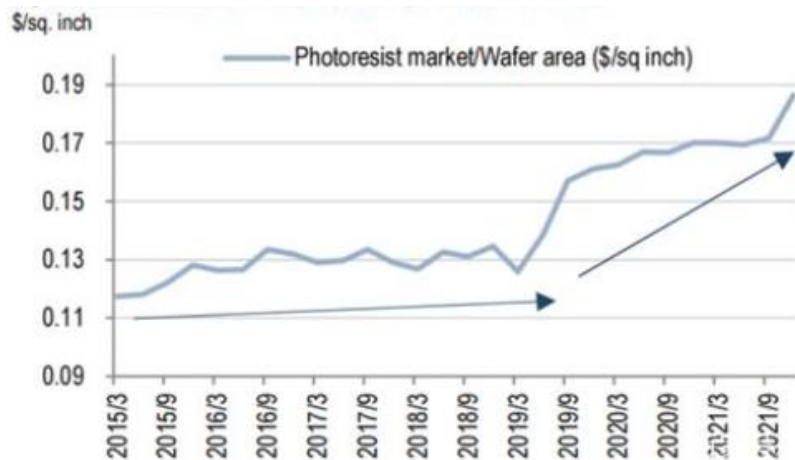
For full disclosure of risks, valuation methodologies and target price formation on all HTI rated stocks, please refer to the latest full report on our website at [equities.htisec.com](http://equities.htisec.com)



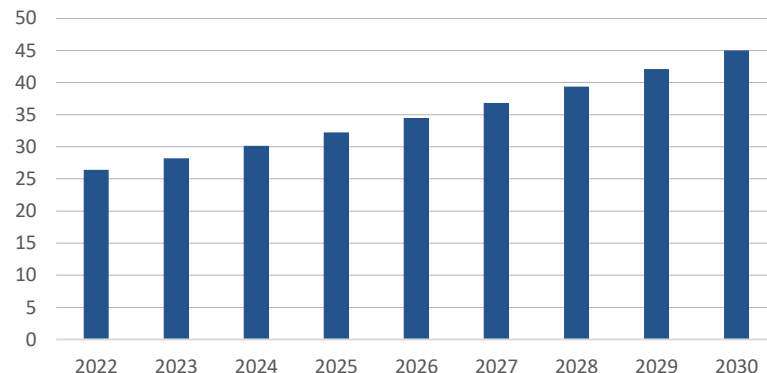
## 2.4 光刻胶：预计2030年市场规模将达45亿美元

- 根据 SEMI 和 WSTS 的数据，单位晶圆面积所消耗的光刻胶金额已经从 2015 年 3 月不到 0.12 美元/平方英寸上升到 2021 年 9 月约 0.19 美元/平方英寸，每平方英寸所耗光刻胶金额呈不断上升之势。2022年全球半导体光刻胶市场规模为26.4亿美元，预期2030年全球市场规模将增长至45亿美元，年均增长率6.9%。

图：单位晶圆面积所消耗的光刻胶金额不断上升



图：全球半导体光刻胶市场规模（亿美元）

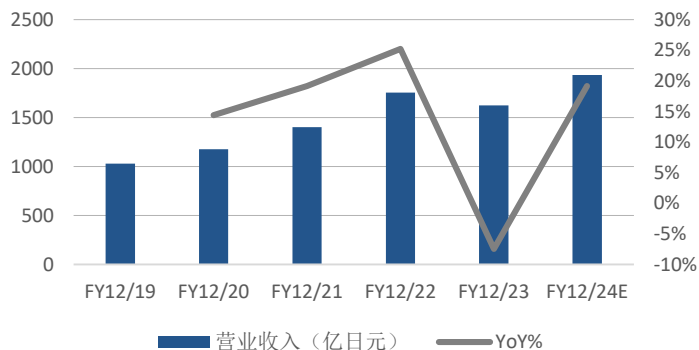


For full disclosure of risks, valuation methodologies and target price formation on all HTI rated stocks, please refer to the latest full report on our website at [equities.htisec.com](http://equities.htisec.com)

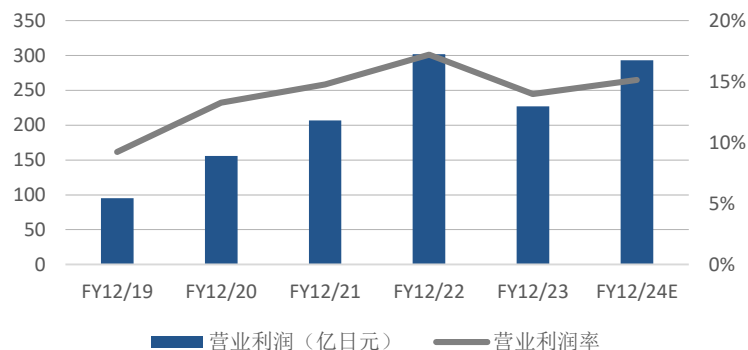
## 2.5 东京应化：全球光刻胶龙头公司

- 东京应化(4186.JP)是一家总部位于日本的世界半导体光刻胶龙头公司，成立于1936年，历史上曾创造过多项日本业界第一。公司1997年开发出KrF光刻胶，2001年推出ArF光刻胶，2018年推出EUV光刻胶，是目前世界上少数有能力提供全品类半导体光刻胶的公司之一。根据公司报告，公司在世界半导体光刻胶市场的份额在2023年底为23.1%，居世界第一位。2023年12月财年，公司营业收入为1623亿日元，同比减少7.5%；营业利润227亿日元，同比减少24.8%，营业利润率为14.0%。公司预计，2024年12月财年营收为1934亿日元，同比增加19.2%，营业利润293亿日元，同比增加29.0%，营业利润率提升至15.1%。

图：营收及增长率



图：营业利润及营业利润率



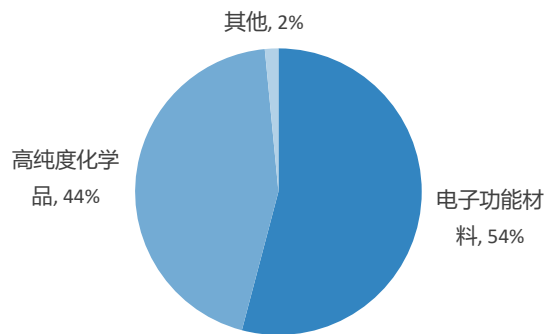
数据来源：公司公告、彭博、海通国际

For full disclosure of risks, valuation methodologies and target price formation on all HTI rated stocks, please refer to the latest full report on our website at [equities.htisec.com](https://www.htisec.com)

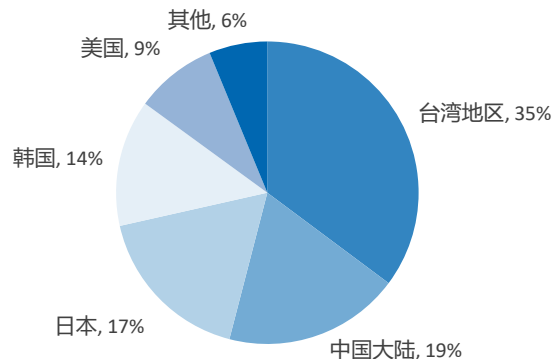
## 2.5 东京应化：全球光刻胶龙头公司

- 东京应化的营业收入按业务领域可以分为电子功能材料、高纯度化学品、其他，2023年12月财年占比分别为54%、44%、2%。东京应化的光刻胶隶属于电子功能材料业务。作为全球半导体制造的重镇，亚太地区贡献了东京应化85%的营业收入，其中台湾地区占比35%，中国大陆19%，日本17%，韩国则贡献了14%。

图：营收按业务拆分（FY12/23）



图：营收按地域拆分（FY12/23）



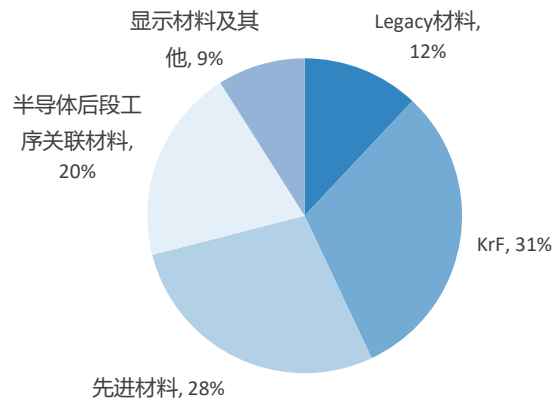
数据来源：公司公告、海通国际

For full disclosure of risks, valuation methodologies and target price formation on all HTI rated stocks, please refer to the latest full report on our website at [equities.htisec.com](http://equities.htisec.com)

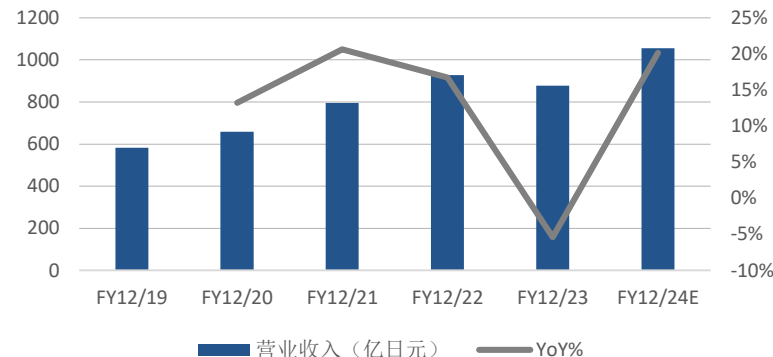
## 2.5 东京应化：全球光刻胶龙头公司

- 电子功能材料板块中，光刻胶营收占比约为81%。其中g/i线光刻胶占比12%，KrF光刻胶占比32%，ArF光刻胶占比22%，EUV光刻胶占比约5%。根据公司公告，2023年底公司KrF光刻胶、g/i线光刻胶的市场份额分别为33.7%、18.6%，居世界首位。EUV光刻胶、ArF光刻胶市占率分别为30.0%及16.7%，分居世界第2和第4位。电子功能材料板块2023年12月财年营收878亿日元，同比下降7.5%。公司预计该板块2024年12月营收约为1055亿日元，同比增加20.2%。

图：电子功能材料营收按板块拆分（FY12/23）



图：电子功能材料营收及其增长率



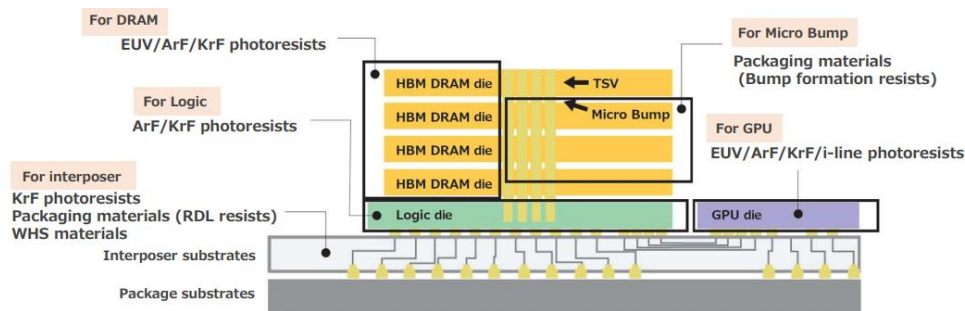
数据来源：公司公告、海通国际

For full disclosure of risks, valuation methodologies and target price formation on all HTI rated stocks, please refer to the latest full report on our website at [equities.htisec.com](https://www.htisec.com)

## 2.5 东京应化：全球光刻胶龙头公司

- 公司产品在生成式AI用GPU中应用广泛。公司预计生成式AI市场规模将自2023年的106亿美元增长至2030年的2110亿美元，复合年均增长率达53.3%。受益于此，预计2024年公司用于形成HBM凸起的抗蚀剂营收将增加至2022年的约5倍以上。为了应对未来需求，公司目前共有4处扩厂计划，其中位于日本阿苏生产高纯度化学品的工厂预计将于2025年上半年投入使用，并向台积电熊本工厂供应清洗液。

图：AI用GPU使用TOK产品举例



表：TOK扩厂计划

地址	动工时间	启动时间	备注
日本阿苏	2024.7(竣工)	1H2025	高纯度化学品
韩国平泽	2H2023	1H2026	先进制程材料
日本郡山	2H2024	2H2026	光刻胶
韩国平泽	2027	2028	未来扩张

数据来源：公司公告、海通国际

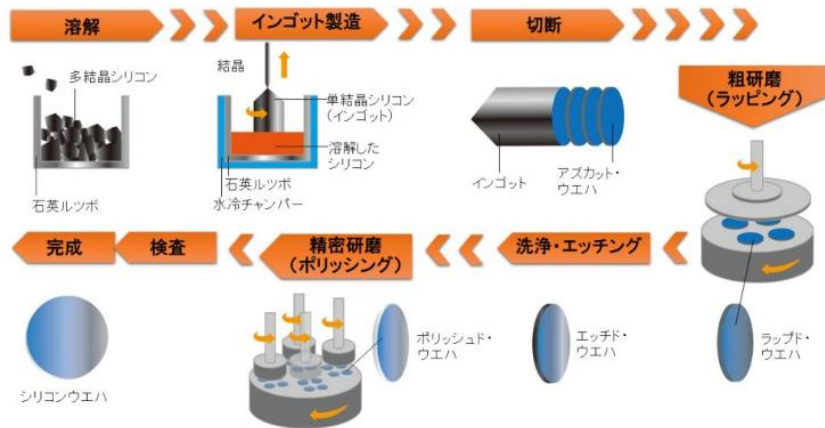
For full disclosure of risks, valuation methodologies and target price formation on all HTI rated stocks, please refer to the latest full report on our website at [equities.htisec.com](https://www.htisec.com)

1. 概述
2. 光刻胶
- 3. 硅晶圆**
4. 环氧塑封料

## 3.1 硅晶圆：硅基集成电路的关键材料

- 硅材料是具有一定半导体电学特性和物理稳定性，并为后续集成电路制造过程提供衬底支撑的固态材料，是硅基集成电路的关键材料，全球95%以上的半导体器件和90%以上的集成电路制作在硅片上。按照单晶生长方式不同，硅单晶有直拉（Czochralski, CZ）和区熔（Floating Zon, FZ）两种。硅片可大致分为抛光片（Polished Wafer）、外延片（Epitaxial Wafer）、绝缘体上硅（Silicon-On-insulator, SOI）三大类。

图：硅晶圆制作过程



表：三类硅片比较及其应用

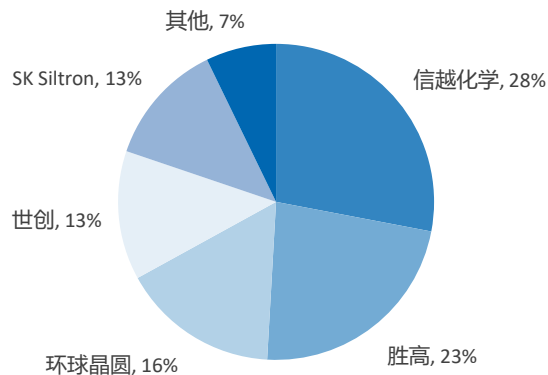
种类	优势	应用
抛光片	硅片表面平坦化，进一步减小了硅片表面的粗糙程度以满足芯片制造工艺对硅片平整度和表面颗粒度的要求	直接用于制作半导体器件，广泛应用于存储芯片与功率器件等。作为外延片、SOI硅片的衬底材料
外延片	含氧量、含碳量、缺陷密度更低，提高了栅氧化层的完整性，改善了沟道中的漏电现象，从而提升了集成电路的可靠性。硅衬底的低电阻率可降低导通电阻，高电阻的外延层可以提高区间的击穿电压。外延片提升了器件的可靠性，并减少了器件的损耗	常在CMOS电路中使用，如通用处理器芯片、图形处理器芯片等。也用于二极管、绝缘栅双极型晶体管（IGBT）等功率器件的制造
SOI硅片	通过绝缘层实现全介质隔离，大幅减少硅片的寄生电容以及漏电现象，并消除了门锁效应	用于耐高压、耐恶劣环境、低功耗、集成度高的芯片上，如射频前端芯片、功率器件、汽车电子、传感器以及星载芯片等

For full disclosure of risks, valuation methodologies and target price formation on all HTI rated stocks, please refer to the latest full report on our website at [equities.htisec.com](http://equities.htisec.com)

## 3.2 硅晶圆：日系厂商占据市场份额第一二位置

- 根据SEMI数据，截至2022年底，世界前五大硅晶圆生产商中，日本企业信越化学及胜高市场份额分居第一二位，分别达到了28.0%及22.9%。第三位为台湾地区公司环球晶圆，市场份额为16.1%。第四、五位分别为德国公司世创及韩国公司SK Siltron，市场份额分别为13.2%、12.6%。

图：硅晶圆市场份额



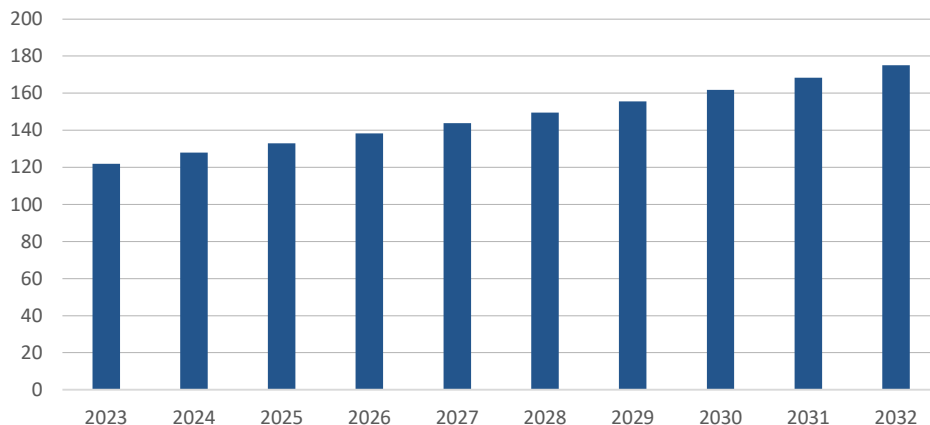
For full disclosure of risks, valuation methodologies and target price formation on all HTI rated stocks, please refer to the latest full report on our website at [equities.htisec.com](http://equities.htisec.com)



### 3.3 硅晶圆：预计2032年市场规模将达175亿美元

- 根据研究机构IMARK Group的数据，2023年全球硅晶圆市场规模约122亿美元，预期2032年将增长至175亿美元，年均复合增长率约4.1%。

图：全球硅晶圆市场规模（亿美元）

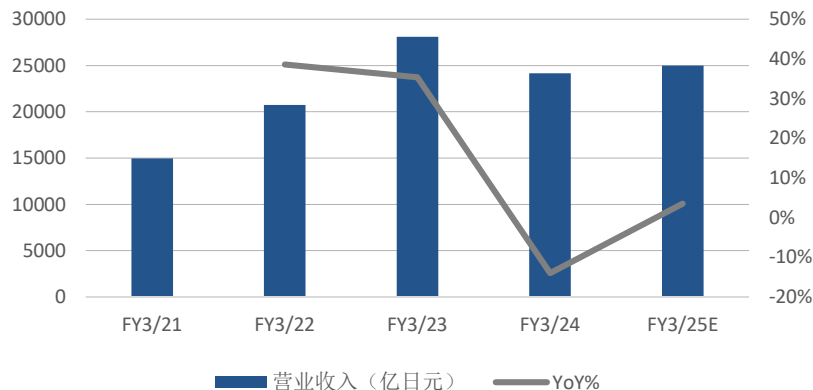


For full disclosure of risks, valuation methodologies and target price formation on all HTI rated stocks, please refer to the latest full report on our website at [equities.htisec.com](http://equities.htisec.com)

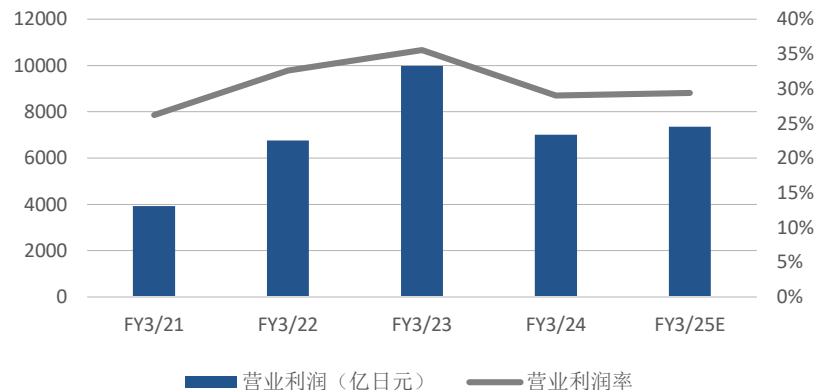
### 3.4 信越化学：市场份额第一的硅晶圆生产商

► 信越化学（4063 JP）是日本最大的化学公司，在福布斯全球2000强化学行业中排名第9。信越在聚氯乙烯、硅晶圆和EUV光刻胶等市场拥有全球最大的市场份额。目前信越化学将其经营领域划分为基建材料、电子材料、功能材料、加工和专门服务等四个业务部门。2024年3月财年，公司实现营业收入24149亿日元，同比减少14.0%；营业利润7010亿日元，同比减少29.8%，营业利润率为29.0%。公司预计，2025年3月财年营收为25000亿日元，同比增加3.5%，营业利润7350亿日元，增加4.8%，营业利润率29.4%。

图：营收及增长率



图：营业利润及营业利润率



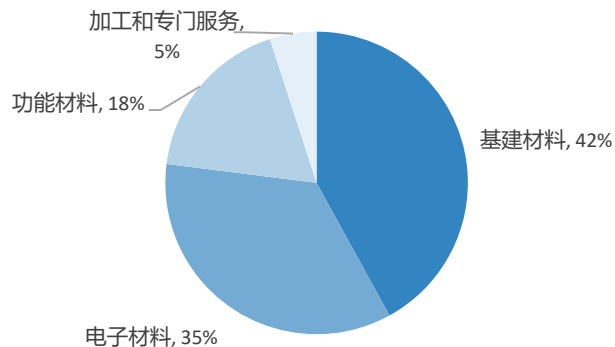
数据来源：公司公告、彭博、海通国际

For full disclosure of risks, valuation methodologies and target price formation on all HTI rated stocks, please refer to the latest full report on our website at [equities.htisec.com](https://www.htisec.com)

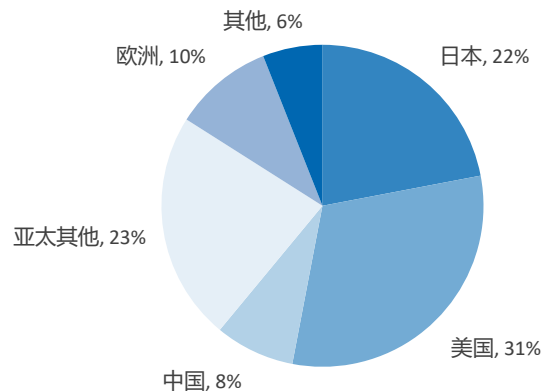
### 3.4 信越化学：市场份额第一的硅晶圆生产商

- 信越化学的营业收入按业务领域可以分为基建材料、电子材料、功能材料、加工和专门服务，2024年3月财年占比分别为42%、35%、18%，5%。信越化学的硅晶圆属于其电子材料业务。分地域来看，美国占总营收的比例为31%，日本占22%，欧洲占10%，中国占8%。

图：营收按业务拆分（FY3/24）



图：营收按地域拆分（FY3/24）



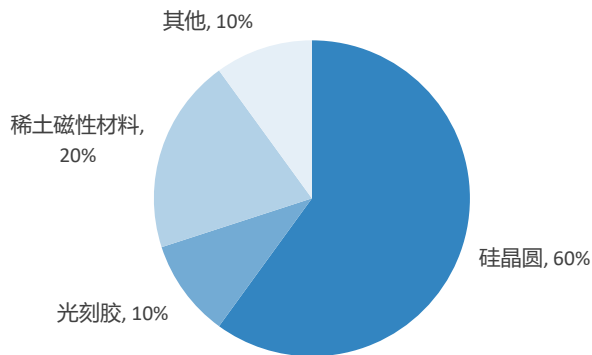
数据来源：公司公告、海通国际

For full disclosure of risks, valuation methodologies and target price formation on all HTI rated stocks, please refer to the latest full report on our website at [equities.htisec.com](http://equities.htisec.com)

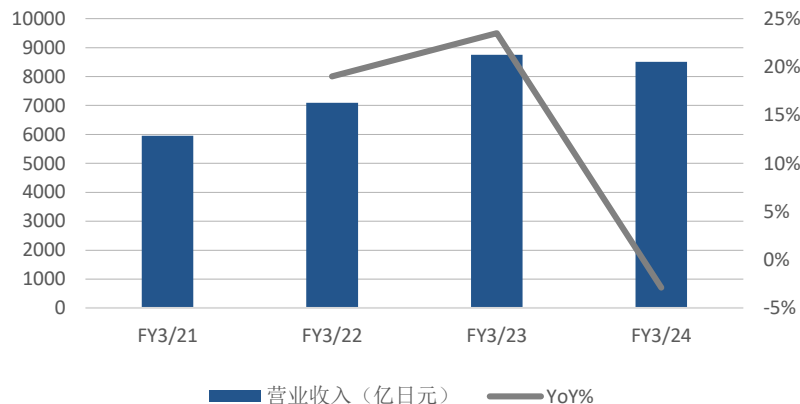
### 3.4 信越化学：市场份额第一的硅晶圆生产商

- 电子材料板块中，硅晶圆营收占比约为60%，70%为300mm晶圆，其中存储约占60%，逻辑约占40%。公司还是世界主要的光刻胶供应商之一，EUV及ArF光刻胶市占率分别为35%及18%，为EUV光刻胶最大供应商。此外，公司还生产ArF用光掩模基板，目前市占率约为60%。电子材料板块2024年3月财年营收8504亿日元，同比下降3%；营业利润2721亿日元，同比下降10%；营业利润率32.0%。

图：电子材料板块营收拆分



图：电子材料营收及其增长率



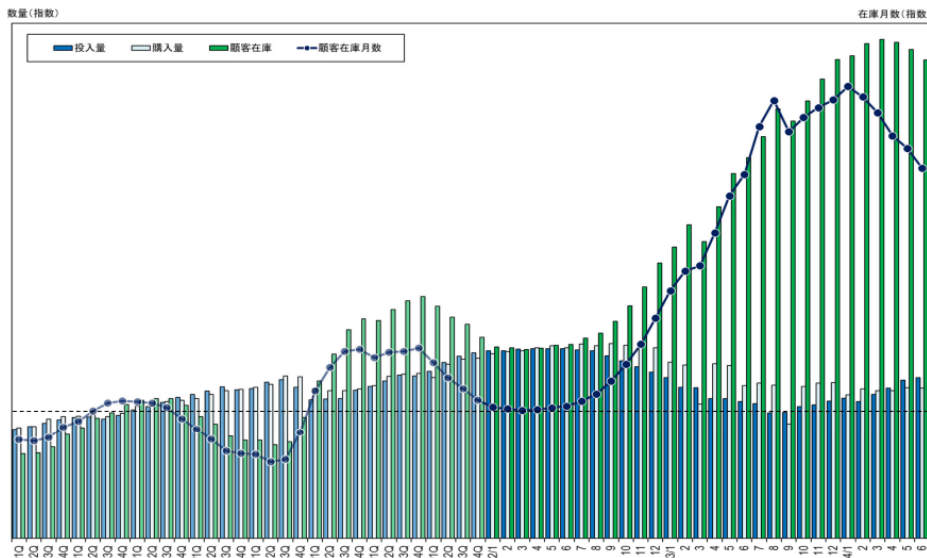
数据来源：公司公告、海通国际

For full disclosure of risks, valuation methodologies and target price formation on all HTI rated stocks, please refer to the latest full report on our website at [equities.htisec.com](https://equities.htisec.com)

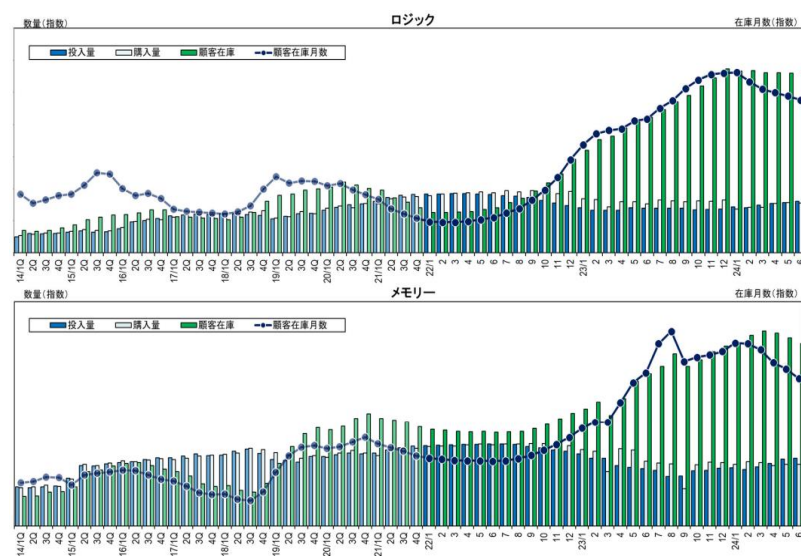
## 3.4 信越化学：市场份额第一的硅晶圆生产商

- 受半导体周期下行影响，硅晶圆需求自去年以来持续调整。根据SUMCO的数据，客户300mm晶圆库存已于2月份见顶，目前正随着AI带来的需求增加而减少；200mm晶圆市场调整依然在继续。分逻辑用与存储用来看，两种用途晶圆的在库月数及客户库存均开始下跌，其中逻辑用300mm晶圆存货下降速度较存储用慢。

图：300mm硅晶圆存货走势（整体）



图：300mm硅晶圆存货走势（逻辑/存储）



For full disclosure of risks, valuation methodologies and target price formation on all HTI rated stocks, please refer to the latest full report on our website at [equities.htisec.com](http://equities.htisec.com)

1. 概述
2. 光刻胶
3. 硅晶圆
4. 环氧塑封料

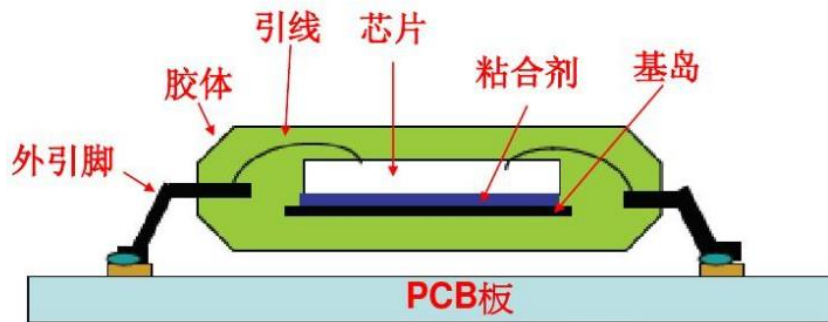
## 4.1 环氧塑封料：电子器件的主要封装材料

- 环氧塑封料是用于半导体封装的一种热固性化学材料，英文名Epoxy Molding Compound（EMC），是由环氧树脂为基体树脂，以高性能酚醛树脂为固化剂，加入硅微粉等为填料，以及添加多种助剂混配而成的粉状模塑料，为后道封装的主要原材料之一，目前95%以上的微电子器件都是环氧塑封器件。环氧塑封料具有保护芯片不受外界环境的影响，抵抗外部溶剂、湿气、冲击，保证芯片与外界环境电绝缘等功能。

图：环氧塑封料



图：环氧塑封料功能示意图



## 4.1 环氧塑封料：配方及工艺是关键

- 随着半导体制程的进步及芯片进一步朝向高集成度与多功能化的方向发展，环氧塑封料厂商需要针对性地开发新产品以匹配下游客户日益复杂的性能需求，因而应用于历代封装形式的各类产品的配方开发（主要涉及原材料选择与配比）、生产中的加料顺序、混炼温度、混炼时间、搅拌速度等工艺参数均存有所不同，即各类产品在理化性能、工艺性能以及应用性能等方面均存在差异，需要厂商长期的技术积累及持续的研发投入才可应对。

表：历代封装技术对环氧塑封料的要求

封装技术阶段	封装形式	性能要求	对应产品
第一阶段	TQ、DIP等	重点考察环氧塑封料的热性能与电性能，要求在配方设计中关注固化时间、Tg、CTE、导热系数、离子含量、气孔率等因素	基础类环氧塑封料
第二阶段	SOT、SOP等	重点考察环氧塑封料的可靠性、连续模塑性等性能，要求在配方设计中关注冲丝率、固化时间、流动性、离子含量、吸水率、粘结力、弯曲强度、弯曲模量等因素	高性能类环氧塑封料
第三阶段	QFN、BGA等	重点考察环氧塑封料的翘曲、可靠性、气孔等性能，要求在配方设计中关注流动性、粘度、弯曲强度、弯曲模量、Tg、CTE、应力、吸水率、粘结力等因素	先进封装类环氧塑封料
第四、五阶段	SIP、FOWLP等	对环氧塑封料的翘曲、可靠性、气孔提出了更高要求，部分产品以颗粒状或液态形式呈现，要求在配方设计中关注粘度、粘结力、吸水率、弯曲强度、弯曲模量、Tg、CTE、离子含量、颗粒状材料的大小等因素	先进封装类环氧塑封料

For full disclosure of risks, valuation methodologies and target price formation on all HTI rated stocks, please refer to the latest full report on our website at [equities.htisec.com](http://equities.htisec.com)



## 4.2 环氧塑封料：中国同世界先进水平依然有差距

- 近年来，中国半导体封装材料产业发展在一些领域取得了较大突破，但整体与外资厂商仍存在一定的差距。目前日本、美国厂商在中高端产品中仍占有较大份额，中国厂商仍主要以满足中国国内需求为主，出口量较小，且大部分仍集中在分立器件和中小规模集成电路封装用的环氧塑封料领域。目前中国产环氧塑封料（包含台资厂商）市场占比约为30%左右，而高端环氧塑封料产品基本被日美产品垄断。

表：国内外环氧塑封料应用对比

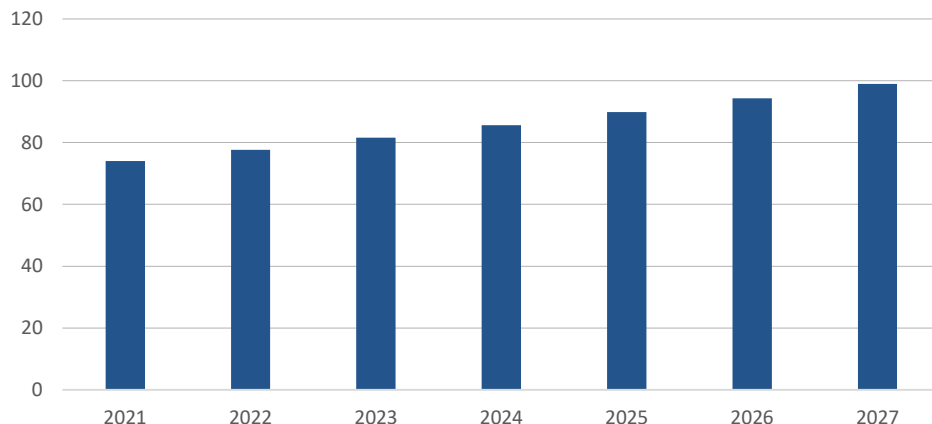
产品应用类型	封装技术类型	日美产品	中国产品	产品类型
DO/DIP/SMX/桥块	传统封装	已基本退出	主导地位	基础类环氧塑封料
TO	传统封装	基本相当	基本相当	基础类环氧塑封料
SOT/SOP/SOD	传统封装	主导地位，在高电压应用等细分领域较为领先	近年来发展迅速，在常规应用领域基本已经可以替代日本产品	高性能类环氧塑封料
QFN、BGA	先进封装	垄断地位	少量销售	先进封装类环氧塑封料
MUF/FOWLP	先进封装	垄断地位	尚处于布局阶段	先进封装类环氧塑封料

For full disclosure of risks, valuation methodologies and target price formation on all HTI rated stocks, please refer to the latest full report on our website at [equities.htisec.com](http://equities.htisec.com)

## 4.3 环氧塑封料：市场规模2027年有望达到99亿美元

- 受益于电动车及数据中心用电子元器件需求的快速增长，作为半导体封装的不可或缺的材料，环氧塑封料市场规模有望不断增长。根据市场研究机构Mordor Intelligence的数据，2021年全球环氧塑封料市场规模约为74亿美元，预计到2027年有望增长至99亿美元，年均复合增长率5.0%。

图：全球环氧塑封料市场规模（亿美元）



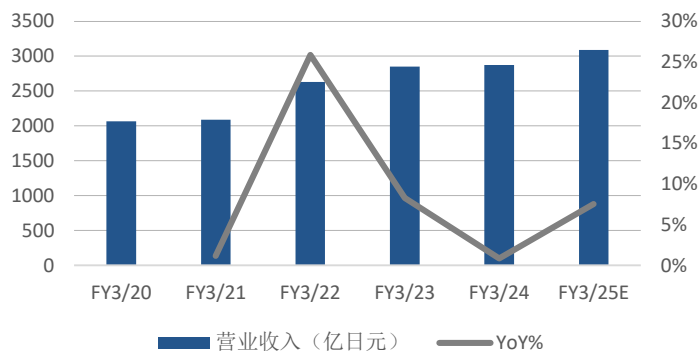
数据来源：Mordor Intelligence、海通国际

For full disclosure of risks, valuation methodologies and target price formation on all HTI rated stocks, please refer to the latest full report on our website at [equities.htisec.com](http://equities.htisec.com)

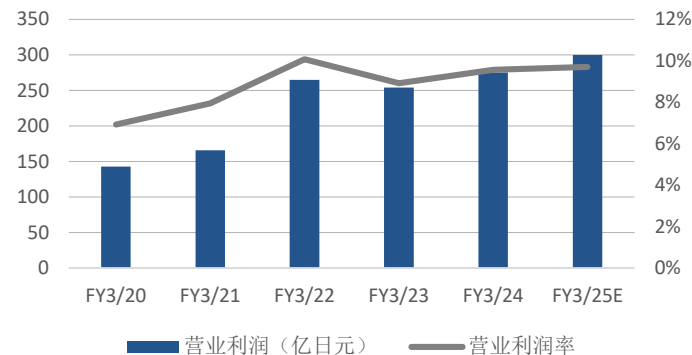
## 4.4 住友电木：全球环氧塑封料领军企业

- 住友电木（4203.JP）是一家总部位于日本东京的化学工业公司，成立于1913年。该公司主要从事塑料、电子材料、化学材料等领域的研发、生产和销售。住友电木的环氧塑封料业务目前全球市场份额约40%左右，排名世界第一。2024年3月财年，公司营业收入为2873亿日元，同比增长0.8%；营业利润275亿日元，同比增加7.9%，营业利润率为9.6%。公司预计，2025年3月财年营收为3090亿日元，同比增加7.6%，营业利润300亿日元，同比增加9.3%，营业利润率9.7%。

图：营收及增长率



图：营业利润及营业利润率



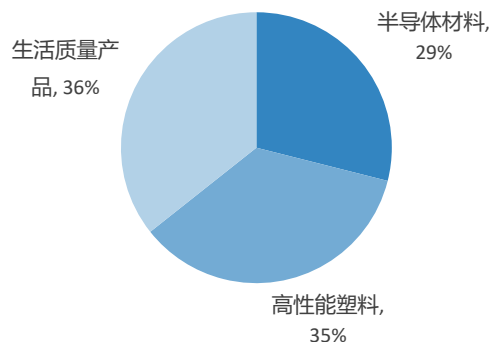
数据来源：公司公告、彭博、海通国际

For full disclosure of risks, valuation methodologies and target price formation on all HTI rated stocks, please refer to the latest full report on our website at [equities.htisec.com](http://equities.htisec.com)

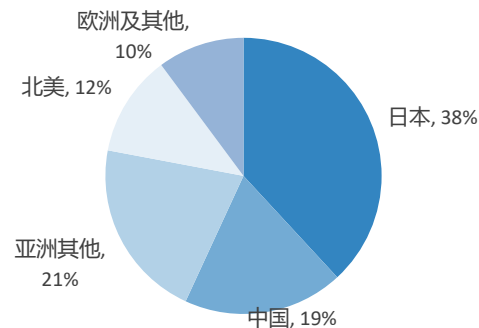
## 4.4 住友电木：全球环氧塑封料领军企业

- 住友电木目前将业务分为三个板块：半导体材料、高性能塑料、生活质量产品，其中半导体材料板块营收主要来自于环氧塑封料业务。该板块营收2024年3月财年占比仅约29%，但营业利润占比却达到了52%，是住友电木营业利润率最高的板块。按地域来看，住友电木来自于日本国内的营收占比最高，约38%；来自中国的营收占比约为19%，排行第二；来自亚洲其余地区、北美、欧洲及其他营收占比分别为21%、12%、10%。

图：营业收入按业务划分（FY3/24）



图：营业收入按地域划分（FY3/24）



数据来源：公司公告、彭博、海通国际

For full disclosure of risks, valuation methodologies and target price formation on all HTI rated stocks, please refer to the latest full report on our website at [equities.htisec.com](https://equities.htisec.com)

## 4.4 住友电木：全球环氧塑封料领军企业

- 公司未来战略拟围绕五点展开：1）增强中国及中国台湾地区的生产能力，以应对两地日益增加的需求；2）开发面向5G/DX时代的高性能材料，如用于高速、大容量通信的高导热性模具底部填充材料；3）建立稳定的原材料采购及成本转嫁机制；4）围绕三种产品（电机磁铁固定材料、ECU批量密封材料及功率模块材料）开展电动车相关业务；5）基于同车企建立的关系，积极合作开发面向下一代的材料。

表：住友电木环氧塑封料业务SWOT分析

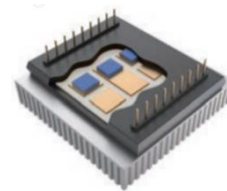
	描述
优势（S）	在半导体封装材料领域拥有世界第一的市场份额；集生产、销售、研发于一体的全球业务结构；在材料、工艺、评估方面的高技术；业界的口碑与信任
劣势（W）	对市场的波动较为敏感；对特定产品依赖程度过高
机会（O）	汽车业向电动车的转变；物联网以及5G的发展；智能、节能社会的建设以及环保力度的加大；远程办公的增加扩大了对信息及通信设备的需求
威胁（T）	中美贸易摩擦带来的不确定性；产品竞争的加剧；原材料价格的上涨

图：住友电木环氧塑封料业务的战略产品

电机磁铁固定材料



功率模块材料



ECU批量密封材料



数据来源：公司公告、海通国际

For full disclosure of risks, valuation methodologies and target price formation on all HTI rated stocks, please refer to the latest full report on our website at [equities.htisec.com](http://equities.htisec.com)

## 4.4 住友电木：全球环氧塑封料领军企业

- 根据公司新的中期计划，公司计划2026年实现营业收入3450亿日元，营业利润400亿日元，ROE 9.0%；至2030年实现营业收入4200亿日元，营业收入550亿日元，ROE 10.0%。半导体材料板块2026年拟实现营业收入1120亿日元，营业利润230亿日元，营业利润率提升至20.5%。

图：中期经营计划2024-2026

(億円)		2023年度	2024年度	2025年度	2026年度	主要製品・用途例
半 導 体	事業利益	161	180	200	230	 
	事業利益率	19.5%	19.4%	20.0%	20.5%	
	(売上収益)	(829)	(930)	(1,000)	(1,120)	
高 機 能	事業利益	53	60	75	90	
	事業利益率	5.2%	5.5%	6.5%	7.5%	
	(売上収益)	(1,014)	(1,100)	(1,150)	(1,200)	
Q O L	事業利益	97	100	110	130	 
	事業利益率	9.5%	9.5%	10.0%	11.5%	
	(売上収益)	(1,022)	(1,050)	(1,100)	(1,130)	

数据来源：公司公告、海通国际

For full disclosure of risks, valuation methodologies and target price formation on all HTI rated stocks, please refer to the latest full report on our website at [equities.htisec.com](http://equities.htisec.com)

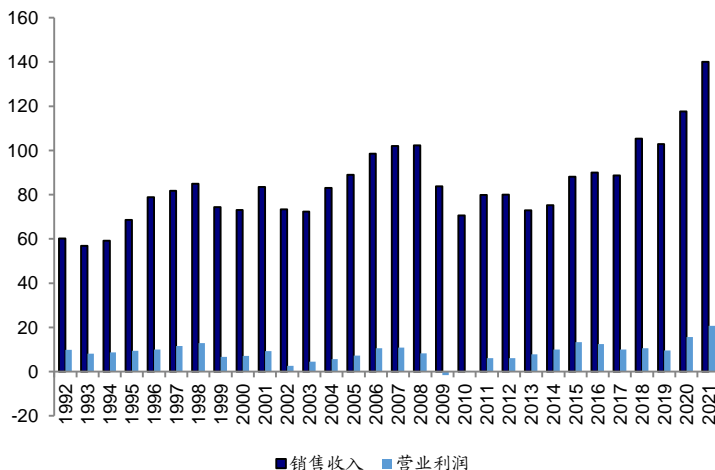
# APPENDIX 1 公司历史之东京应化

► 1936 年，东京应化作为一家开发和制造高纯度化学品的化学品制造商成立。此后，东京应化在创业之初的经营方针下，“即使市场规模很小，也要掌握技术能力，表现出压倒性的存在”，进入高性能印刷材料和面板材料等领域。自 1960 年代后期以来，它与日本国内外的半导体和电子行业一起，发展成为一家提供光刻胶等微加工材料的化学制造商，这些材料在半导体制造过程中发挥着关键作用。

表：东京应化:公司大事记

日期	事件
1936	作为日本第一家生产氢氧化钾的公司成立
1954	开发日本制造的 CRT 荧光粉
1968	开发半导体用负性光刻胶[OMR-81]
1971	推出合成橡胶光刻胶[OMR-83]
1972	在日本开发出国内第一款半导体用正性光刻胶[OFPR 系列]
1975	推出非金属抗蚀剂显影液[NMD-3]
1989	开发大型基板涂布机线[TR25000]
1991	推出液晶彩色滤光片制造颜料分散型负性光刻胶[CFPR]
1997	开发出 KrF 化学放大正性光刻胶[TDUR-P015]
2001	推出 ArF 正性光刻胶[TARF-P 系列]
2003	开发负性光阻永久膜[TMMF 系列]
2018	推出 EUV（极紫外）光刻胶[EUVR 系列]

图：东京应化:历史销售额和营业利润（十亿日元）



数据来源：公司公告、海通国际

For full disclosure of risks, valuation methodologies and target price formation on all HTI rated stocks, please refer to the latest full report on our website at [equities.htisec.com](https://www.htisec.com)

## Summary

Introduces the current status of Japan's semiconductor materials, mainly covering photoresists, silicon wafers, and EMC with key companies analysis.



## 重要信息披露

本研究报告由海通国际分销，海通国际是由海通国际研究有限公司 (HTIRL)，Haitong Securities India Private Limited (HSIPL)，Haitong International Japan K.K. (HTIJKK) 和海通国际证券有限公司 (HTISCL) 的证券研究团队所组成的全球品牌，海通国际证券集团 (HTISG) 各成员分别在其许可的司法管辖区内从事证券活动。

## IMPORTANT DISCLOSURES

This research report is distributed by Haitong International, a global brand name for the equity research teams of Haitong International Research Limited (“HTIRL”), Haitong Securities India Private Limited (“HSIPL”), Haitong International Japan K.K. (“HTIJKK”), Haitong International Securities Company Limited (“HTISCL”), and any other members within the Haitong International Securities Group of Companies (“HTISG”), each authorized to engage in securities activities in its respective jurisdiction.

## HTIRL 分析师认证 Analyst Certification:

我，郭翔宇，在此保证 (i) 本研究报告中的意见准确反映了我们对本研究中提及的任何或所有目标公司或上市公司的个人观点，并且 (ii) 我的报酬中没有任何部分与本研究报告中表达的具体建议或观点直接或间接相关；及就此报告中所讨论目标公司的证券，我们（包括我们的家属）在其中均不持有任何财务利益。我和我的家属（我已经告知他们）将不会在本研究报告发布后的3个工作日内交易此研究报告所讨论目标公司的证券。I, Xiangyu Guo, certify that (i) the views expressed in this research report accurately reflect my personal views about any or all of the subject companies or issuers referred to in this research and (ii) no part of my compensation was, is or will be directly or indirectly related to the specific recommendations or views expressed in this research report; and that I (including members of my household) have no financial interest in the security or securities of the subject companies discussed. I and my household, whom I have already notified of this, will not deal in or trade any securities in respect of the issuer that I review within 3 business days after the research report is published.

## 利益冲突披露Conflict of Interest Disclosures

海通国际及其某些关联公司可从事投资银行业务和/或对本研究中的特定股票或公司进行做市或持有自营头寸。就本研究报告而言，以下是有关该等关系的披露事项（以下披露不能保证及时无遗漏，如需了解及时全面信息，[请发邮件至ERD-Disclosure@htisec.com](mailto:ERD-Disclosure@htisec.com)）

HTI and some of its affiliates may engage in investment banking and / or serve as a market maker or hold proprietary trading positions of certain stocks or companies in this research report. As far as this research report is concerned, the following are the disclosure matters related to such relationship (As the following disclosure does not ensure timeliness and completeness, please send an email to ERD-Disclosure@htisec.com if timely and comprehensive information is needed).

## 评级定义（从2020年7月1日开始执行）：

海通国际（以下简称“HTI”）采用相对评级系统来为投资者推荐我们覆盖的公司：优于大市、中性或弱于大市。投资者应仔细阅读HTI的评级定义。并且HTI发布分析师观点的完整信息，投资者应仔细阅读全文而非仅看评级。在任何情况下，分析师的评级和研究都不能作为投资建议。投资者的买卖股票的决策应基于各自情况（比如投资者的现有持仓）以及其他因素。

## 分析师股票评级

**优于大市**，未来12-18个月内预期相对基准指数涨幅在10%以上，基准定义如下

**中性**，未来12-18个月内预期相对基准指数变化不大，基准定义如下。根据FINRA/NYSE的评级分布规则，我们会将中性评级划入持有这一类别。

**弱于大市**，未来12-18个月内预期相对基准指数跌幅在10%以上，基准定义如下

**各地股票基准指数：**日本 – TOPIX, 韩国 – KOSPI, 台湾 – TAIEX, 印度 – Nifty100, 美国 – SP500; 其他所有中国概念股 – MSCI China.

## Ratings Definitions (from 1 Jul 2020):

Haitong International uses a relative rating system using Outperform, Neutral, or Underperform for recommending the stocks we cover to investors. Investors should carefully read the definitions of all ratings used in Haitong International Research. In addition, since Haitong International Research contains more complete information concerning the analyst's views, investors should carefully read Haitong International Research, in its entirety, and not infer the contents from the rating alone. In any case, ratings (or research) should not be used or relied upon as investment advice. An investor's decision to buy or sell a stock should depend on individual circumstances (such as the investor's existing holdings) and other considerations.

## Analyst Stock Ratings

**Outperform:** The stock's total return over the next 12-18 months is expected to exceed the return of its relevant broad market benchmark, as indicated below.

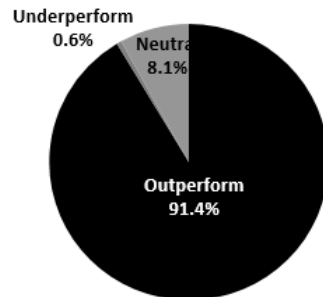
**Neutral:** The stock's total return over the next 12-18 months is expected to be in line with the return of its relevant broad market benchmark, as indicated below. For purposes only of FINRA/NYSE ratings distribution rules, our Neutral rating falls into a hold rating category.

**Underperform:** The stock's total return over the next 12-18 months is expected to be below the return of its relevant broad market benchmark, as indicated below.

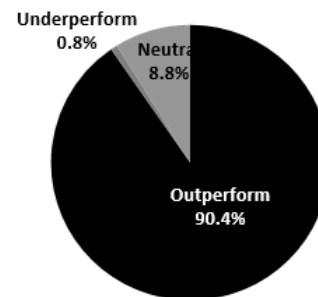
**Benchmarks for each stock's listed region are as follows:** Japan – TOPIX, Korea – KOSPI, Taiwan – TAIEX, India – Nifty100, US – SP500; for all other China-concept stocks – MSCI China.

## 评级分布Rating Distribution

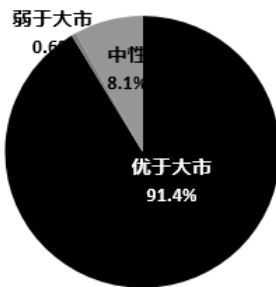
Most Recent Full Quarter



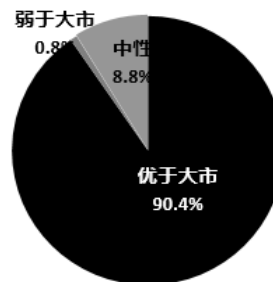
Prior Full Quarter



最新季度



上一季度



# APPENDIX 2

## 截至2024年6月30日海通国际股票研究评级分布

	优于大市	中性 (持有)	弱于大市
海通国际股票研究覆盖率	91.4%	8.1%	0.6%
投资银行客户*	3.1%	4.8%	0.0%

\*在每个评级类别里投资银行客户所占的百分比。

上述分布中的买入，中性和卖出分别对应我们当前优于大市，中性和落后大市评级。

只有根据FINRA/NYSE的评级分布规则，我们才将中性评级划入持有这一类别。请注意在上表中不包含非评级的股票。

### 此前的评级系统定义（直至2020年9月30日）：

**买入**，未来12-18个月内预期相对基准指数涨幅在10%以上，基准定义如下

**中性**，未来12-18个月内预期相对基准指数变化不大，基准定义如下。根据FINRA/NYSE的评级分布规则，我们会将中性评级划入持有这一类别。

**卖出**，未来12-18个月内预期相对基准指数跌幅在10%以上，基准定义如下

各地股票基准指数：日本 – TOPIX, 韩国 – KOSPI, 台湾 – TAIEX, 印度 – Nifty100; 其他所有中国概念股 – MSCI China.

## Haitong International Equity Research Ratings Distribution, as of June 30, 2024

	Outperform	Neutral (hold)	Underperform
HTI Equity Research Coverage	91.4%	8.1%	0.6%
IB clients*	3.1%	4.8%	0.0%

\*Percentage of investment banking clients in each rating category.

BUY, Neutral, and SELL in the above distribution correspond to our current ratings of Outperform, Neutral, and Underperform.

For purposes only of FINRA/NYSE ratings distribution rules, our Neutral rating falls into a hold rating category. Please note that stocks with an NR designation are not included in the table above.

### Previous rating system definitions (until 30 Jun 2020):

**BUY:** The stock's total return over the next 12-18 months is expected to exceed the return of its relevant broad market benchmark, as indicated below.

**NEUTRAL:** The stock's total return over the next 12-18 months is expected to be in line with the return of its relevant broad market benchmark, as indicated below.

For purposes only of FINRA/NYSE ratings distribution rules, our Neutral rating falls into a hold rating category.

**SELL:** The stock's total return over the next 12-18 months is expected to be below the return of its relevant broad market benchmark, as indicated below.

**Benchmarks for each stock's listed region are as follows:** Japan – TOPIX, Korea – KOSPI, Taiwan – TAIEX, India – Nifty100; for all other China-concept stocks – MSCI China.

**海通国际非评级研究：**海通国际发布计量、筛选或短篇报告，并在报告中根据估值和其他指标对股票进行排名，或者基于可能的估值倍数提出建议价格。这种排名或建议价格并非为了进行股票评级、提出目标价格或进行基本面估值，而仅供参考使用。

**Haitong International Non-Rated Research:** Haitong International publishes quantitative, screening or short reports which may rank stocks according to valuation and other metrics or may suggest prices based on possible valuation multiples. Such rankings or suggested prices do not purport to be stock ratings or target prices or fundamental values and are for information only.

**海通国际A股覆盖：**海通国际可能会就沪港通及深港通的中国A股进行覆盖及评级。海通证券（600837.CH），海通国际于上海的母公司，也会于中国发布中国A股的研究报告。但是，海通国际使用与海通证券不同的评级系统，所以海通国际与海通证券的中国A股评级可能有所不同。

**Haitong International Coverage of A-Shares:** Haitong International may cover and rate A-Shares that are subject to the Hong Kong Stock Connect scheme with Shanghai and Shenzhen. Haitong Securities (HS; 600837 CH), the ultimate parent company of HTISG based in Shanghai, covers and publishes research on these same A-Shares for distribution in mainland China. However, the rating system employed by HS differs from that used by HTI and as a result there may be a difference in the HTI and HS ratings for the same A-share stocks.

**海通国际优质100 A股（Q100）指数：**海通国际Q100指数是一个包括100支由海通证券覆盖的优质中国A股的计量产品。这些股票是通过基于质量的筛选过程，并结合对海通证券A股团队自下而上的研究。海通国际每季对Q100指数成分作出复审。

**Haitong International Quality 100 A-share (Q100) Index:** HTI's Q100 Index is a quant product that consists of 100 of the highest-quality A-shares under coverage at HS in Shanghai. These stocks are carefully selected through a quality-based screening process in combination with a review of the HS A-share team's bottom-up research. The Q100 constituent companies are reviewed quarterly.

**盟浪义利（FIN-ESG）数据通免责声明条款：**在使用盟浪义利（FIN-ESG）数据之前，请务必仔细阅读本条款并同意本声明：

**第一条** 义利（FIN-ESG）数据系由盟浪可持续数字科技有限责任公司（以下简称“本公司”）基于合法取得的公开信息评估而成，本公司对信息的准确性及完整性不作任何保证。对公司的评估结果仅供参考，并不构成对任何个人或机构投资建议，也不能作为任何个人或机构购买、出售或持有相关金融产品的依据。本公司不对任何个人或机构投资者因使用本数据表述的评估结果造成的任何直接或间接损失负责。

**第二条** 盟浪并不因收到此评估数据而将收件人视为客户，收件人使用此数据时应根据自身实际情况作出自我独立判断。本数据所载内容反映的是盟浪在最初发布本数据日期当日的判断，盟浪有权在不发出通知的情况下更新、修订与发出其他与本数据所载内容不一致或有不同结论的数据。除非另行说明，本数据（如财务业绩数据等）仅代表过往表现，过往的业绩表现不作为日后回报的预测。

**第三条** 本数据版权归本公司所有，本公司依法保留各项权利。未经本公司事先书面许可授权，任何个人或机构不得将本数据中的评估结果用于任何营利性目的，不得对本数据进行修改、复制、编译、汇编、再次编辑、改编、删减、缩写、节选、发行、出租、展览、表演、放映、广播、信息网络传播、摄制、增加图标及说明等，否则因此给盟浪或其他第三方造成损失的，由用户承担相应的赔偿责任，盟浪不承担责任。

**第四条** 如本免责声明未约定，而盟浪网站平台载明的其他协议内容（如《盟浪网站用户注册协议》《盟浪网用户服务（含认证）协议》《盟浪网隐私政策》等）有约定的，则按其他协议的约定执行；若本免责声明与其他协议约定存在冲突或不一致的，则以本免责声明约定为准。

**SusallWave FIN-ESG Data Service Disclaimer:** Please read these terms and conditions below carefully and confirm your agreement and acceptance with these terms before using SusallWave FIN-ESG Data Service.

1. FIN-ESG Data is produced by SusallWave Digital Technology Co., Ltd. (In short, SusallWave)'s assessment based on legal publicly accessible information. SusallWave shall not be responsible for any accuracy and completeness of the information. The assessment result is for reference only. It is not for any investment advice for any individual or institution and not for basis of purchasing, selling or holding any relative financial products. We will not be liable for any direct or indirect loss of any individual or institution as a result of using SusallWave FIN-ESG Data.

2. SusallWave do not consider recipients as customers for receiving these data. When using the data, recipients shall make your own independent judgment according to your practical individual status. The contents of the data reflect the judgment of us only on the release day. We have right to update and amend the data and release other data that contains inconsistent contents or different conclusions without notification. Unless expressly stated, the data (e.g., financial performance data) represents past performance only and the past performance cannot be viewed as the prediction of future return.

3. The copyright of this data belongs to SusallWave, and we reserve all rights in accordance with the law. Without the prior written permission of our company, none of individual or institution can use these data for any profitable purpose. Besides, none of individual or institution can take actions such as amendment, replication, translation, compilation, re-editing, adaption, deletion, abbreviation, excerpts, issuance, rent, exhibition, performance, projection, broadcast, information network transmission, shooting, adding icons and instructions. If any loss of SusallWave or any third-party is caused by those actions, users shall bear the corresponding compensation liability. SusallWave shall not be responsible for any loss.

4. If any term is not contained in this disclaimer but written in other agreements on our website (e.g. User Registration Protocol of SusallWave Website, User Service (including authentication) Agreement of SusallWave Website, Privacy Policy of Susallwave Website), it should be executed according to other agreements. If there is any difference between this disclaim and other agreements, this disclaimer shall be applied.



## 重要免责声明:

**非印度证券的研究报告:** 本报告由海通国际证券集团有限公司 (“HTISGL”) 的全资附属公司海通国际研究有限公司 (“HTIRL”) 发行, 该公司是根据香港证券及期货条例 (第571章) 持有第4类受规管活动 (就证券提供意见) 的持牌法团。该研究报告在HTISGL的全资附属公司Haitong International (Japan) K.K. (“HTIJKK”) 的协助下发行, HTIJKK是由日本关东财务局监管为投资顾问。

**印度证券的研究报告:** 本报告由从事证券交易、投资银行及证券分析及受Securities and Exchange Board of India (“SEBI”) 监管的Haitong Securities India Private Limited (“HTSIPL”) 所发行, 包括制作及发布涵盖BSE Limited (“BSE”) 和National Stock Exchange of India Limited (“NSE”) 上市公司 (统称为「印度交易所」) 的研究报告。HTSIPL于2016年12月22日被收购并成为海通国际证券集团有限公司 (“HTISG”) 的一部分。

所有研究报告均以海通国际为名作为全球品牌, 经许可由海通国际证券股份有限公司及/或海通国际证券集团的其他成员在其司法管辖区发布。

本文件所载信息和观点已被编译或源自可靠来源, 但HTIRL、HTISGL或任何其他属于海通国际证券集团有限公司 (“HTISG”) 的成员对其准确性、完整性和正确性不做任何明示或暗示的声明或保证。本文件中所有观点均截至本报告日期, 如有更改, 恕不另行通知。本文件仅供参考使用。文件中提及的任何公司或其股票的说明并非意图展示完整的内容, 本文件并非/不应被解释为对证券买卖的明示或暗示地出价或征价。在某些司法管辖区, 本文件中提及的证券可能无法进行买卖。如果投资产品以投资者本国货币以外的币种进行计价, 则汇率变化可能会对投资产生不利影响。过去的表现并不一定代表将来的结果。某些特定交易, 包括设计金融衍生工具的, 有产生重大风险的可能性, 因此并不适合所有的投资者。您还应认识到本文件中的建议并非为您量身定制。分析师并未考虑到您自身的财务情况, 如您的财务状况和风险偏好。因此您必须自行分析并在适用的情况下咨询自己的法律、税收、会计、金融和其他方面的专业顾问, 以期在投资之前评估该项建议是否适合于您。若由于使用本文件所载的材料而产生任何直接或间接的损失, HTISG及其董事、雇员或代理人对此均不承担任何责任。

除对本文内容承担责任的分析师除外, HTISG及我们的关联公司、高级管理人员、董事和雇员, 均可不时作为主事人就本文件所述的任何证券或衍生品持有长仓或短仓以及进行买卖。HTISG的销售员、交易员和其他专业人士均可向HTISG的相关客户和公司提供与本文件所述意见相反的口头或书面市场评论意见或交易策略。HTISG可做出与本文件所述建议或意见不一致的投资决策。但HTIRL没有义务来确保本文件的收件人了解到该等交易决定、思路或建议。

请访问海通国际网站 [www.equities.htisec.com](http://www.equities.htisec.com), 查阅更多有关海通国际为预防和避免利益冲突设立的组织和行政安排的内容信息。

**非美国分析师披露信息:** 本项研究首页上列明的海通国际分析师并未在FINRA进行注册或者取得相应的资格, 并且不受美国FINRA有关与本项研究目标公司进行沟通、公开露面和自营证券交易的第2241条规则之限制。



## IMPORTANT DISCLAIMER

**For research reports on non-Indian securities:** The research report is issued by Haitong International Research Limited (“HTIRL”), a wholly owned subsidiary of Haitong International Securities Group Limited (“HTISGL”) and a licensed corporation to carry on Type 4 regulated activity (advising on securities) for the purpose of the Securities and Futures Ordinance (Cap. 571) of Hong Kong, with the assistance of Haitong International (Japan) K.K. (“HTIJKK”), a wholly owned subsidiary of HTISGL and which is regulated as an Investment Adviser by the Kanto Finance Bureau of Japan.

**For research reports on Indian securities:** The research report is issued by Haitong Securities India Private Limited (“HSIPL”), an Indian company and a Securities and Exchange Board of India (“SEBI”) registered Stock Broker, Merchant Banker and Research Analyst that, inter alia, produces and distributes research reports covering listed entities on the BSE Limited (“BSE”) and the National Stock Exchange of India Limited (“NSE”) (collectively referred to as “Indian Exchanges”). HSIPL was acquired and became part of the Haitong International Securities Group of Companies (“HTISG”) on 22 December 2016.

All the research reports are globally branded under the name Haitong International and approved for distribution by Haitong International Securities Company Limited (“HTISCL”) and/or any other members within HTISG in their respective jurisdictions.

The information and opinions contained in this research report have been compiled or arrived at from sources believed to be reliable and in good faith but no representation or warranty, express or implied, is made by HTIRL, HTISCL, HSIPL, HTIJKK or any other members within HTISG from which this research report may be received, as to their accuracy, completeness or correctness. All opinions expressed herein are as of the date of this research report and are subject to change without notice. This research report is for information purpose only. Descriptions of any companies or their securities mentioned herein are not intended to be complete and this research report is not, and should not be construed expressly or impliedly as, an offer to buy or sell securities. The securities referred to in this research report may not be eligible for purchase or sale in some jurisdictions. If an investment product is denominated in a currency other than an investor's home currency, a change in exchange rates may adversely affect the investment. Past performance is not necessarily indicative of future results. Certain transactions, including those involving derivatives, give rise to substantial risk and are not suitable for all investors. You should also bear in mind that recommendations in this research report are not tailor-made for you. The analyst has not taken into account your unique financial circumstances, such as your financial situation and risk appetite. You must, therefore, analyze and should, where applicable, consult your own legal, tax, accounting, financial and other professional advisers to evaluate whether the recommendations suits you before investment. Neither HTISG nor any of its directors, employees or agents accepts any liability whatsoever for any direct or consequential loss arising from any use of the materials contained in this research report.

HTISG and our affiliates, officers, directors, and employees, excluding the analysts responsible for the content of this document, will from time to time have long or short positions in, act as principal in, and buy or sell, the securities or derivatives, if any, referred to in this research report. Sales, traders, and other professionals of HTISG may provide oral or written market commentary or trading strategies to the relevant clients and the companies within HTISG that reflect opinions that are contrary to the opinions expressed in this research report. HTISG may make investment decisions that are inconsistent with the recommendations or views expressed in this research report. HTI is under no obligation to ensure that such other trading decisions, ideas or recommendations are brought to the attention of any recipient of this research report.

Please refer to HTI's website [www.equities.htisec.com](http://www.equities.htisec.com) for further information on HTI's organizational and administrative arrangements set up for the prevention and avoidance of conflicts of interest with respect to Research.

**Non U.S. Analyst Disclosure:** The HTI analyst(s) listed on the cover of this Research is (are) not registered or qualified as a research analyst with FINRA and are not subject to U.S. FINRA Rule 2241 restrictions on communications with companies that are the subject of the Research; public appearances; and trading securities by a research analyst.

## 分发和地区通知:

除非下文另有规定, 否则任何希望讨论本报告或者就本项研究中讨论的任何证券进行任何交易的收件人均应联系其所在国家或地区的海通国际销售人员。

**香港投资者的通知事项:** 海通国际证券股份有限公司(“HTISCL”)负责分发该研究报告, HTISCL是在香港有权实施第1类受规管活动(从事证券交易)的持牌公司。该研究报告并不构成《证券及期货条例》(香港法例第571章)(以下简称“SFO”)所界定的要约邀请, 证券要约或公众要约。本研究报告仅提供给SFO所界定的“专业投资者”。本研究报告未经过证券及期货事务监察委员会的审查。您不应仅根据本研究报告中所载的信息做出投资决定。本研究报告的收件人就研究报告中产生或与之相关的任何事宜请联系HTISCL销售人员。

**美国投资者的通知事项:** 本研究报告由HTIRL, HSIPL或HTIJKK编写。 HTIRL, HSIPL, HTIJKK以及任何非HTISG美国联营公司, 均未在美国注册, 因此不受美国关于研究报告编制和研究分析人员独立性规定的约束。本研究报告提供给依照1934年“美国证券交易法”第15a-6条规定的豁免注册的「美国主要机构投资者」(“Major U.S. Institutional Investor”)和「机构投资者」(“U.S. Institutional Investors”)。在向美国机构投资者分发研究报告时, Haitong International Securities (USA) Inc. (“HTI USA”) 将对报告的内容负责。任何收到本研究报告的美国投资者, 希望根据本研究报告提供的信息进行任何证券或相关金融工具买卖的交易, 只能通过HTI USA。HTI USA位于340 Madison Avenue, 12th Floor, New York, NY 10173, 电话(212) 351-6050。HTI USA是在美国于U.S. Securities and Exchange Commission (“SEC”)注册的经纪商, 也是Financial Industry Regulatory Authority, Inc. (“FINRA”)的成员。HTIUSA不负责编写本研究报告, 也不负责其中包含的分析。在任何情况下, 收到本研究报告的任何美国投资者, 不得直接与分析师直接联系, 也不得通过HSIPL, HTIRL或HTIJKK直接进行买卖证券或相关金融工具的交易。本研究报告中出现的HSIPL, HTIRL或HTIJKK分析师没有注册或具备FINRA的研究分析师资格, 因此可能不受FINRA第2241条规定的与目标公司的交流, 公开露面和分析师账户持有的交易证券等限制。投资本研究报告中讨论的任何非美国证券或相关金融工具(包括ADR)可能存在一定风险。非美国发行的证券可能没有注册, 或不受美国法规的约束。有关非美国证券或相关金融工具的信息可能有限制。外国公司可能不受审计和汇报的标准以及与美国境内生效相符的监管要求。本研究报告中以美元以外的其他货币计价的任何证券或相关金融工具的投资或收益的价值受汇率波动的影响, 可能对该等证券或相关金融工具的价值或收入产生正面或负面影响。美国收件人的所有问询请联系:

Haitong International Securities (USA) Inc.  
340 Madison Avenue, 12th Floor  
New York, NY 10173  
联系人电话: (212) 351 6050

## DISTRIBUTION AND REGIONAL NOTICES

Except as otherwise indicated below, any Recipient wishing to discuss this research report or effect any transaction in any security discussed in HTI's research should contact the Haitong International salesperson in their own country or region.

**Notice to Hong Kong investors:** The research report is distributed by Haitong International Securities Company Limited ("HTISCL"), which is a licensed corporation to carry on Type 1 regulated activity (dealing in securities) in Hong Kong. This research report does not constitute a solicitation or an offer of securities or an invitation to the public within the meaning of the SFO. This research report is only to be circulated to "Professional Investors" as defined in the SFO. This research report has not been reviewed by the Securities and Futures Commission. You should not make investment decisions solely on the basis of the information contained in this research report. Recipients of this research report are to contact HTISCL salespersons in respect of any matters arising from, or in connection with, the research report.

**Notice to U.S. investors:** As described above, this research report was prepared by HTIRL, HSIPL or HTIJKK. Neither HTIRL, HSIPL, HTIJKK, nor any of the non U.S. HTISG affiliates is registered in the United States and, therefore, is not subject to U.S. rules regarding the preparation of research reports and the independence of research analysts. This research report is provided for distribution to "major U.S. institutional investors" and "U.S. institutional investors" in reliance on the exemption from registration provided by Rule 15a-6 of the U.S. Securities Exchange Act of 1934, as amended. When distributing research reports to "U.S. institutional investors," HTI USA will accept the responsibilities for the content of the reports. Any U.S. recipient of this research report wishing to effect any transaction to buy or sell securities or related financial instruments based on the information provided in this research report should do so only through Haitong International Securities (USA) Inc. ("HTI USA"), located at 340 Madison Avenue, 12th Floor, New York, NY 10173, USA; telephone (212) 351 6050. HTI USA is a broker-dealer registered in the U.S. with the U.S. Securities and Exchange Commission (the "SEC") and a member of the Financial Industry Regulatory Authority, Inc. ("FINRA"). HTI USA is not responsible for the preparation of this research report nor for the analysis contained therein. Under no circumstances should any U.S. recipient of this research report contact the analyst directly or effect any transaction to buy or sell securities or related financial instruments directly through HSIPL, HTIRL or HTIJKK. The HSIPL, HTIRL or HTIJKK analyst(s) whose name appears in this research report is not registered or qualified as a research analyst with FINRA and, therefore, may not be subject to FINRA Rule 2241 restrictions on communications with a subject company, public appearances and trading securities held by a research analyst account. Investing in any non-U.S. securities or related financial instruments (including ADRs) discussed in this research report may present certain risks. The securities of non-U.S. issuers may not be registered with, or be subject to U.S. regulations. Information on such non-U.S. securities or related financial instruments may be limited. Foreign companies may not be subject to audit and reporting standards and regulatory requirements comparable to those in effect within the U.S. The value of any investment or income from any securities or related financial instruments discussed in this research report denominated in a currency other than U.S. dollars is subject to exchange rate fluctuations that may have a positive or adverse effect on the value of or income from such securities or related financial instruments. All inquiries by U.S. recipients should be directed to:

Haitong International Securities (USA) Inc.  
340 Madison Avenue, 12<sup>th</sup> Floor  
New York, NY 10173  
Attn: Sales Desk at (212) 351 6050

**中华人民共和国的通知事项：**在中华人民共和国（下称“中国”，就本报告目的而言，不包括香港特别行政区、澳门特别行政区和台湾）只有根据适用的中国法律法规而收到该材料的人员方可使用该材料。并且根据相关法律法规，该材料中的信息并不构成“在中国从事生产、经营活动”。本文件在中国并不构成相关证券的公共发售或认购。无论根据法律规定或其他任何规定，在取得中国政府所有的批准或许可之前，任何法人或自然人均不得直接或间接地购买本材料中的任何证券或任何实益权益。接收本文件的人员须遵守上述限制性规定。

**加拿大投资者的通知事项：**在任何情况下该等材料均不得被解释为在任何加拿大的司法管辖区内出售证券的要约或认购证券的要约邀请。本材料中所述证券在加拿大的任何要约或出售行为均只能在豁免向有关加拿大证券监管机构提交招股说明书的前提下由Haitong International Securities (USA) Inc.（“HTI USA”）予以实施，该公司是一家根据National Instrument 31-103 Registration Requirements, Exemptions and Ongoing Registrant Obligations（“NI 31-103”）的规定得到「国际交易商豁免」（“International Dealer Exemption”）的交易商，位于艾伯塔省、不列颠哥伦比亚省、安大略省和魁北克省。在加拿大，该等材料在任何情况下均不得被解释为任何证券的招股说明书、发行备忘录、广告或公开发售。加拿大的任何证券委员会或类似的监管机构均未审查或以任何方式批准该等材料、其中所载的信息或所述证券的优点，任何与此相反的声明即属违法。在收到该等材料时，每个加拿大的收件人均将被视为属于National Instrument 45-106 Prospectus Exemptions第1.1节或者Securities Act (Ontario)第73.3(1)节所规定的「认可投资者」（“Accredited Investor”），或者在适用情况下National Instrument 31-103第1.1节所规定的「许可投资者」（“Permitted Investor”）。

**•新加坡投资者的通知事项：**本研究报告由Haitong International Securities (Singapore) Pte Ltd（“HTISSPL”）于新加坡提供。HTISSPL是符合《财务顾问法》2001（“FAA”）定义的豁免财务顾问，可（a）提供关于证券，集体投资计划的部分，交易所衍生品合约和场外衍生品合约的建议（b）发行或公布有关证券、交易所衍生品合约和场外衍生品合约的研究分析或研究报告。本研究报告仅提供给符合《证券及期货法》2001第4A条项下规定的机构投资者。对于因本研究报告而产生的或与之相关的任何问题，本研究报告的收件人应通过以下信息与HTISSPL联系：

Haitong International Securities (Singapore) Pte. Ltd  
10 Collyer Quay, #19-01 - #19-05 Ocean Financial Centre, Singapore 049315  
电话: (65) 6713 0473

**日本投资者的通知事项：**本研究报告由海通国际证券有限公司所发布，旨在分发给从事投资管理的金融服务提供商或注册金融机构（根据日本金融机构和交易法（“FIEL”）第61（1）条，第17-11（1）条的执行及相关条款）。

**英国及欧盟投资者的通知事项：**本报告由从事投资顾问的Haitong International Securities Company Limited所发布，本报告只面向有投资相关经验的专业客户发布。任何投资或与本报告相关的投资行为只面对此类专业客户。没有投资经验或相关投资经验的客户不得依赖本报告。Haitong International Securities Company Limited的分支机构的净长期或短期金融权益可能超过本研究报告中提及的实体已发行股本总额的0.5%。特别提醒有些英文报告有可能此前已经通过中文或其它语言完成发布。

**澳大利亚投资者的通知事项：**Haitong International Securities (Singapore) Pte Ltd, Haitong International Securities Company Limited和Haitong International Securities (UK) Limited分别根据澳大利亚证券和投资委员会（以下简称“ASIC”）第03/1102、03/1103或03/1099号规章在澳大利亚分发本项研究，该等规章免除了根据2001年《公司法》在澳大利亚为批发客户提供金融服务时海通国际需持有澳大利亚金融服务许可的要求。ASIC的规章副本可在以下网站获取：[www.legislation.gov.au](http://www.legislation.gov.au)。海通国际提供的金融服务受外国法律法规规定的管制，该等法律与在澳大利亚所适用的法律存在差异。

**印度投资者的通知事项：**本报告由从事证券交易、投资银行及证券分析及受Securities and Exchange Board of India（“SEBI”）监管的Haitong Securities India Private Limited（“HTSIPL”）所发布，包括制作及发布涵盖BSE Limited（“BSE”）和National Stock Exchange of India Limited（“NSE”）（统称为「印度交易所」）研究报告。

研究机构名称: Haitong Securities India Private Limited

SEBI 研究分析师注册号: INH000002590

地址: 1203A, Floor 12A, Tower 2A, One World Center

841 Senapati Bapat Marg, Elphinstone Road, Mumbai 400 013, India

CIN U74140MH2011FTC224070

电话: +91 22 43156800 传真: +91 22 24216327

合规和申诉办公室联系人: Prasanna Chandwaskar; 电话: +91 22 43156803; 电子邮箱: [prasanna.chandwaskar@htisec.com](mailto:prasanna.chandwaskar@htisec.com)

“请注意，SEBI 授予的注册和 NISM 的认证并不保证中介的表现或为投资者提供任何回报保证”。

，未经海通国际的书面同意不得予以复制和再次分发。

版权所有：海通国际证券集团有限公司2019年。保留所有权利。

**People's Republic of China (PRC):** In the PRC, the research report is directed for the sole use of those who receive the research report in accordance with the applicable PRC laws and regulations. Further, the information on the research report does not constitute "production and business activities in the PRC" under relevant PRC laws. This research report does not constitute a public offer of the security, whether by sale or subscription, in the PRC. Further, no legal or natural persons of the PRC may directly or indirectly purchase any of the security or any beneficial interest therein without obtaining all prior PRC government approvals or licenses that are required, whether statutorily or otherwise. Persons who come into possession of this research are required to observe these restrictions.

**Notice to Canadian Investors:** Under no circumstances is this research report to be construed as an offer to sell securities or as a solicitation of an offer to buy securities in any jurisdiction of Canada. Any offer or sale of the securities described herein in Canada will be made only under an exemption from the requirements to file a prospectus with the relevant Canadian securities regulators and only by Haitong International Securities (USA) Inc., a dealer relying on the "international dealer exemption" under National Instrument 31-103 Registration Requirements, Exemptions and Ongoing Registrant Obligations ("NI 31-103") in Alberta, British Columbia, Ontario and Quebec. This research report is not, and under no circumstances should be construed as, a prospectus, an offering memorandum, an advertisement or a public offering of any securities in Canada. No securities commission or similar regulatory authority in Canada has reviewed or in any way passed upon this research report, the information contained herein or the merits of the securities described herein and any representation to the contrary is an offence. Upon receipt of this research report, each Canadian recipient will be deemed to have represented that the investor is an "accredited investor" as such term is defined in section 1.1 of National Instrument 45-106 Prospectus Exemptions or, in Ontario, in section 73.3(1) of the Securities Act (Ontario), as applicable, and a "permitted client" as such term is defined in section 1.1 of NI 31-103, respectively.

**Notice to Singapore investors:** This research report is provided in Singapore by or through Haitong International Securities (Singapore) Pte Ltd ("HTISSPL"). HTISSPL is an Exempt Financial Adviser under the Financial Advisers Act 2001 ("FAA") to (a) advise on securities, units in a collective investment scheme, exchange-traded derivatives contracts and over-the-counter derivatives contracts and (b) issue or promulgate research analyses or research reports on securities, exchange-traded derivatives contracts and over-the-counter derivatives contracts. This research report is only provided to institutional investors, within the meaning of Section 4A of the Securities and Futures Act 2001. Recipients of this research report are to contact HTISSPL via the details below in respect of any matters arising from, or in connection with, the research report:

Haitong International Securities (Singapore) Pte. Ltd.

10 Collyer Quay, #19-01 - #19-05 Ocean Financial Centre, Singapore 049315

Telephone: (65) 6713 0473



**Notice to Japanese investors:** This research report is distributed by Haitong International Securities Company Limited and intended to be distributed to Financial Services Providers or Registered Financial Institutions engaged in investment management (as defined in the Japan Financial Instruments and Exchange Act ("FIEL") Art. 61(1), Order for Enforcement of FIEL Art. 17-11(1), and related articles).

**Notice to UK and European Union investors:** This research report is distributed by Haitong International Securities Company Limited. This research is directed at persons having professional experience in matters relating to investments. Any investment or investment activity to which this research relates is available only to such persons or will be engaged in only with such persons. Persons who do not have professional experience in matters relating to investments should not rely on this research. Haitong International Securities Company Limited's affiliates may have a net long or short financial interest in excess of 0.5% of the total issued share capital of the entities mentioned in this research report. Please be aware that any report in English may have been published previously in Chinese or another language.

**Notice to Australian investors:** The research report is distributed in Australia by Haitong International Securities (Singapore) Pte Ltd, Haitong International Securities Company Limited, and Haitong International Securities (UK) Limited in reliance on ASIC Class Order 03/1102, 03/1103 or 03/1099, respectively, which exempts those HTISG entities from the requirement to hold an Australian financial services license under the Corporations Act 2001 in respect of the financial services it provides to wholesale clients in Australia. A copy of the ASIC Class Orders may be obtained at the following website, [www.legislation.gov.au](http://www.legislation.gov.au). Financial services provided by Haitong International Securities (Singapore) Pte Ltd, Haitong International Securities Company Limited, and Haitong International Securities (UK) Limited are regulated under foreign laws and regulatory requirements, which are different from the laws applying in Australia.

**Notice to Indian investors:** The research report is distributed by Haitong Securities India Private Limited ("HSIPL"), an Indian company and a Securities and Exchange Board of India ("SEBI") registered Stock Broker, Merchant Banker and Research Analyst that, inter alia, produces and distributes research reports covering listed entities on the BSE Limited ("BSE") and the National Stock Exchange of India Limited ("NSE") (collectively referred to as "Indian Exchanges").

Name of the entity: Haitong Securities India Private Limited

SEBI Research Analyst Registration Number: INH000002590



# APPENDIX 2

Address : 1203A, Floor 12A, Tower 2A, One World Center

841 Senapati Bapat Marg, Elphinstone Road, Mumbai 400 013, India

CIN U74140MH2011FTC224070

Ph: +91 22 43156800 Fax:+91 22 24216327

Details of the Compliance Officer and Grievance Officer : Prasanna Chandwaskar : Ph: +91 22 43156803; Email id: prasanna.chandwaskar@htisec.com

“Please note that Registration granted by SEBI and Certification from NISM in no way guarantee performance of the intermediary or provide any assurance of returns to investors”.

This research report is intended for the recipients only and may not be reproduced or redistributed without the written consent of an authorized signatory of HTISG.

Copyright: Haitong International Securities Group Limited 2019. All rights reserved.

<http://equities.htisec.com/x/legal.html>