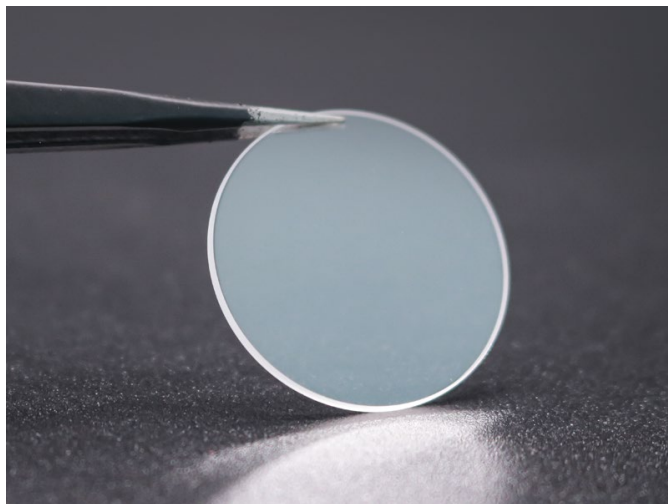




Al₂O₃ 圆形蓝宝石窗片



产品描述:

蓝宝石Al₂O₃ 因其极度的韧性和强度可以很好的应用为UV, VIS和NIR光谱波段的光学窗片材料。

蓝宝石具有多种生长方式。Verneuil和Czochralski方法通常用于标准级蓝宝石材料。更高质量的蓝宝石, 应用于电子基板的由Kyropulos生长制造, 这可以得到非常高的纯度, 具有优良的紫外透射特性。在IR中的使用范围被限制在约5μm, 并且在任何光学级别中遇到很少的困难。它在紫外线范围内, 必须注意观察, 因为从140nm到240nm的透射对杂质和间隙空位非常敏感。大片蓝宝石可以通过色带生长制成。蓝宝石具有轻微的双折射性, 通常的IR窗口通常以随机的方式从晶体切割, 也有对于双折射的特定应用, 选择取向。通常这是光轴与表面平面成90度, 称为“零度”材料。合成光学蓝宝石没有着色。

*请注意, 所有制造商似乎对热膨胀的实际数字不统一!

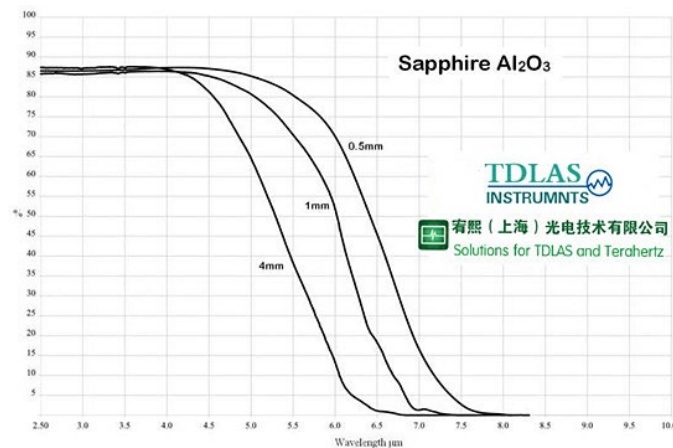


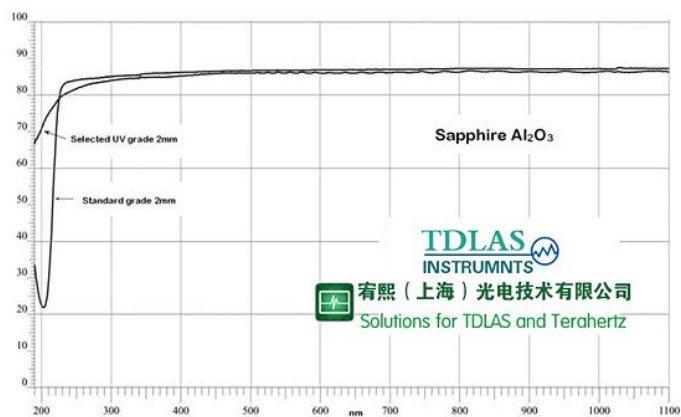


产品参数:

传输范围:	0.17~5.5μm
折射率:	No 1.75449; Ne 1.74663 (1.06μm) (1)
反射损耗:	14% at 1.06μm
吸收系数:	$0.3 \times 10^{-3} \text{ cm}^{-1}$ at 2.4μm (2)
吸收峰:	13.5μm
dn / dT:	13.4×10^{-6} (0.546μm) (3)
dn / dμ = 0:	1.5μm
密度:	3.97g/cm ³
熔点:	2040°C
热导率:	27.21W m ⁻¹ K ⁻¹ at 300K
热膨胀:	5.6 (para) & 5.0 (perp) $\times 10^{-6} / \text{K}^*$
硬度:	Knoop 2000 with 2000g indenter
比热容量:	763JKg ⁻¹ K ⁻¹ (293K) (4)
介电常数:	11.5 (para) 9.4 (perp) at 1MHz
杨氏模量 (E) :	335GPa
剪切模量 (G) :	148.1GPa
体积模量 (K) :	240GPa
弹性系数:	C11 = 496 C12 = 164 C13 = 115 C33 = 498 C44 = 148
表观弹性极限:	300 MPa (45,000 psi)
泊松比:	0.25
溶解度:	98 $\times 10^{-6}$ g / 100g water
分子量:	101.96
类/结构: (hex) , R3c	Trigonal (hex) , R3c

光谱透射曲线:





折射率: (No = Ordinary Ray, Ne = Extraordinary Ray)

um	No	Ne	um	No	Ne	um	No	Ne
0.193	1.9288	1.9174	0.213	1.8890	1.8784	0.222	1.8754	1.8650
0.226	1.8702	1.8599	0.244	1.8506	1.8407	0.248	1.8470	1.8372
0.257	1.8393	1.8297	0.266	1.8330	1.8236	0.280	1.8244	1.8151
0.308	1.8110	1.8020	0.325	1.8047	1.7958	0.337	1.8001	1.7921
0.351	1.7969	1.7882	0.355	1.7960	1.7883	0.442	1.7804	1.7721
0.458	1.7784	1.7702	0.488	1.7753	1.7671	0.515	1.7730	1.7649
0.532	1.7717	1.7636	0.590	1.7680	1.7600	0.633	1.7659	1.7579
0.670	1.7643	1.7563	0.694	1.7634	1.7554	0.755	1.7614	1.7535
0.780	1.7607	1.7527	0.800	1.7601	1.7522	0.820	1.7596	1.7517
0.980	1.7561	1.7482	1.064	1.7545	1.7466	1.320	1.7501	1.7423
1.550	1.7462	1.7384	2.010	1.7375	1.7297	2.249	1.7323	1.7243
2.703	1.719	1.711	2.941	1.712	1.711	3.333	1.701	1.693
3.704	1.687	1.679	4.000	1.674	1.666	4.348	1.658	1.65
4.762	1.636	1.628	5.000	1.623	1.615	5.263	1.607	1.599

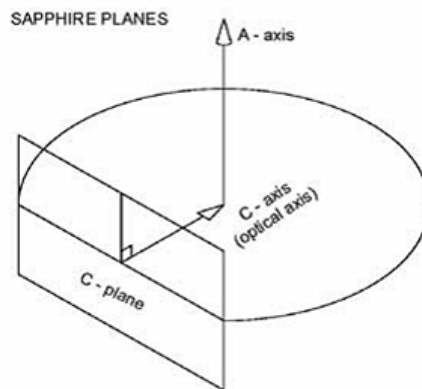


订购信息:

订购型号	规格 (D×L)	方向	应用范围
SAPP10-2	10.0×2.0mm	Random	IR
SAPP12-1	12.0×1.0mm	Random	IR
SAPP12-2	12.0×2.0mm	Random	IR
SAPP12-4	12.0×4.0mm	Random	IR
SAPP15-2	15.0×2.0mm	Random	IR
SAPP18-4	18.0×4.0mm	Random	IR
SAPP20-2	20.0×2.0mm	Random	IR
SAPP25-0.5	25.0×0.5mm	Random	IR
SAPP25-1	25.0×1.0mm	Random	IR
SAPP25-2	25.0×2.0mm	Random	IR
SAPP25.4-1	25.4×1.0mm	Random	IR
SAPP26-1	26.0×1.0mm	Random	IR
SAPP35-2	35.0×2.0mm	Random	IR

关于晶体切割:

Sapphire is slightly birefringent and so for critical optical or mechanical applications, the windows should be specified as 'zero degree', or 'c-cut', meaning that the optical axis of the material should be perpendicular to the plane of the window. If unspecified, the component will be of 'random' cut, but its worth noting that this is nearly always 60° to the optic axis as this is the 'softest' direction for the saw. Note that all sapphire is always single crystal, sub-grains are always avoided in the cut.



C-plane (0,0,0,1) = Z-cut

A-plane (1,1,-2,0) = Y-cut

M-Plane (1,0,-1,0) = X-cut R-Plane (1,0,-1,0)

Manufacturers seem unable to agree on the thermal expansion coefficient of sapphire, figures from 5.6 to 8.4×10^{-6} K are given. While there may be some variation due to the method of growth, and certainly due to the axis of cut, this variation is inexplicable.

