

Chemical Resistance and Etch Rates for AQ Synthetic Quartz

Importance of Chemical Resistance and Etch Rates

The etch rate of AGC quartz is highly dependent upon the fictive temperature and the halogen content. The higher the fictive temperature is, the faster the etch rate. Controlling the halogen content to no more than 400 ppm will result in a uniform etch rate over the surface. The lower the halogen content is, the faster the etch rate. AGC controls halogen content to a maximum of 100 ppm.

AGC quartz is a highly chemically resistant material with impurity levels in the parts per billion range. Because of the low impurity levels, the etch rate and uniformity of the channels and holes are extremely uniform. They can be controlled very close in a vertical and horizontal direction.

Etch Rates Versus Fictive Temperature and Halogen Content

Fictive Temp. (°C)	Halogen Content (ppm)	Etch Rate $\mu\text{m}/\text{min}$
1095	<10	0.715
1139	<10	0.731
1145	<10	0.733
1150	<10	0.735
1170	<10	0.743

Resistance to Base and Acid

	Condition		Units	AQ
Resistance to Alkaline	NaOH 0.1mol/L @90°C 20h	Typical	mg/cm ²	0.59
Resistance to Acid	HCl 1mol/L @90°C 20h	Typical	mg/cm ²	0.001

Etch Rate using Hydrofluoric Acid

