

LaAlO₃ Single Crystal

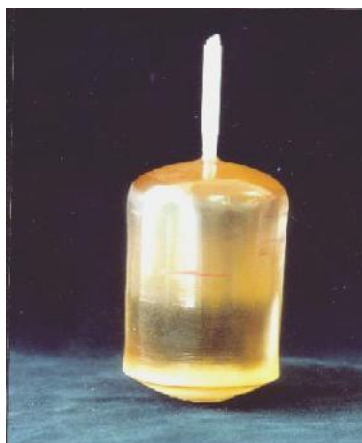
LaAlO₃ single crystal provides a good lattice match to many materials with perovskite structure. It is an excellent substrate for epitaxial growth of high T_c superconductors, magnetic and ferro-electric thin films. The dielectric properties of LaAlO₃ crystal are well suitable for low loss microwave and dielectric resonance applications.

MTI is the largest existing grower of LaAlO₃ single crystals. It produces 10- 20 Kg of LaAlO₃ crystals per month and can supply as-grown boules, as-cut blanks and epi-polished substrates up to 3" diameter. The surface roughness of MTI LaAlO₃ substrate is warranted less than 8 Å through in house AFM quality control.

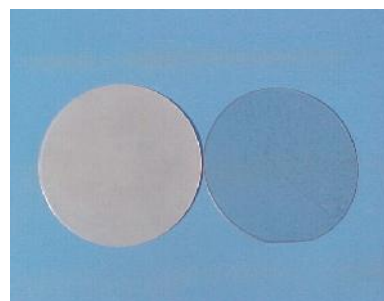
Typical Physical Properties	
Crystal Structure	Pseudo cubic a=3.792 Å
Growth Method	Czochralski
Density / Moh's hardness:	6.52 g/cm ³ / 6.5 Mohs
Melt Point	2080 °C
Thermal expansion	10 (x10 ⁻⁶ /°C)
Dielectric Constant	~ 25
Loss Tangent at 10 GHz	~3x10 ⁻⁴ @ 300K, ~0.6 x10 ⁻⁴ @ 77K
Color and Appearance	Tan to Brown based on annealing condition Visible twins on polished substrate.
Chemical Stability	Insoluble in mineral acids at 25 °C and soluble in H ₃ PO ₃ at > 150 °C
Standard Products	
As - grown boule <100>	3" dia x 50 ~ 70 mm length 2" dia x 50 ~ 70 mm length
As cut blank <100>	3" dia x 0.7 mm, 2" dia x 0.7 mm 1" dia x 0.7 mm
Epi -polished substrates <100> ori. 1 or 2 sides polished Ra < 8 Å by AFM certified	3" dia x 0.5 mm, 2" dia x 0.5 mm 1" dia x 0.5 mm 1"x1"x0.5 mm 0.5" x 0.5" x 0.5 mm 10x10x0.5 mm

Special size and orientation are available upon request

3" and 2" dia. LAO boules



3" dia. LAO blank and polished wafer



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