



**Synthetic Quartz Wafers for  
RF and Microwave Devices**



# AQ Synthetic Quartz Wafers for RF and Microwave Devices

## Available Dimensions

|                         | Minimum | Standard | Maximum | Notes  |
|-------------------------|---------|----------|---------|--|
| Square Substrates* (in) | 4 x 4   | 6 x 6    | 8 x 8   |  |
| Wafer Diameter (in)     | 4       | 6        | 12      | 8 also available                             |
| Thickness (mils)        | 5       | 25       | 120     | Any increment within this range is available |
| Surface Roughness (Ra)  | < 5nm   | < 5µm    |         |  |

\* Can be cut to smaller sizes

## Electrical Properties

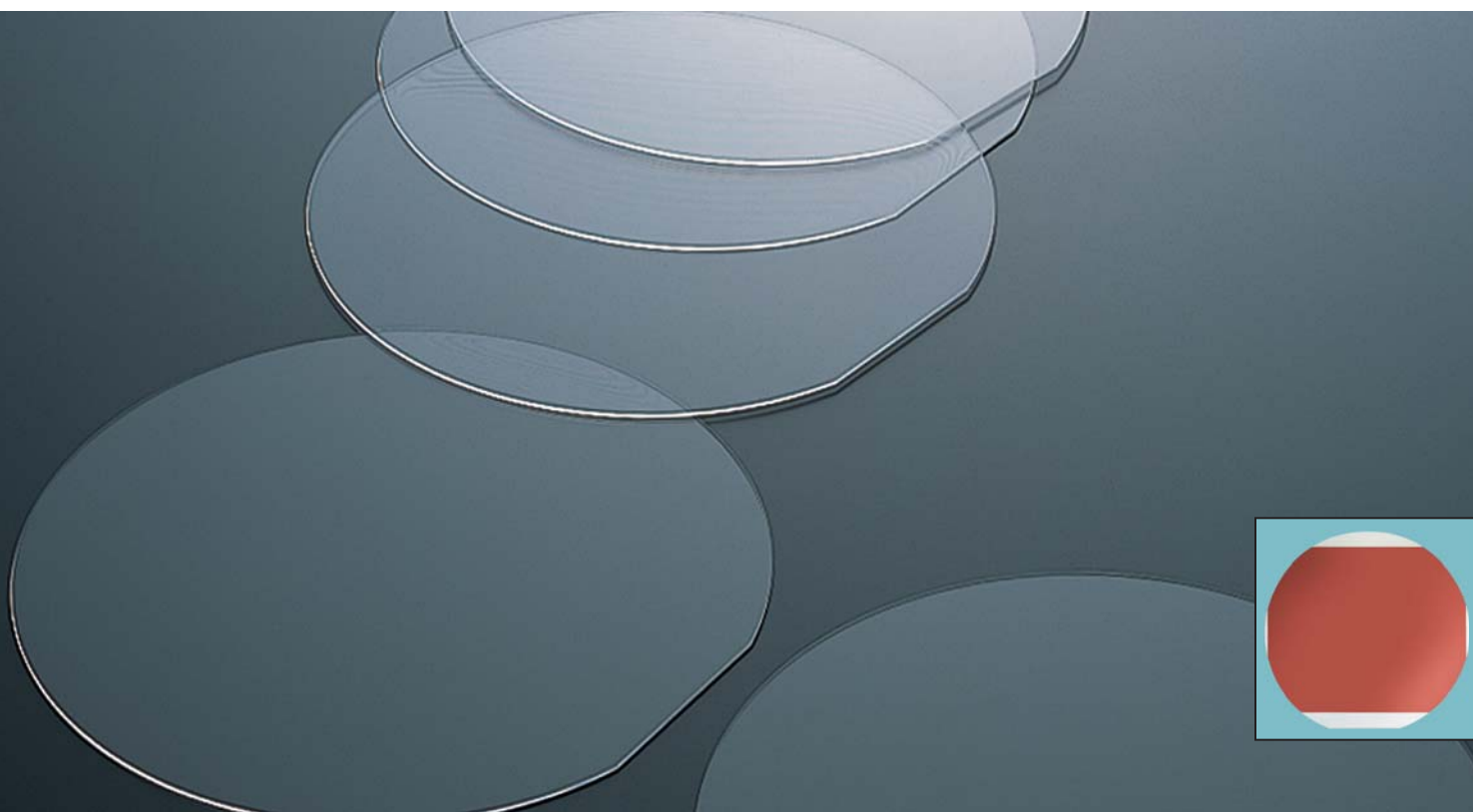
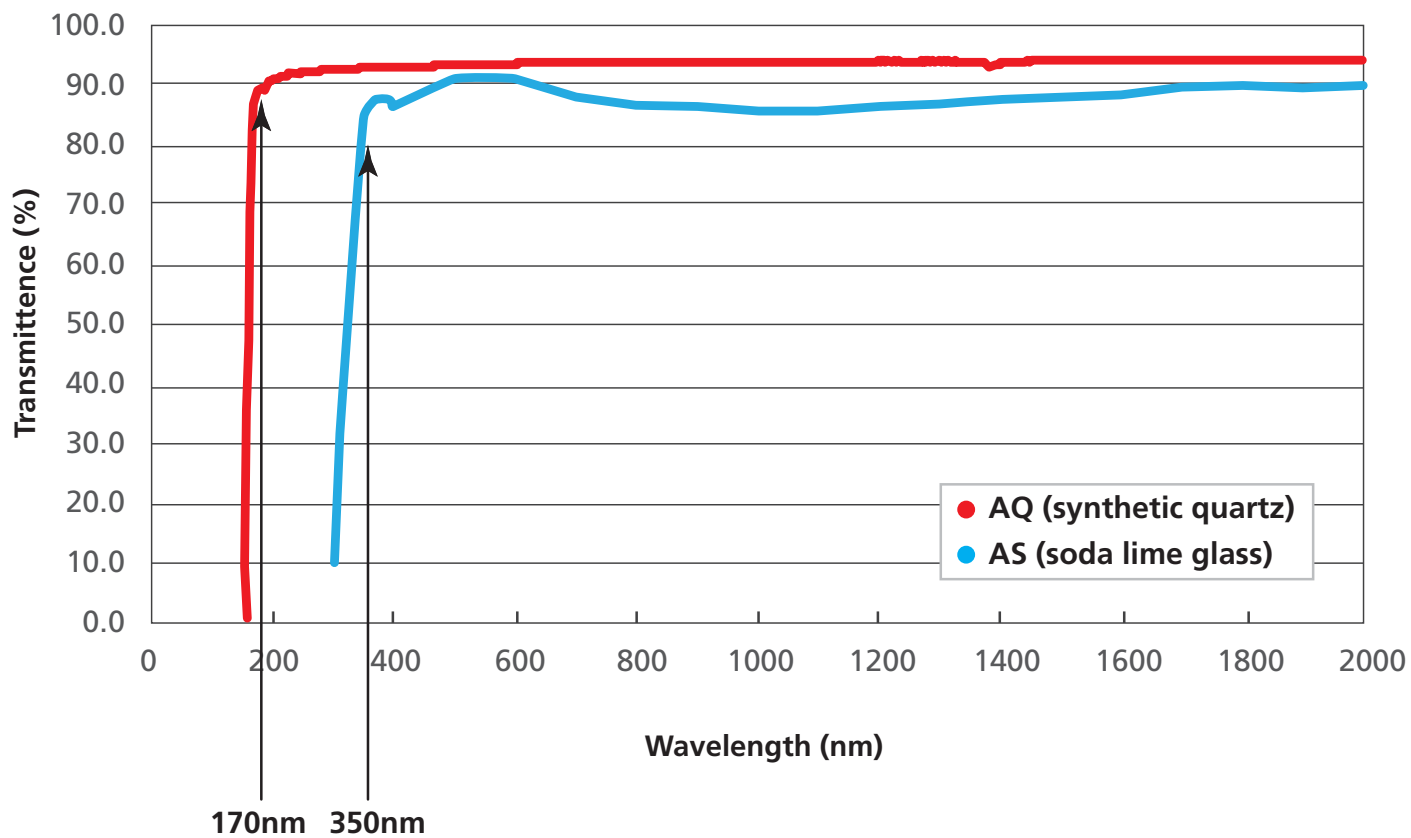
| Frequency (GHz) | Dielectric Constant | Loss Tangent |
|-----------------|---------------------|--------------|
| 4.7             | 3.9                 | 0.00008      |
| 11.3            | 3.9                 | 0.00026      |
| 22.7            | 3.9                 | 0.00022      |
| 32.1            | 3.9                 | 0.00024      |

## Mechanical Properties

| Property                 | Units              | Value   |
|--------------------------|--------------------|---------|
| Thermal Conductivity     | W/mK               | 1.46    |
| Density                  | g/cc               | 2.2     |
| Specific Heat (@25°C)    | J/gK               | 0.745   |
| Young's Modulus          | GPa                | 72.6    |
| Thermal Diffusivity Rate | cm <sup>2</sup> /s | 0.00892 |
| TCE (@25°C)              | ppm/°C             | 0.6     |
| Poisson's Ratio          |                    | 0.165   |
| Flexural Strength        | GPa                | > 100   |

AQ quartz is an advanced dielectric material for your RF, Digital, and optical applications where low loss is required. The benefit of low loss in circuit design allows for excellent signal integrity, and minimum propagation loss. AGC's synthetic quartz is manufactured using AGC's proprietary plasma flame technology allowing AGC to produce an extremely pure Synthetic quartz with a Sub zero loss better than any available substrate currently on the market. AGC's synthetic quartz can be metalized with thick film copper or thin film to produce a variety of circuits. Low cost applications produced with copper metallizations can be used to design ultra performance and provide a very stable circuit resistance in thermomechanical/moisture environments.

## Transmission Spectra Synthetic Quartz vs. Soda Lime Glass



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