

## Standard Products

[Accuflect®](#)

[Macor®](#)

> [Fabrication](#)

> [Properties](#)

> [Available Sizes](#)

[Ceramic Rod & Tube](#)

[Aluminum Nitride Substrates](#)

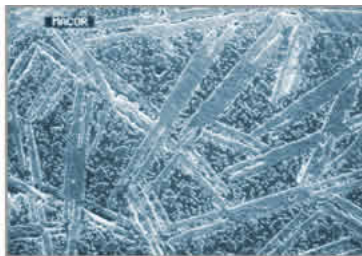
## MACOR® Machinable Glass Ceramic

High use temperature  
Non-flammable  
Excellent electrical insulator  
Excellent thermal insulator  
Dimensionally stable

MACOR® machinable glass ceramic gives you the characteristics you need from a ceramic with the added benefit of easy fabrication using ordinary machine tools. No longer is it necessary to staff a ceramic specialist with high temperature kilns or specialized diamond grinding equipment. Fabrication is quick, inexpensive and accurate using your in-house personnel, local machinist or Accuratus.

### MACOR® Manufacture

MACOR® is melted and cast using conventional glass making techniques. It is a fluorine rich glass with a composition approaching trisilicic fluorophlogopite mica ( $\text{KMg}_3\text{AlSi}_3\text{O}_{10}\text{F}_2$ ). Upon cooling from the melt, the glass spontaneously phase separates into fluorine rich droplets. The resulting glass has the appearance of an opal glass. Subsequent controlled heat treatment devitrifies the fluorine rich droplets causing a series of morphological changes ultimately resulting in the formation of randomly oriented, interlocked, sheet-like fluorophlogopite mica crystals within the alumino-borosilicate glass matrix. The volume percent crystalline phase after heat treatment is approximately 55% with a mean crystal size of 20 microns. It is this uniform distribution of randomly oriented mica within the parent glass that gives rise to the unique characteristics of MACOR®.



### MACOR® Properties

MACOR® possesses a number of notable [physical properties](#). It has a continuous use temperature of 800°C. Its coefficient of thermal expansion readily matches most metals and sealing glasses. It is nonwetting, exhibits zero porosity, and unlike ductile materials, won't deform. It is an excellent insulator at high voltages, various frequencies and high temperatures. When properly baked out, will not outgas in vacuum environments.

### MACOR® Machining

Machining tolerances are surprisingly tight, up to 10 microns (.0005"). It can be machined to a surface finish of less than 0.5 micron (20 microinch) and polished to a smoothness of 125 angstroms (0.5 microinch) average roughness. Most conventional [machining processes](#) can be used. Configurations are limited only by available equipment and the experience of the machinist.

### MACOR® Sealing, Joining, Metallizing

Macor can also be joined or sealed to itself and other materials in a number of ways: metallized parts can be soldered together and [brazing](#) has proven an effective method of joining the material to various metals; [epoxy](#) produces a strong joint, and [sealing glass](#) creates a vacuum tight seal. Even a straightforward mechanical joint is possible. It can be [thick film metallized](#) using inks or [thin film coated](#) using sputtering techniques.

### The Bottom Line with MACOR®

When you need the performance of a technical ceramic — high use temperature, electrical resistivity, zero porosity — and your application demands the ready fabrication of a complicated shape — quickly, precisely, privately — consider MACOR®. It will lower costs and substantially reduce the time between design and actual use.

[Back to top](#)

See also: [Materials > Macor®](#)

[Standard Products](#) | [Custom Products and Services](#) | [Case Studies](#) | [Materials](#)  
[Design Notes](#) | [Working Together](#) | [Vision](#) | [Contact Us](#) | [Site Map](#)

**1-908-213-7070**

© 2013 Accuratus

Site Design M. Adams