



# GaN Substrates: Semi-Insulating

Kyma's bulk GaN substrates improve device epitaxy by reducing dislocation density by 1000x and doubling thermal conductivity when compared to other non-native substrates. GaN substrates provide an alternative to multi-step nucleation processes, allowing customers to:

- Eliminate interlayers
- Eliminate processing steps
- Improve device yield and reliability



Orientation\*: c-axis (00.1)  $\pm 1^\circ$   
 Conduction Type: N-type  
 Resistivity:  $>10^6$  Ohm-cm  
 Front Surface Finish (Ga-face): Epi-ready, RMS  $<0.5$  nm  
 Back Surface Finish: Optical polish, RMS  $<1\mu\text{m}$   
 Dislocation Density:  $<5 \times 10^6$  cm $^{-2}$   
 Edge Exclusion Area: 1mm  
 TTV:  $<10 \mu\text{m}$  (10 mm $^2$ ),  $<20 \mu\text{m}$  (18 mm $^2$ ),  $<50 \mu\text{m}$  (rounds)  
 Bow:  $<5 \mu\text{m}$  (10 mm $^2$ ),  $<15 \mu\text{m}$  (18 mm $^2$ ),  $<50 \mu\text{m}$  (rounds)

Available Sizes: 10 mm $^2$ , 18 mm $^2$ , 30 mm & 2" round  
 Available Grades: Prime, Production, Research, Rider  
 Available Thickness\*: 475  $\mu\text{m}$  ( $\pm 25 \mu\text{m}$ )

\*Varies for rider grade

Grade:	Prime	Production	Research	Rider
Macro Defect Density:	$\leq 3$ cm $^{-2}$	$\leq 5$ cm $^{-2}$	$\leq 10$ cm $^{-2}$	$>10$ cm $^{-2}$

*Other polishing options available: N-face CMP, double-side CMP, double-side optical  
 Other size, thickness and offcut options available*