

# VITAL THIN FILM MATERIALS

## 先导薄膜



先导薄膜材料有限公司  
Vital Thin Film Materials Co. Ltd.

# VITAL THIN FILM MATERIALS

### 深圳 Shenzhen Office, China

地址：广东省深圳市南山区太子路 111 号深圳自贸中心 18 楼 18G  
Add: 18G, 18th Floor, Shenzhen Free Trade Centre,  
No.111 Taizi Road, Nanshan District,  
Shenzhen, Guangdong China 518067  
Tel: (+86) 755-21651348  
sales@vitaltfm.com

### 清远 Qingyuan Plant, China

先导薄膜材料(广东)有限公司  
地址：广东省清远市高新区百嘉工业园 27-9 号  
邮编：511517  
Vital Thin Film Materials (Guangdong) Co., Ltd.  
Add: No. 27-9, A-Zone, Baijia Industrial Park, High-tech Zone,  
Qingyuan, Guangdong China 511517  
sales@vitaltfm.com

### 合肥 Hefei Plant, China

先导薄膜材料有限公司  
地址：安徽省合肥市新站区龙子湖路 邮编：230012  
Vital Thin Film Materials Co. Ltd.  
Add: Long Zihu Road, Xin Zhan district, Hefei, Anhui China 230012  
sales@vitaltfm.com

### 新加坡 Singapore Plant

Singapore Advanced Thin Film Material Private Limited  
Add: 1 Tuas South Street 3 Singapore 638043  
sales@vitaltfm.com

### 韩国 Korea Plant

KV Materials Co. Ltd.  
Add: 242, 3gongdan 3-ro, Gumi-City, Gyeongbuk, 39396 Korea  
sales@vitaltfm.com



WWW.VITALTFM.COM



# Vital Thin Film Materials



## 公司介绍 INTRODUCTION

先导薄膜材料有限公司是先导集团下属子公司，致力于研发、生产、销售和回收真空镀膜用溅射靶材和蒸发材料。产品系列包括高纯金属、合金、贵金属及陶瓷材料所制成的靶材、锭、颗粒及粉末，被广泛应用于显示、光伏、半导体、精密光学、数据存储及玻璃等领域。

先导薄膜现有员工 1500 人，在全球多个国家和地区设有销售办公室，先导薄膜目前已成为国内具备相当规模和影响力的靶材供应商之一，产品质量稳定，受到国内外客户广泛认可。

先导集团于 2020 年收购了韩国 KVM 公司，KVM 前身是三星康宁先进玻璃有限公司陶瓷靶材事业部，在研发、生产和销售 PVD 溅射靶材和蒸发材料有 20 多年的历史和经验。KVM 加入先导集团以后，先导薄膜将进一步整合全球技术、人才和市场资源，将为客户提供高端 ITO、IZO 和 IGZO 等及其他高迁移率氧化物陶瓷靶材产品，以及配套的技术解决方案。

Vital Thin Film Materials (VTFM), part of the Vital Group, focuses on research, development, production, recycling and sales of sputter targets and evaporation materials for physical vapor deposition (PVD). VTFM's product portfolio breadth and depth of high purity metals, complex metal alloys, precious metals and ceramics is unsurpassed.

Employing a staff of nearly 1,500 across production sites and sales offices around the world, VTFM has become a world-leader for PVD consumables. In working directly with industry recognized PVD vacuum equipment OEMs, VTFM is at the forefront of developing new materials utilized in next-generation technologies for Display, Photovoltaic, Semiconductor, Optics, LED, Data Storage and Glass applications.

In 2020 Vital Group acquired KV Materials (KVM), adding over 20 years of experience in ceramic materials production of PVD sputter targets and powders. KVM was previously a division of Samsung Corning Advanced Glass in Korea. The acquisition solidifies Vital's place as a world-class leader in ITO, IZO, IGZO and other high-mobility ceramics, uniquely positioned to address tomorrow's technologies, today.



先导薄膜材料 (广东) 有限公司  
Vital Thin Film Materials (Guangdong) Co., Ltd.  
广东清远, 中国  
Qingyuan, China



先导薄膜材料有限公司  
Vital Thin Film Materials Co. Ltd.  
安徽合肥, 中国  
Hefei, China

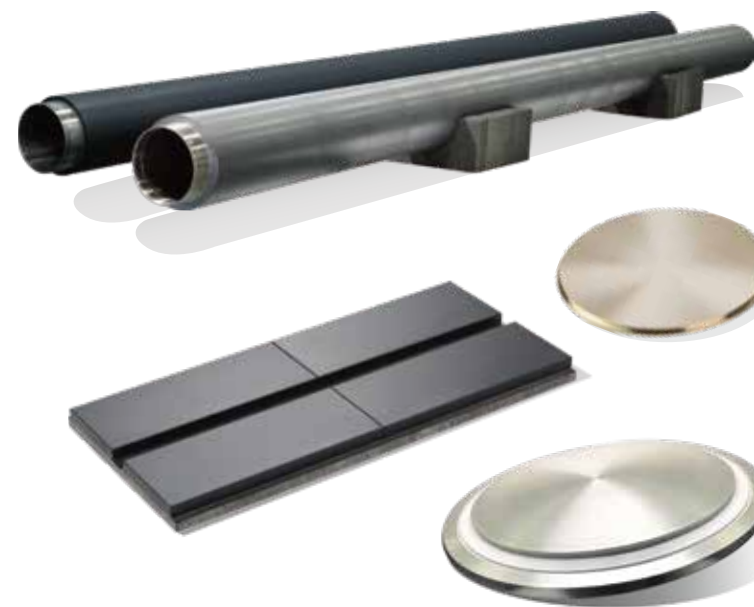


Singapore Advanced Thin Film Materials  
Private Limited  
新加坡  
Singapore



KV Materials Co. Ltd.  
韩国  
Korea

## 主要产品 PRODUCTS



### 溅射靶材 SPUTTER TARGETS

### 溅射靶材 SPUTTER TARGETS

溅射靶材主要用于真空镀膜设备中，通过物理气相沉积 (PVD) 在基片上涂覆薄膜层，以增加新的功能或创建微小的连接，如薄膜晶体管 (TFT)。

先导薄膜为各行业客户提供不同材料所制成的平面靶材和旋转靶材，我们的制备技术先进，保证产品达到最佳的使用性能。

Sputter Targets are mainly used in Vacuum Coating Equipment to coat thin films by Physical Vapor Deposition (PVD) on a substrate to add new functions or create micro-electronic connections and functions as Thin Film Transistors (TFT).

VTFM manufactures planar and rotary Sputter Targets in a wide range of materials using all available and most advanced technologies to guarantee the best performance.

### 蒸发材料 EVAPORATION MATERIALS

先导薄膜为各行业客户提供各种材料所制成的高品质蒸发材料，同时根据客户的具体应用为客户提供最佳的解决方案。我们的产品具有高纯度、高熔炼性能、在预熔和加工过程中飞溅率低等优点，能有效避免镀膜缺陷，提高镀膜良率。

先导薄膜的产品范围包括贵金属、高纯金属、金属合金、氟化物、氧化物和硫化物等，可根据需要制成颗粒、圆片、球状等形状。

Vital Thin Film Materials (VTFM) provides a wide range of high-quality evaporation materials offering the best solution for any individual application. High-purity, optimized melting properties as well as low spitting during pre-melt and processing allows coating complex layer stacks with low defects and high yield.

Our product range includes precious metals, high purity metals, metal alloys, fluorides, oxides and sulphides in a wide variety of shapes and geometries of granules, tablets, shots or disks.





## 显示 DISPLAY

液晶显示器 (LCD) 是使用最广泛的面板技术, 提供各种尺寸和配置, 可满足各种应用需求。LCD 和其他面板技术 (TN、STN、TFT-LCD、OLED、Micro-OLED 等) 正常运作的过程中, 都需要用到透明导电氧化物 (TCO) 膜, 最常见的 TCO 有氧化铟锡 (ITO), 以及因为可以提高电子迁移率而被逐渐采用的氧化铟镓锌 (IGZO)。

先导薄膜专注于为全球显示行业客户提供高品质、高性能的 ITO 和 IGZO 靶材。先导薄膜制造过程的每个步骤, 都采用独特的技术, 从而能够控制各种影响质量的因素 (组分、密度、纯度、键合覆盖率), 进而实现产品质量的高标准把控, 并同时确保批次间的一致性。除 ITO 外, 先导薄膜还提供了 TFT 生产中使用的配套金属靶材, 可用于 LCD、触摸传感器、笔记本电脑电磁干扰涂层、手机后盖渐变、可穿戴设备硬质涂层等。

Liquid Crystal Displays (LCD) are the most widely used panel technology, offering a vast range of sizes and configurations to address various applications. To function properly, LCD and alternative panel technologies (TN, STN, TFT LCD, OLED, Micro-OLED, etc.) require a transparent conductive oxide (TCO) film. The most common TCO for display technologies is Indium Tin Oxide (ITO), though Indium Gallium Zinc Oxide (IGZO) is quickly gaining acceptance.

Vital Thin Film Materials (VTFM) is a global leader in ITO and IGZO target production. Each step of the manufacturing process is completed in-house, enabling quality-control over key material attributes (composition, density, purity, bond coverage) within-lot and consistency from lot-to-lot. In addition to ITO, VTFM offers a complementary range of metal targets (molybdenum, aluminum, copper, titanium, etc.) utilized in TFT production for LCDs and touch sensors; EMI shielding for portable devices; color filters for mobiles; and hard coatings for wear devices.

### 相关产品 PRODUCTS

	旋转靶 Rotary Target	平面靶 Planar Target	颗粒 Tablet
ITO	✓	✓	✓
IGZO	✓	✓	
Mo	✓	✓	
Al	✓	✓	
Cu	✓	✓	
Ti	✓	✓	

## 半导体 SEMICONDUCTOR

用于半导体的溅射靶材, 是一种被广泛运用于芯片制造的重要材料, 可用于前段的制程例如制造闸极元件、栅极、金属层及金属互联等, 以及后段键合。

高纯金属溅射靶材可由各种金属及金属合金制得, 种类繁多, 适用于通过物理气相沉积 (PVD) 生成多层功能性薄膜, 满足半导体技术小体积和多功能集成发展趋势的需求。

Physical vapor deposition (PVD) sputter targets and evaporation materials are widely used within semiconductor fabrication, including front-end and back-end processes. Chip densification is no longer the driving technology for growth, but rather a shift to adding functionality.

High purity metal sputter targets can be made from various metals and metal alloys, which are suitable for the generation of multilayer functional films by physical vapor deposition (PVD) to meet the demand of volume and multi-functional integration of semiconductor technology.

### 相关产品 PRODUCTS

	旋转靶 Rotary Target	平面靶 Planar Target	颗粒 Tablet	粉末 Powder
AlSc		✓		
WTi		✓		
NiPt		✓		
GeSbTe		✓		
CoTaZr		✓		
ITO	✓	✓	✓	✓
WSi		✓		
V		✓		
Si	✓	✓		
Au		✓		✓
Ag		✓		✓
Cr	✓	✓		✓
Hf	✓	✓		✓
Ti	✓	✓	✓	✓
Sn	✓	✓	✓	✓



# 光伏 PHOTOVOLTAICS

近年来,由于溅射靶材质量的提高,以及替代材料的不断发展,太阳能电池的效率逐步提高,太阳能光伏技术也已被更广泛地采用。在过去十年中,采用异质结(HIT)制造光伏面板的技术一直在不断发展。异质结技术将最优质的单晶硅与非晶硅薄膜相结合,从而提高效率和功率输出到最高水平,是当下太阳能行业的最佳选择。

先导薄膜生产可用于太阳能电池的全系列高质量PVD溅射靶材和蒸发材料。目前主要的光伏材料包括碲化镉系列靶材、铜铟镓硒系列靶材、ITO靶材等。

Photovoltaics (PV) technology is more widely adopted in recent years due to improvements in sputter target quality combined with developments in alternative materials to increase solar cell efficiency.

PV panels manufactured with Heterojunction Technology (HIT) have gained wider adoption over the last decade. The technology is currently the solar industry's best option to increase efficiency and power output to their highest levels by combining the best qualities of crystalline silicon with those from amorphous silicon thin-film.

Vital Thin Film Materials (VTFM) produces a full range of high-quality PVD sputter targets and evaporation materials for solar cell applications. Our products include CdTe base and CIGS base products.

## 相关产品 PRODUCTS

	旋转靶 Rotary Target	平面靶 Planar Target	颗粒 Tablet	粉末 Powder
CdTe	✓	✓		✓
CdZnTe	✓	✓		✓
CdS		✓		✓
CdSe		✓		✓
ZnTe	✓	✓		✓
CIGS	✓	✓	✓	✓
CIG	✓	✓	✓	✓
CuGa	✓	✓	✓	✓
In <sub>2</sub> Se <sub>3</sub>		✓	✓	✓
In <sub>2</sub> S <sub>3</sub>		✓	✓	✓
ITO	✓	✓	✓	✓
Ag	✓	✓		
Cu	✓	✓	✓	
In	✓	✓	✓	
Ga			✓	
Mo	✓	✓		
Se			✓	
Te		✓	✓	
Ti	✓	✓		

## 相关产品 PRODUCTS

	旋转靶 Rotary Target	平面靶 Planar Target	颗粒 Tablet
Al <sub>2</sub> O <sub>3</sub>			✓
HfO <sub>2</sub>			✓
Ta <sub>2</sub> O <sub>5</sub>	✓		✓
Nb <sub>2</sub> O <sub>5</sub>	✓		✓
Ti <sub>3</sub> O <sub>5</sub>	✓		✓
MgO			✓
BaF <sub>2</sub>			✓
CaF <sub>2</sub>			✓
CeF <sub>3</sub>			✓
MgF <sub>2</sub>			✓
YbF <sub>3</sub>			✓
ZnSe			✓
ZnS		✓	✓
ITO	✓	✓	✓
Ge		✓	✓
Si	✓	✓	✓
Nb	✓	✓	
Ta	✓	✓	
Hf		✓	✓

# 精密光学 PRECISION OPTICS

物理气相沉积(PVD)蒸发镀膜一直是光学镀膜的主流技术。随着用于医疗、国防和商业用途的光学滤光片涂层要求越来越高,转为倾向于使用光学监控溅射沉积技术。

先导薄膜是PVD蒸发和溅射材料的专业制造商。我们自主回收和加工原材料,通过成熟的提纯、熔化、铸造、锻轧和绑定等工艺,直接控制有可能对PVD工艺产生影响的因素,确保材料纯度、晶粒尺寸、均匀性等符合PVD工艺的要求。

Physical Vapor Deposition (PVD) by means of evaporation has continued to be the leading technology for optical thin film coatings. However, as optical filter coatings for medical, defense and commercial applications become tighter a shift in favor of sputter deposition technology with optical monitoring will continue, though evaporation will always maintain a crucial role in the process.

VTFM is a uniquely positioned supplier of PVD evaporation and sputter materials. Raw materials largely originate from in-house reclaim. Adding further value to Vital's ability to maintain control of material characteristics (purity, grain size, homogeneity, etc.) critical to the PVD process stems from in-house refining, melting, casting, forging, rolling and bonding capabilities.



## 数据存储 DATA STORAGE

在过去的十年中, 智能手机、平板电脑、物联网设备和企业解决方案等应用的全球数字化推动了数据存储的巨大增长。 由于随时随地都需要实现数据的即时访问, 智能手机、平板电脑、物联网设备和企业解决方案都连接到了“云”。

硬盘驱动器仍然是全球数据中心成本最低的解决方案。 先导薄膜为磁盘和磁头镀膜提供全系列的溅射靶材(各类贵金属: 铂、铂合金、铂氧化物、钌、钌合金、钌氧化物以及非贵金属合金)。

先导薄膜对于多种金属和贵金属产品, 建立了一套完整的“租赁”体系, 帮助客户更好的控制原料和成本。作为专业的集成制造商, 先导薄膜还能为客户提供废靶、生产废料中所含的贵金属和其他有价金属回收服务。

Data storage has seen tremendous growth over the last decade, fueled by an ever-growing demand requiring immediate access to data, regardless of location. Smart phones, tablets, IoT devices and enterprise solutions are all connected to the “Cloud”.

Hard Disk Drives continue to be the lowest cost solution for global data centers. VTFM provides a full spectrum of sputter targets (Precious Metals and Non-Precious Metals, including Pt, Pt-Alloys, Pt-Oxides, Ru, Ru-Alloys, Ru-Oxides, Non-Precious Alloys) for both magnetic disk and read/write head.

Vital Thin Film Materials' (VTFM) in-house recycling and refining services guarantee stable supply with consistent quality due to tight control over the starting raw materials and subsequent production steps (VIM, HP, HIP, etc.). This creates a unique position for VTFM to support customers with a closed-loop recycling service of spent targets, thereby reducing cost of ownership.

### 相关产品 PRODUCTS

	旋转靶 Rotary Target	平面靶 Planar Target	粉末 Powder
Ru	✓	✓	
Ru Oxide			✓
Ni		✓	
NiPt		✓	
CrCo		✓	
CoZrTa		✓	
CoCrPtB		✓	

## 技术支持 TECHNOLOGY SUPPORT

先导薄膜拥有一支专业的国际化研发和应用技术支持团队。我们的研发团队与客户共同合作, 改进产品和工艺, 提升现有产品性能; 共同探索, 开发适用于未来先进技术的新产品和新工艺。我们的应用技术支持团队协助客户解决产品应用问题, 提升应用性能; 我们的应用分析实验室为客户提供专业的材料分析和靶材测试服务。

先导薄膜不仅仅是客户的材料供应商, 更是客户可以信赖的合作伙伴, 我们与客户携手, 共同提升和发展。

VTFM's R&D team works hand-in-hand with end-users to improve performance upon existing products; developing new materials for next generation products/application solutions.

Our application laboratory is equipped with state-of-the-art equipment to test our products and provide sample coatings for our customers, to assist customers with process improvements, including new material compositions and geometries or depositing layer stacks.

Our customers view VTFM as a materials partner, helping to achieve better yields through material improvements.





# 回收服务 RECYCLING SERVICE

先导薄膜在全球多个国家和地区设立办公室，为我们的客户提供优质的产品和服务、及时的服务。

先导薄膜提供的回收服务包括：废靶、靶粉和产品废料。先导薄膜还可以根据客户需求，提供有针对性的回收服务。

先导薄膜致力于环境保护和健康安全，我们在中国清远、中国合肥和新加坡的制造工厂都建立ISO9001、ISO14001、ISO14021和OHSAS18001管理体系，以确保我们的生产过程和品质控制遵循行业的高标准。

VTFM has established a global network of sales offices and service centers to locally assist our customers.

VTFM provides close-loop recycling services include: spent targets, target waste and production waste. We can also offer a 'leasing' program for most materials according to customer needs.

Our manufacturing sites in Qingyuan, Hefei and Singapore have established quality management system certified to ISO9001. Additionally, VTFM sites have been certified to ISO14001, ISO14021 and OHSAS18001 to ensure production processes and quality control comply with the highest industry standards.



建立闭环回收的合作伙伴关系，打造绿色未来  
Recycling, enabling a cleaner future  
through closed loop partnerships



## 回收物料 Recycling Materials

ITO 废靶、靶粉 Spent ITO target, target powder
IGZO 废靶、靶粉 Spent IGZO target, target powder
CIGS/CdTe 废靶、靶粉 Spent CIGS / CdTe target, target powder
AlSc 废靶 Spent AlSc target
氧化铟 Indium oxide
废旧铟液 Indium containing liquids
含铟废料 Indium containing production waste
含铟废料的腔体、挡板废料 Indium containing chamber/shield scrap
含银物料 Silver containing materials
含铂物料 Platinum containing materials
含钌物料 Ruthenium containing materials
含钯物料 Palladium containing materials
含金物料 Gold containing materials
含钪物料 Scandium containing materials