



## General Product Specification

<b>AlN</b>
<b>Electrically Conducting SiC substrate</b>

### Available AlN templates on SiC:

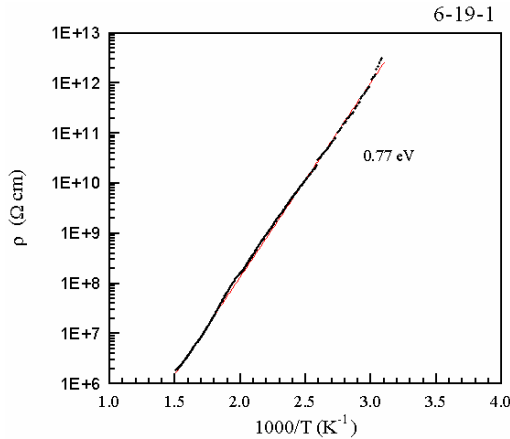
Substrate	4H-SiC or 6H-SiC
Substrate Orientation	On axis (0001) Si face – electrically conducting
Substrate Diameter	2" , 3" and 4"
AlN Thickness Range	0.2 to 20 $\mu\text{m}$

### Typical template properties for 10- $\mu\text{m}$ thick AlN layer on 2-inch SiC substrate:

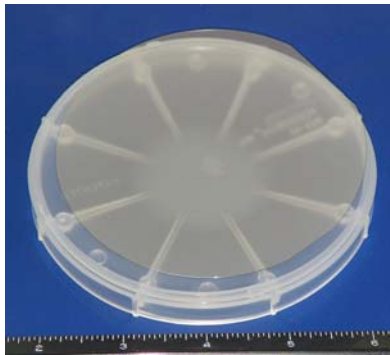
<i>Properties</i>	<i>Specification</i>
AlN Thickness	10 $\mu\text{m}$
Thickness Variation	<4% std. deviation
Thickness Uniformity	< 2% std. deviation
Dislocation Density ( $\text{cm}^{-2}$ )	5 to 9 x 10 <sup>8</sup>
FWHM of X-ray $\omega$ -scan (00.2), arcsec	< 450
Surface Morphology	As grown or polished (typical ave. RMS < 0.5 nm)
Doping	Undoped
Electrical Resistivity ( $\Omega\text{-cm}$ )	> 10 <sup>10</sup> (@300K) and >10 <sup>7</sup> (@500K)



## Electrical Resistivity of AlN Layer



## AlN (20 $\mu$ m) on 4-inch SiC



## References:

- (1) **Recent Results on AlN growth by HVPE and fabrication of free standing AlN wafers.** V.Soukhoveev, O.Kovalenkov, V.Ivantsov, A.Syrkin, A.Usikov, V.Maslennikov, V.Dmitriev, *Phys.Stat.Sol.* (c) 3 (2006) 1653-1657.
- (2) **Novel HVPE Technology to Grow Nanometer Thick GaN, AlN, AlGaN Layers and Multi-layered Structures.** Alexander Usikov, Lisa Shapovalova, Oleg Kovalenkov, Vitali Soukhoveev, Anna Volkova, Vladimir Ivantsov, Vladimir Dmitriev, Fanyu Meng, Ranjan Datta, Subhash Mahajan, Eric Readinger, Gregory Garret, Michael Wraback, and Michael Reshchikov. *Phys.Stat.Sol.* (c) 4, Issue 7, (2007) 2301-2305.

- Plasma Etch & Deposition
- Atomic Layer Deposition
- Ion Beam Etch & Deposition
- Nanoscale Growth Systems
- Hydride Vapour Phase Epitaxy

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