



kyma[®]
technologies

Bulk GaN Substrates



Overview

Kyma has over 20 years experience of research, development, partnership, and innovation for bulk GaN substrates. Using world class Halide Vapor Phase Epitaxy (HVPE), lapping, and polishing processes; Kyma is offering bulk GaN substrates with outstanding crystalline quality, electrical properties, and usable surface area.

Available in 10 mm x 10 mm, 2-inch and 4-inch diameters along with excellent prices, Kyma is offering bulk GaN that is truly a commercially-viable innovation.



General Specs

	N-type	Semi-Insulating
Available diameters	10 mm x 10 mm, 2 inch, 4 inch	10 mm x 10 mm, 2 inch, 4 inch
Resistivity	$\leq 0.02 \Omega \text{ cm}$	$> 1E8 \Omega \text{ cm}$
Dislocation Density	$< 1E6 \text{ cm}^{-2}$	
XRD Linewidths	002 Reflection: $< 100 \text{ arcsec}$ 102 Reflection: $< 100 \text{ arcsec}$	
Polarities	Ga-face: standard N-Face: optional	

Thickness

	10 mm sq	2 inch	4 inch
Diameter	10 mm x 10 mm $\pm 0.3 \text{ mm}$	50.8 $\pm 0.3 \text{ mm}$	100 mm $\pm 0.3 \text{ mm}$
Thickness	400 $\mu\text{m} \pm 30 \mu\text{m}$	400 $\mu\text{m} \pm 30 \mu\text{m}$	450 $\mu\text{m} \pm 30 \mu\text{m}$
TTV	Not Measured	$\leq 20 \mu\text{m}$	$\leq 40 \mu\text{m}$
Warp	Not Measured	$\leq 30 \mu\text{m}$	$\leq 80 \mu\text{m}$

Pitting

- Every wafer is inspected for pitting and measured for pit density (#/cm²). They are then classified into two categories

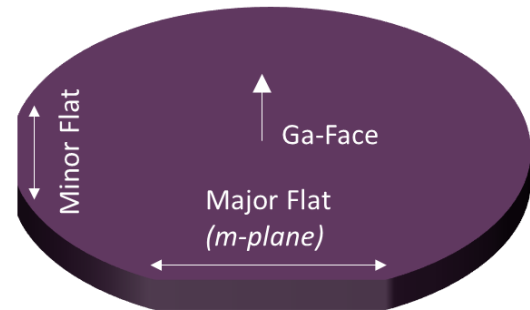
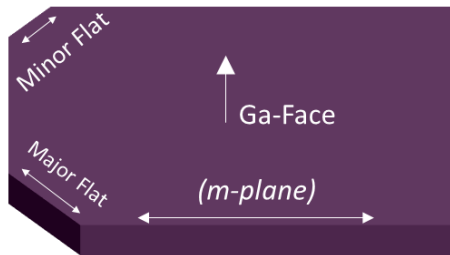
Pit Density	#/cm ²
Production Grade	≤ 0.5
Research Grade	≤ 1.5

	10 mm x 10 mm	2"	4"
Production Grade	≤ 1	≤ 10	≤ 40
Research Grade	≤ 2	≤ 30	≤ 120

Surface

Polarity	Front Side	Back Side
Ga-Face	RMS < 1.0 nm	RMS < 5.0 nm
N-Face		

Orientation



	10 mm x 10 mm	2"	4"
Major Flat Length	N/A	16 mm	32 mm
Minor Flat Length	N/A	8 mm	8 mm

* All measurements are ± 1 mm

Orientation	(0001) Ga-Face, c-plane (standard); (000-1) N-face (optional)
Offcut Toward m-plane	0.6° ± 0.12° toward [10-10]
Offcut Toward Orthogonal a-plane	0.0° ± 0.2° toward [1-210]
Major Orientation Flat Plane	(10-10) m-plane

For sales and business-related inquiries please contact