



企业优势 TDG Advantages

- 引入国外的管理技术和团队专注于蓝宝石衬底
- 采用改良KY法长晶模式，具有尺寸大、质量高、位错密度小，单晶性好等优势
- Introducing advanced management method and team.
- The improved KY method can grow sapphire crystal with big dimension, high quality, small dislocation density and good monocrystal performance etc.

技术优势 Technical Advantage

- 引进国外高自动化、高精度的切磨抛与清洗设备，通过对蓝宝石切片、研磨、抛光等工艺不断的技术改进以及设备的优化升级，确保量产晶片的高品质及良好的一致性。
- 采用国外先进的生产管理方法，定期对管理人员及员工进行相关职业技术培训;通过了ISO 9000质量管理体系，遵循6S管理原则，用严格的质量管控方法保证产品的合格率。
- With supermatic and high-precision equipment, continuous technical improvement of cutting, grinding and polishing processes, TDG can achieve the mass production of high quality wafers.
- With advanced production management methods, TDG provides administrators and employees with regular vocational technical training. Passed ISO 9000 quality management system certification, TDG guarantee the products yield with strict quality control method.

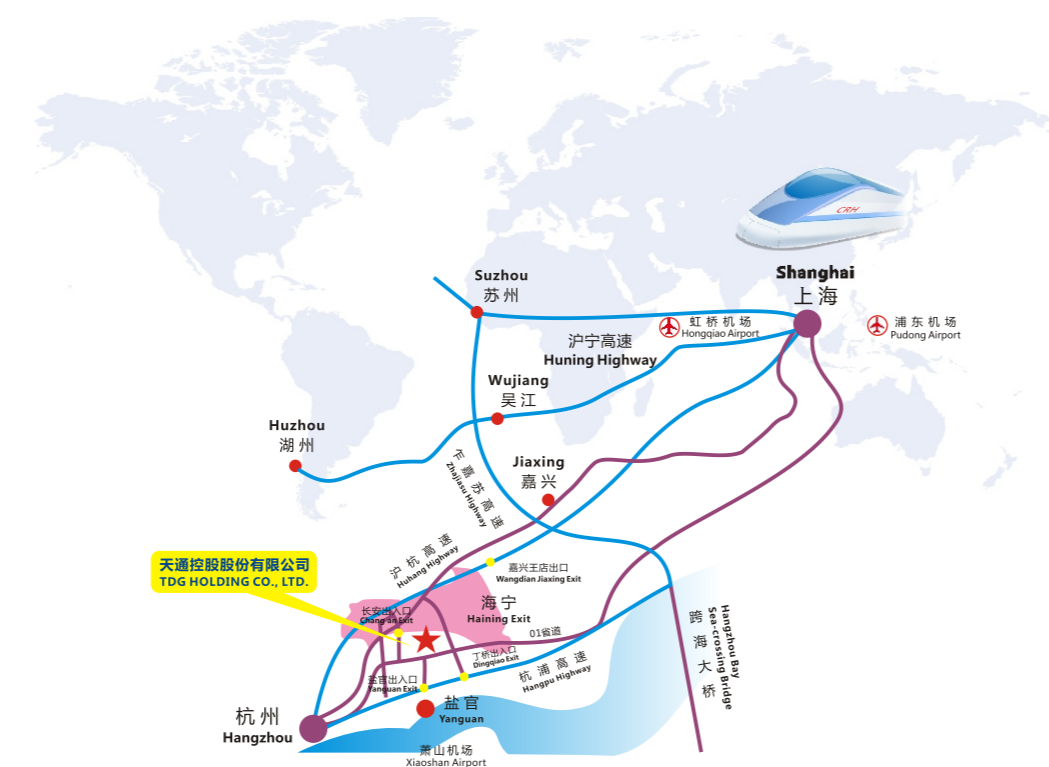


天通控股股份有限公司 / TDG Holding Co., Ltd.

天通控股股份有限公司 TDG HOLDING CO., LTD.

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PROFESSIONAL SAPPHIRE CRYSTAL MATERIAL MANUFACTURER

专业蓝宝石晶体材料制造商

TDG SAPPHIRE



天通控股股份有限公司
TDG HOLDING CO., LTD.
股票代码 (Stock Code): 600330

公司简介 Company Profile

天通控股股份有限公司（证券代码：600330）创办于1984年，拥有多家控股公司和参股公司，是国内首家由自然人控股的上市公司，是集科研、制造、销售于一体的国家重点高新技术企业。经过结构调整，目前天通已形成电子材料、电子部品、智能装备和产业投资四大业务板块。

天通在浙江海宁、宁夏银川建立了蓝宝石产业基地。

通过引进消化吸收国际先进的长晶技术及晶片的切磨抛技术，致力于开发高品质蓝宝石衬底材料，注重大尺寸、高品质蓝宝石产品的研制。产品覆盖2-12英寸蓝宝石衬底片，为客户提供高品质产品与服务，已成为中国蓝宝石行业的领跑者。

Founded in 1984, TDG (Stock Code : 600330) was the first public company held by individuals in China, which has possessed several holding companies and share holding companies. TDG is a key national Hi-Tech enterprise integrats R&D, manufacturing and marketing in one. TDG focuses on electronic materials, electronic components, intelligent equipment and strategic investment.

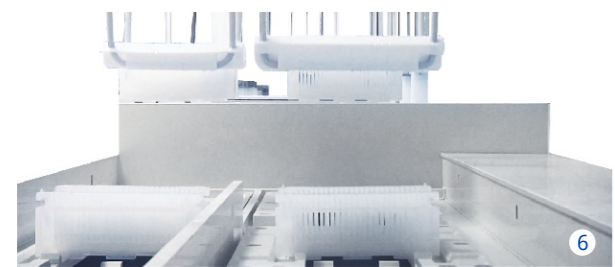
TDG established its sapphire industrial bases in Haining and Yinchuan.

By adopting the advanced international crystal growth method and wafer cutting, grinding and polishing technology, TDG is committing to developing high quality sapphire substrate, researching large size and high quality sapphire products. Products covers 2-12 inches sapphire substrate. Providing customers high quality products and services. TDG has become the leader of China's sapphire industry.



生产设备 Processing Equipment

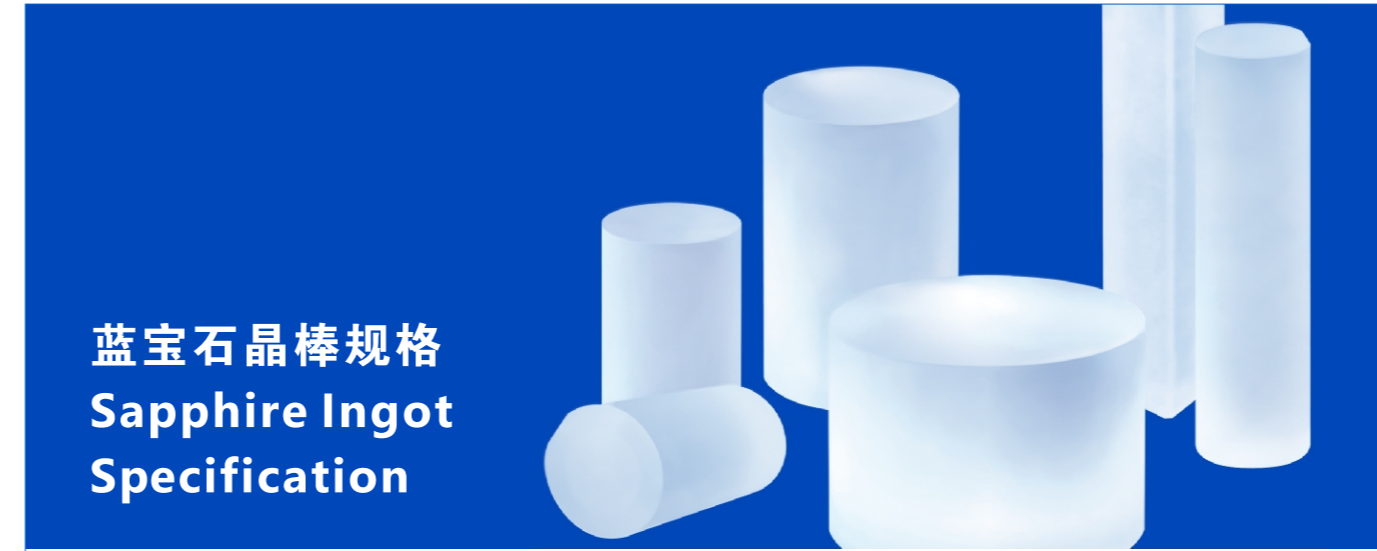
- 1 育晶
Crystal Growing
- 2 切片
Multi Wire Saw
- 3 双面研磨
Double-side Lapping
- 4 单面研磨
Single-side Lapping
- 5 抛光
Polishing
- 6 清洗
Cleaning



蓝宝石衬底规格 Sapphire Substrate Specification

性能 Properties	规格要求 Specification			
	单位 Unit	2英寸衬底 2 Inch Substrate	4英寸衬底 4 Inch Substrate	6英寸衬底 6 Inch Substrate
直径 / Diameter	mm	50.8±0.1	100±0.1	150±0.2
厚度 / Thickness	μm	430±10	650±10	1300±20
A面(11-20)取向 / Surface Orientation of A-plane	Degree	0°±0.1°	0°±0.1°	0°±0.1°
M面(1-100)取向 / Surface Orientation of M-plane	Degree	0.2°±0.05°	0.2°±0.05°	0.2°±0.05°
定位面长度 / Primary Flat Length	mm	16±1.0	30±1	47.5±1 or 25±1
定位面方向 / Primary Flat Orientation	Degree	A面±0.25° A-plane±0.25°	A面±0.25° A-plane±0.25°	A面±0.25° A-plane±0.25°
背面粗糙度 / Back Side Roughness	μm	1.0±0.2	1.0±0.2	1.0±0.2
正面粗糙度 / Front Side Roughness	nm	≤0.2	≤0.2	≤0.2
崩边 / Wafer Edge	Type	R or T	R or T	T
总体厚度偏差 / Total Thickness Variation, TTV	μm	≤6	≤6	≤10
翘曲度 / SORI	μm	≤15	≤15	≤15
弯曲度 / BOW	μm	-10~0	-10~0	-10~0

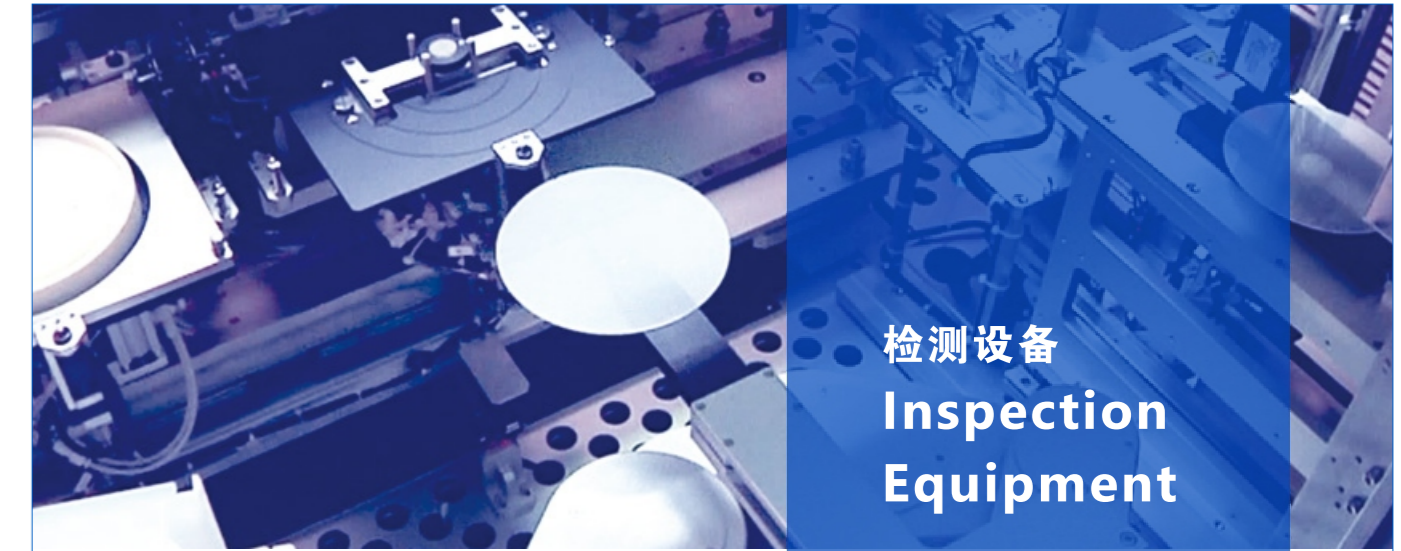
备注：可根据客户要求定制 Remark: upon customers' request



蓝宝石晶棒规格 Sapphire Ingot Specification

性能 Properties	规格要求 Specification			
	单位 Unit	2英寸晶棒 2 Inch Ingot	4英寸晶棒 4 Inch Ingot	6英寸晶棒 6 Inch Ingot
直径 / Diameter	mm	51±0.05	100.2±0.05	150.2±0.05
平边长度 / Flat Length	mm	16±1	31±1	47.5±1
材质 / Material	高纯单晶氧化铝 / High Purity and Monocrystalline Al ₂ O ₃			
端面晶向 / Surface Crystal Orientation	C-Plane ±0.3°			
平边晶向 / Primary Flat Orientation	A-Plane ±0.2°			
每一批次平均长度 / Average Length Per Batch	> 80mm			
有效长度率 / Effective Length Ratio	≥90%			
缺陷 / Defect	无包裹物、孪晶、晶界 No Wrappage, Twin Crystal or Crystal Boundary			
崩边、裂纹、气泡 / Broken Edge, Flaw, Bubble	崩边、裂纹、气泡所占长度不计入有效长度 Broken Edge, Flaw, Bubbles are not Counted Into Effective length			
位错密度 / EPD	< 1000个/cm ²			

备注：可根据客户要求定制 Remark: upon customers' request



检测设备 Inspection Equipment

- 1 光学表面分析仪
Optical Surface Analyzer
- 2 全反射荧光X射线分析仪
Total x-ray reflection
fluorescence Analyzer
- 3 平坦度测试仪
Flatness Tester
- 4 X射线表面形态检测仪
X-ray Surface Morphological Detector

