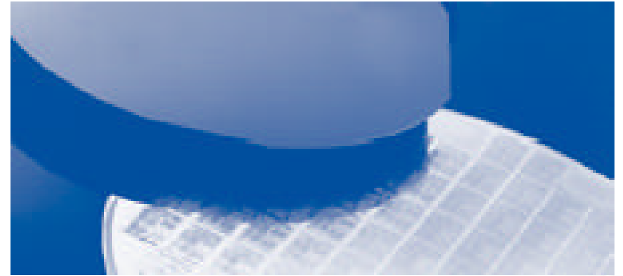
ASAHI GLASS **Agem** ELECTRONIC MATERIALS

Aegis Wafers

PURE SILICON CARBIDE (SiC) - CVD



Aegis : *n.* 1. Protection of power, in Greek. 2. The first line of defense for military warships.
Aegis Wafers : *n.* 1. High Purity SiC-CVD wafers. 2. The first line of defense against particle generation for silicon wafers in furnaces. Highly recommended for Diffusion and LPCVD processes.

Aegis Wafers are high purity, 100% SiC-CVD material, formed by an advanced CVD process. The exceptional material properties of these advanced wafers offer a reusable, cost-effective alternative to silicon wafers when used as dummy or "filler" wafers.

In LPCVD processes, the coefficient of thermal expansion of Aegis Wafers is similar to that of Poly Silicon and SilconNitride, therefore issues of particle generation normally associated with other forms of filler wafers are significantly reduced. Increased film deposition allowances extend maintenance intervals thereby improving furnace through-put.

Aegis Wafers are virtually impervious to erosion or etching by hydrofluoric and nitric acids during cleaning. Their chemical stability provides an etch rate over 1,000 times slower than silicon wafers. Because the SiC-CVD is impervious to acid, the material surface condition remains essentially unchanged after numerous acid cleaning processes. This surface characterisitic prevents contamination and outgassing.

Aegis Wafers are available with or without a flat or notch. Thickness and surface finish can be varied to best meet your requirements.

Contact *Agem* at our headquarters for a regional office near you:

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Your Global Partner in Wafer Processing

Aegis Wafers PROPERTIES

Density	3.21	g/cc
Porosity	0	%
Flexural Strength	650	MPa
CTE	4.3-4.5	10^{-6}K
Young's modulus	490	GPa
Thermal conductivity	240	W/m K
Specific Heat Capacity	725	J/kg K
Electrical Resistivity	25-100	Ohm-cm

Table 1.

Aegis Wafers SPECIFICATIONS

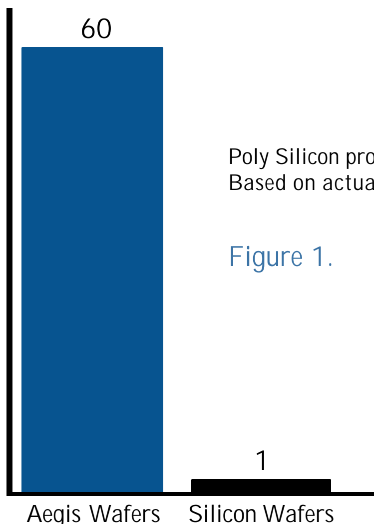
	150 mm	200 mm	300mm
Thickness[1]	0.50mm	0.50 mm	.60 mm
Edge Feature	Flat / notch / none	Flat / notch / none	notch / none
Mass	28 g, Nominal[1]	50 g, Nominal[2]	136 g, Nominal[2]
Surface Finish, Standard[3]	0.2 - 0.5 μm Ra	0.2 - 0.5 μm Ra	0.2 - 0.5 μm Ra
Sori	0.3 mm Max.	0.3 mm Max.	1 mm Max.
Scribing	Standard	Standard	Standard

Table 2.

Notes:
Aegis Wafers also available in 300mm.
1. Various thicknesses available
2. Mass varies by edge feature, i.e. flat or notch
3. Various translucency & other surface finishes also available.

RELATIVE FILM DEPOSITION THICKNESS

When running the Poly Silicon process, reports show that up to 60 times more film can be deposited onto Aegis Wafers versus silicon dummy wafers. This increased film deposition allowance extends maintenance intervals thereby improving furnace through-put.



Poly Silicon process.
Based on actual application data.

Figure 1.

PURITY TABLE

Element	ppb
Na	15
K	20
Ca	10
Cr	10
Fe	13
Ni	8
Cu	15
B	33
Al	23
P	7
Ti,V,Mn,As,Zr,Sb	9

Typical data.
GDMS Analysis Method.

Table 3.

COMPARISON OF ACID ETCH

Aegis Wafers are virtually impervious to erosion or etching by hydrofluoric and nitric acids during cleaning. This imperviousness ensures that the material surface condition of Aegis Wafers will remain unchanged after numerous acid cleaning processes. As a result, Aegis Wafers provide a cost-effective alternative to silicon filler wafers.

Etch Rates for wafers in HF + HNO_3 *

Aegis Wafers	less than 0.001 μm/hr.
Silicon Wafers	2.0 μm/hr.

*HF (17%) + HNO_3 (17%)

Table 4.

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