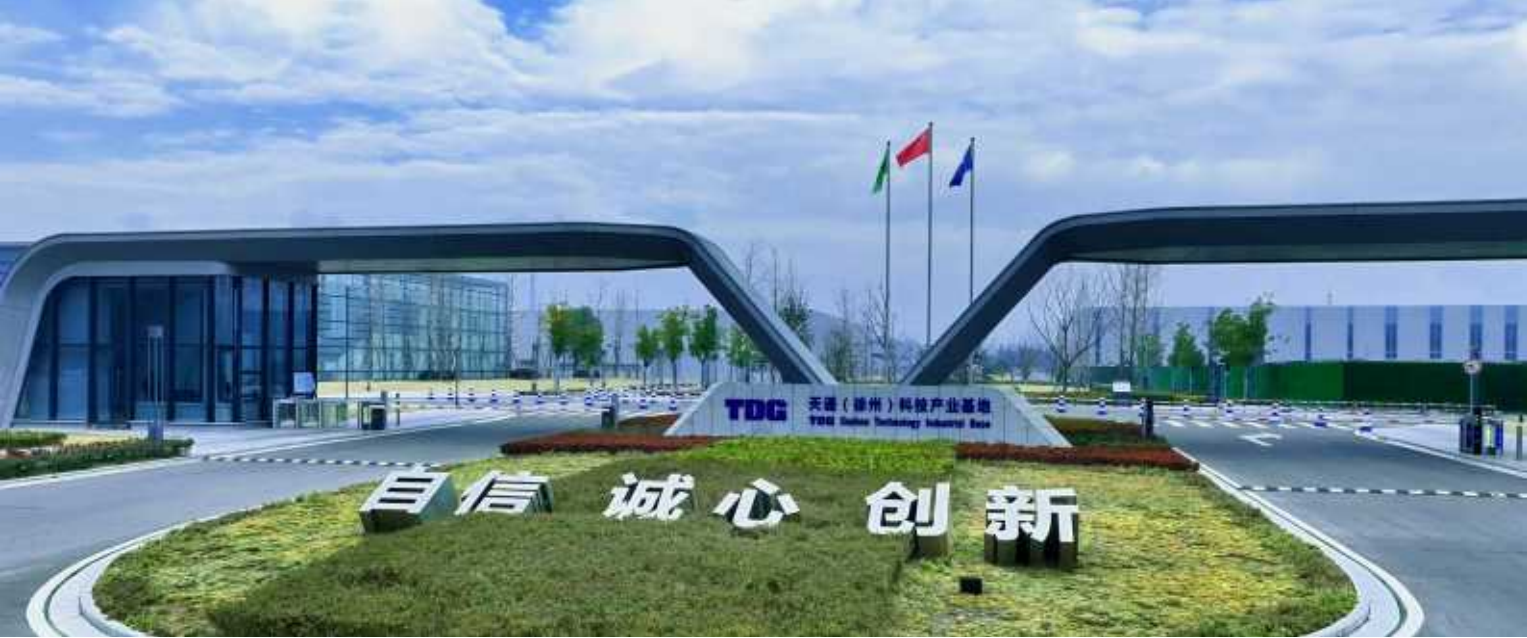


# SAPPHIRE OPTICAL & WINDOW PRODUCTS

蓝宝石光学&窗口产品





## 天通控股股份有限公司

**TDG HOLDING CO., LTD**

天通控股股份有限公司（股票代码：600330）创建于1984年，于2001年在上海证券交易所挂牌上市，是国内首家由自然人直接控股的上市公司，经过四十年的艰苦创业，天通拥有多家控股和参股公司，目前已经形成电子材料、电子模组、智能装备、绿色能源四大业务板块，业务涵盖电子信息材料产业链上下游，是集科研、制造、销售于一体的国家高新技术企业。

TDG Holding Co., Ltd (stock code: 600330) was founded in 1984 and listed on the Shanghai Stock Exchange in 2001. TDG is the first listed company in China that is controlled by individual shareholders. After forty years of development, TDG possesses several holding and joint stock companies, and now has formed four major business segments: electronic materials, electronic modules, intelligent equipment and green energy. Its business covers the upstream and downstream of the electronic information material industry chain and it is a high-tech enterprise integrating scientific research, manufacturing and sales.

## 徐州凯成科技有限公司

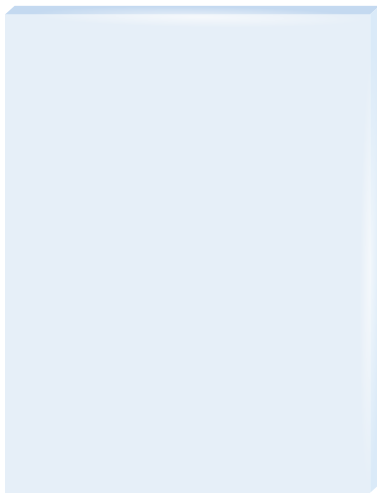
**TDG XUZHOU KAICHENG TECHNOLOGY CO., LTD**

徐州凯成科技有限公司成立于2021年，是天通控股股份有限公司的全资子公司，是集生产、销售、科研于一体的高新技术企业。徐州凯成科技是一家依托控股公司的蓝宝石长晶产业链为基础，以蓝宝石加工为核心竞争力，并将产品延伸至丝印、镀膜、贴合、组装等工序。公司产品广泛应用于智能穿戴、工业光学、医疗美容等行业。

Xuzhou Kaicheng Technology Co., Ltd was established in 2021 and is a wholly-owned subsidiary of TDG Holding Co., Ltd. It is a high-tech enterprise that integrates production, sales and scientific research. Xuzhou Kaicheng Technology is a company that relies on its holding company's sapphire industry chain as its foundation, with sapphire processing as its core competitiveness, and extends its products to processes such as INK printing, PVD, laminating and assembling. The products are widely used in smart wearable, industrial optics and medical beauty.



**蓝宝石大光窗产品**  
**Sapphire Big size Window Products**



**产品优势 Sapphire Advantages**

- 高透过 High Transmittance
- 高耐热 High Heat Resistance
- 高耐磨 High Abrasion Resistance
- 高强度 High Strength
- 高化学稳定 High Chemical Stability

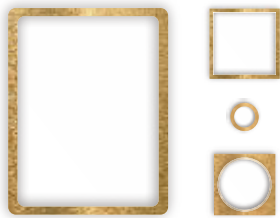


1000kg Sapphire Boule

**产品规格**  
**Product Specification**

晶锭公斤级 Weight (kg)	最大晶锭规格 Max Boule Specification (mm)		最大产品规格 Max Product Specification (mm)	
	直径 Diameter	高度 Height	圆形 Circles	方形 Squares
160	420	360	D360	340*280
400	560	530	D505	500*360
800	690	750	D650	700*450
<b>1000</b>	<b>740</b>	<b>810</b>	<b>D680</b>	<b>750*500</b>

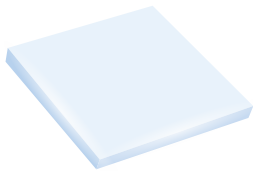
# 蓝宝石工业光学产品 Sapphire Optical Products



金属化光窗  
Metallized Optical Product



ELA蓝宝石  
Sapphire for ELA  
Transmittance > 84.5% @ 308nm



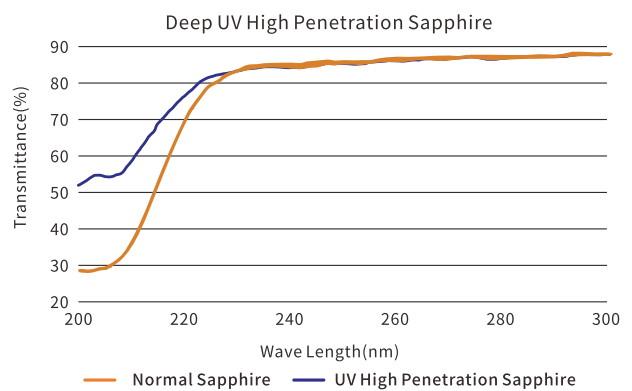
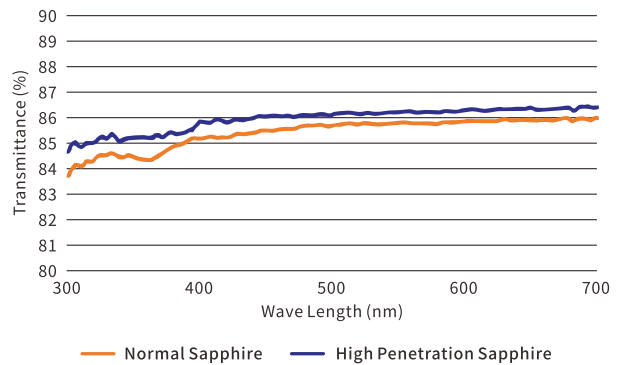
激光蓝宝石  
Sapphire for Laser  
Bulk Absorption < 300ppm @ 1064nm



火焰探测器盖板  
Flame Detector Cover  
Transmittance ≥ 50% @ 200nm

## 产品优势 Sapphire Advantages

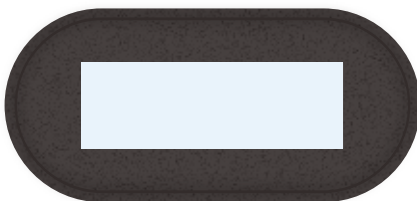
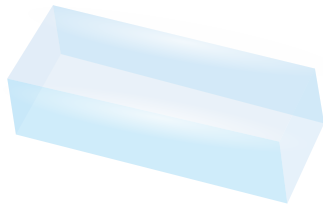
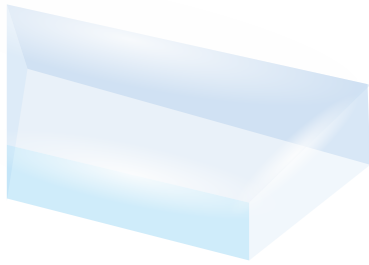
- 高透过 High Transmittance
- 高耐热 High Heat Resistance
- 低体吸收 Low Body Absorption



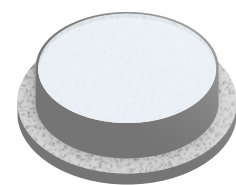
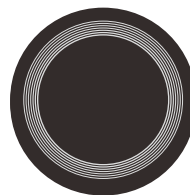
## 蓝宝石医美窗口产品 Sapphire Medical Beauty Products

### 产品优势 Sapphire Advantages

- 高透过 High Transmittance
- 高耐磨 High Abrasion Resistance
- 高导热 High Thermal Conductivity
- 高化学稳定 High Chemical Stability



脱毛仪导光块  
Sapphire Light Guide Block



美容仪导光块  
Sapphire Light Guide Block



## 蓝宝石手表产品 Sapphire Watch Products

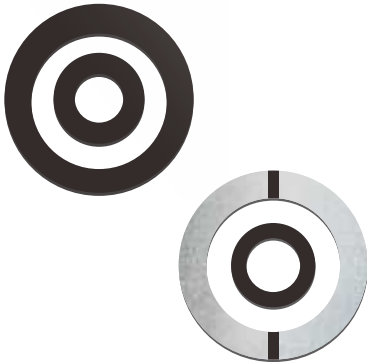
### 产品优势 Sapphire Advantages



- 高透过 High Transmittance
- 高耐磨 High Abrasion Resistance
- 高介电常数 High Dielectric Constant
- 高化学稳定 High Chemical Stability



蓝宝石手表盖板  
Sapphire Watch Cover



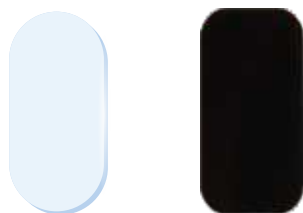
蓝宝石手表心率背盖  
Sapphire Back Cover



## 蓝宝石盖板产品 Sapphire Cover Products



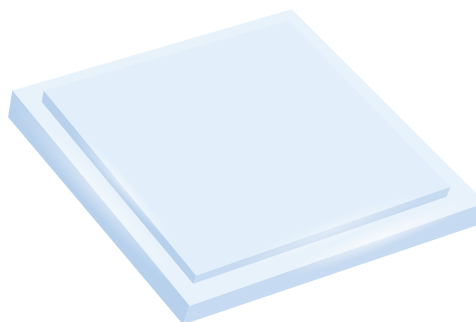
蓝宝石摄像头盖板  
Sapphire Lens Cover



蓝宝石指纹识别盖板  
Sapphire Touch ID Cover



投影仪盖板  
Sapphire Projector Cover



扫描仪视窗盖板  
Sapphire Scanner Window Cover

### 产品优势 Sapphire Advantages

- 高透过 High Transmittance
- 高耐磨 High Abrasion Resistance
- 高耐热 High Heat Resistance
- 高介电常数 High Dielectric Constant
- 高化学稳定 High Chemical Stability

# 蓝宝石材料特性

## SAPPHIRE PROPERTIES

材料 Material	Al <sub>2</sub> O <sub>3</sub>
密度 Density	3.98g/cm <sup>3</sup>
维氏硬度 Vickers Hardness	// C 16~17GPa    ⊥ A 18~20GPa
纯度 Purity	>99.996%
莫氏硬度 Mohs Hardness	9
杨氏模量 Young's Modulus	>420GPa
泊松比 Poisson Ratio	0.27~0.3
抗弯强度 Bending Strength	>350MPa
熔点 Melting Point	2050°C
线性热膨胀系数 Linear Coefficient of Thermal Expansion	232~323K // C6.6 ±C 0.5    310~670K // C7.0 ±C 7.7
折射率 Refractivity	1.762-1.770
热导率 Thermal Conductivity	46.06@0°C    25.12@100°C    12.56@400°C (W/(m.k))
热容 Heat Capacity	0.10(cal/°C)
双折射 Birefringence	0.008~0.010
比热 Specific Heat	0.7788J/(g.K)@300K
位错密度 (EPD) Etch Pit Density	<500 ea./ cm <sup>2</sup>
半峰宽 FWHM	<15"
透过率 Transmittance	≥85%@400-4000nm
光学均匀性 Optical Uniformity	Δn ≤ 4 × 10 <sup>-5</sup>
介电常数 Dielectric Constant	7.65@1575MHz/C axis 7.47@2450MHz/C axis 7.51@5000MHz/C axis

**TDG** 天通控股股份有限公司  
TDG HOLDING CO.,LTD.

地址：浙江省海宁市海宁经济开发区双联路129号  
ADD: No. 129 Shuanglian Road, Haining Economic Development Zone, Haining, Zhejiang, China

地址：中国江苏省徐州经济技术开发区杨山路98号  
ADD: No. 98 Yangshan Road, Xuzhou Economic and Technological Development Zone, Xuzhou, Jiangsu, China

电话TEL: +86-573-8070 1398  
传真FAX: +86-573-8768 9999



天通智造



天通蓝宝石



线上商城