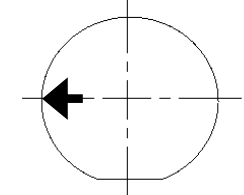
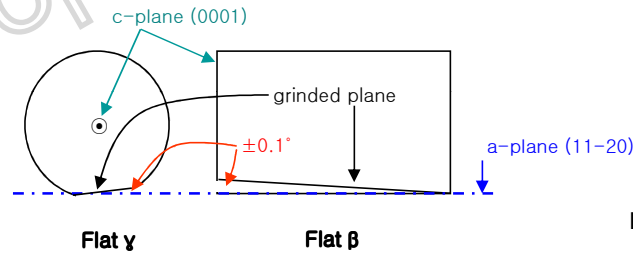
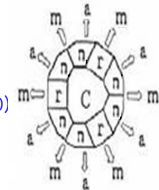
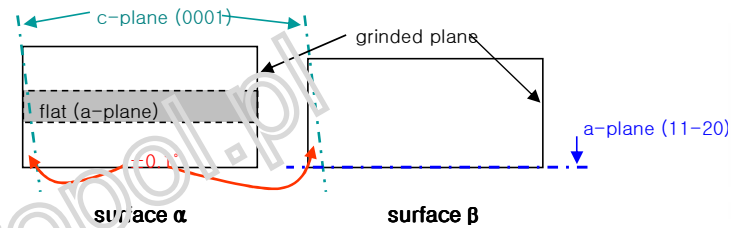
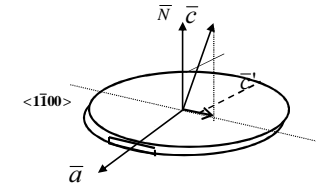
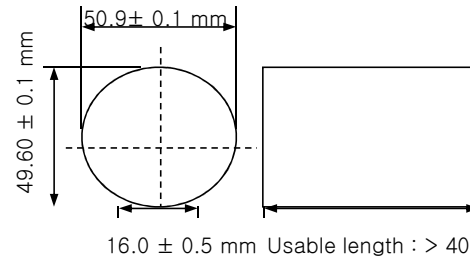


### Sample Product Specification:

(We offer the ingots with custom set orientation and dimension tolerance)

# 2" Sapphire Crystal Ingot

Specification				
	Property	Target	Tolerance	Unit
1	Surface Orientation	C-plane (0001)		
2	M-axis Orientation Tolerance ( $\alpha$ )	0.0	$\pm 0.1$	degree (°)
3	A-axis Orientation Tolerance ( $\beta$ )	0.0	$\pm 0.1$	degree (°)
4	Primary Flat Orientation	A-plane (11-20)		
5	M-axis Orientation Tolerance ( $\gamma$ )	0.0	$\pm 0.1$	degree (°)
6	C-axis Orientation Tolerance ( $\beta$ )	0.0	$\pm 0.1$	degree (°)
7	Flat Length	16,0	$\pm 0.5$	mm
8	Flat Height	49,60	$\pm 0.1$	mm
9	Diameter	50,90	$\pm 0.10$	mm
10	Usable Ingot Length	> 70	-	mm/core
11	Edge Chipping/Crack	<3mm		
12	Defect (pore, chip, twin, etc)	< 10	-	%/core
13	Face Surface Finish	Fine		
14	OD Surface Finish	Fine		
15	EPD	$\leq 1,000$	-	pcs/cm <sup>2</sup>
16	X-ray rocking curve	$\leq 14$	-	arcsec



Ref. : r-plane position from OF

Reference :2" sapphire ingot

#### Note

- 1) Bubble spec : None by visual inspection under a high intensity light
- 2) Grain boundary/Lineage spec : None by visual inspection under polarized light
- 3) Defect areas : Allowance as noted. Defect areas will be identified and marked on individual cores. Defect areas will not be billed.
- 4) Material documentation : A unique and traceable Lot number will be marked and attached specification on each core.