



MOMENTIVE
performance materials



i21* Fused Quartz

It's what you don't see that matters

i21 ingot is the newest addition to Momentive's solid fused ingot product portfolio.

The near defect-free quality of i21 ingot potentially reduces the risk that particulate will adversely impact semiconductor yields. Using a patent-pending process, the product is manufactured as a solid cylinder to be virtually bubble free. The i21 ingot is an excellent candidate to consider for minimizing material waste and closely matching the final part size.

i21 quartz ingots are an outstanding choice for semiconductor equipment manufacturers supporting the production of advanced 300mm wafers with sub-micron line widths, with potential applications including single wafer etch chamber windows and batch wafer applications. They also offer a low-cost alternative to synthetic flame fused silica for optical applications and other components requiring excellent visual clarity.

Typical product features

- Ultra-low bubble content
- Near defect-free quality
- Homogeneous quality throughout ingot
- Available in several natural sand purities
- Low OH for high temperature processes
- Improved IR transmission over flame fused silica
- Ultra-low coefficient of thermal expansion
~0.5 ppm/K

Potential performance benefits

- Reduced risk of particulate generation in semiconductor processes
- Excellent dimensional stability

Potential cost savings

Increased material utilization

- Ultimate high efficiency shape, in various diameters, typically reduces waste in solid disc manufacture
- Ultra-low defect density typically enables high yield during part fabrication

Ingot homogeneity potentially reduces end-use cost of ownership

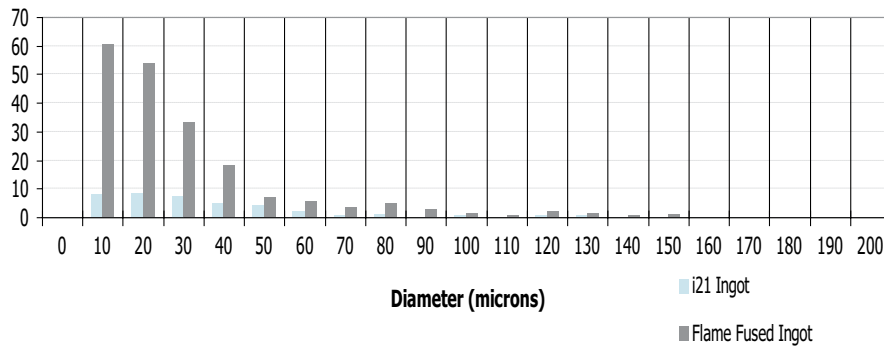
- Predictable performance typically drives higher yields and minimizes unexpected downtime

Purity

PURITY	BUBBLES		
	Standard	AA	i21
Natural: standard	124	124 AA	i21-24
Natural: low Al	N/A	N/A	i21-34
Natural: low alkali, low Al	N/A	144 AA	i21-44
Synthetic: <1ppm total impurities	N/A	012 AA	i21-12 under development



Micro Defect Density (#/cm³)

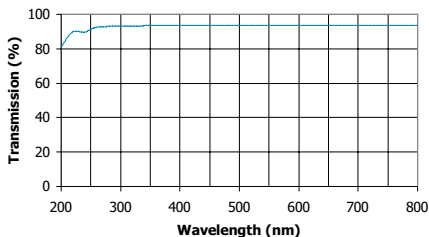


Defect density

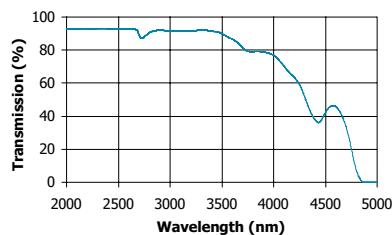
- Typically extremely low bubble and inclusion content
- < 0.3 defects/100cm³ of defects larger than 200 microns

Optical Transmission: Grades i21-24, i21-34, i21-44

Ultraviolet and Visible Range @ 1mm Thickness



Infrared Range @ 1mm Thickness



Optical transmission

- Excellent UV, Vis, IR transmission
- Significantly reduced "water peak" when compared to flame fused silica

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