

## HEAT-RESISTANT MATERIAL SERIES **MICALEX**

Advanced-technology material. Machineable ceramics made from natural mica, artificial mica and special glass with hot forming.

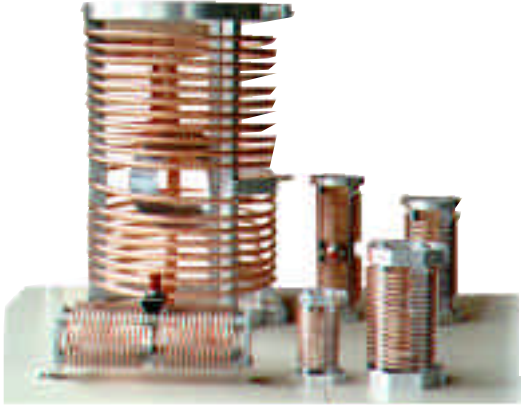


| Specifications for MICALEX |               |               |                            |
|----------------------------|---------------|---------------|----------------------------|
|                            | Max.thickness | Min.thickness | Material dimension         |
| M-31<br>(Natural mica)     | 35mm          | 3.2mm         | 300 × 300mm<br>280 × 500mm |
| M-25<br>(Artificialmica)   | 35mm          | 3.2mm         | 290 × 340mm                |

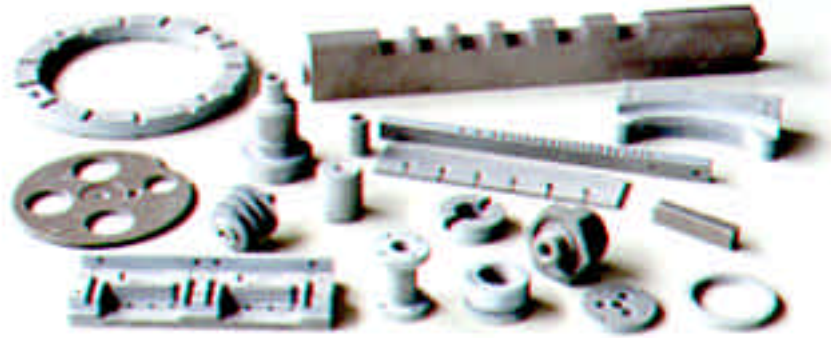
- Excellent electrical insulation.
- Excellent high frequency properties.
- Heat, pressure and arc resistance.
- Superior workability.
- Excellent dimensional accuracy and form-stability.

Today, heat-resistance materials play an important role in semiconductor which is the core of our computer world. MICALEX is on the cutting edge of heat-resistance material technology by minimizing the generation of gas caused by the corrosion of glass material at a temperature of 700 .With its excellent accuracy and stability, MICALEX is behind the scenes supporting the microchip industry.

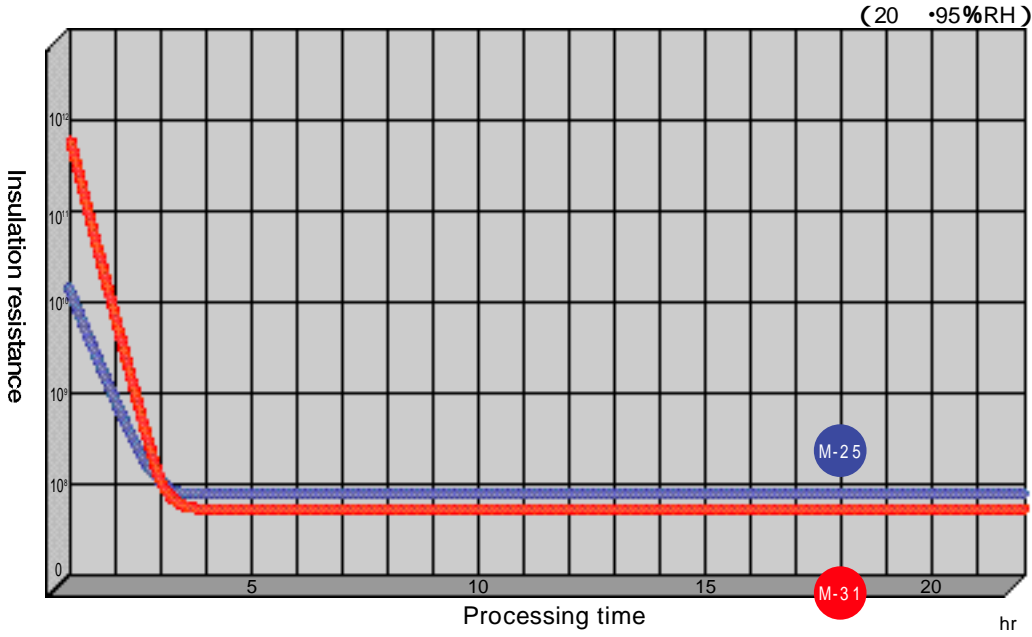
| Physical Properties of MICALEX                             |         |                           |                        |
|--|---------|---------------------------|------------------------|
| Test Items   | Unit    | M-25<br>(Artificial mica) | M-31<br>(Natural mica) |
| Heat resistance  |         | 700                       | 400                    |
| Flexural strength  | MPa     | 73                        | 108                    |
| Compressive strength                                       | MPa     | 216                       | 226                    |
| Tensile strength   | MPa     | 148                       | 115                    |
| Izod impact strength                                       | J/cm    | 0.4                       | 0.6                    |
| Water absorption   | %       | 0.002                     | 0.005                  |
| Thermal conductivity                                       | W/m · K | 1.42                      | 1.24                   |
| Coefficient of thermal expansion (Vertical to laminations) | 1/      | $7.0 \times 10^{-6}$      | $9.0 \times 10^{-6}$   |
| Specific gravity   |         | 2.5                       | 2.6                    |
| Withstand voltage (1 min.)                                 | kV/mm   | 10                        | 15                     |
| Volume resistivity   | J · cm  | $1.9 \times 10^{14}$      | $2.0 \times 10^{14}$   |
| Insulation resistance                                      | M       | $2.2 \times 10^5$         | $2.5 \times 10^5$      |
| Arc resistance   | sec     | 420                       | 246                    |



Example of application in a heater

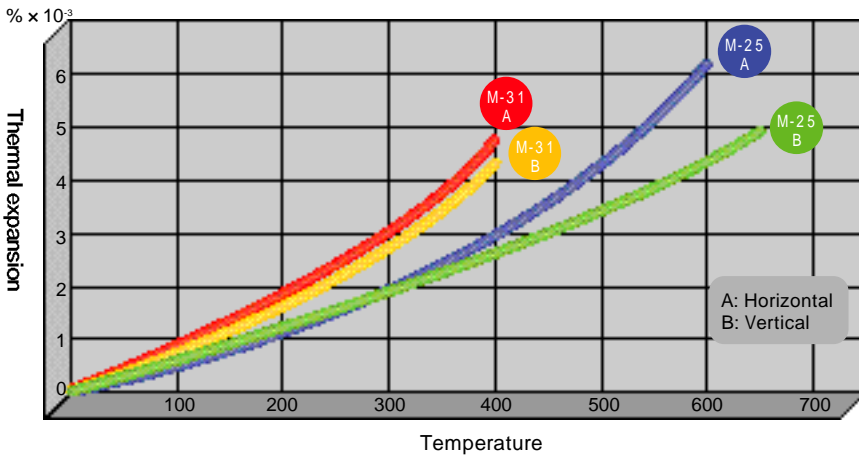


Machined example of MICALEX



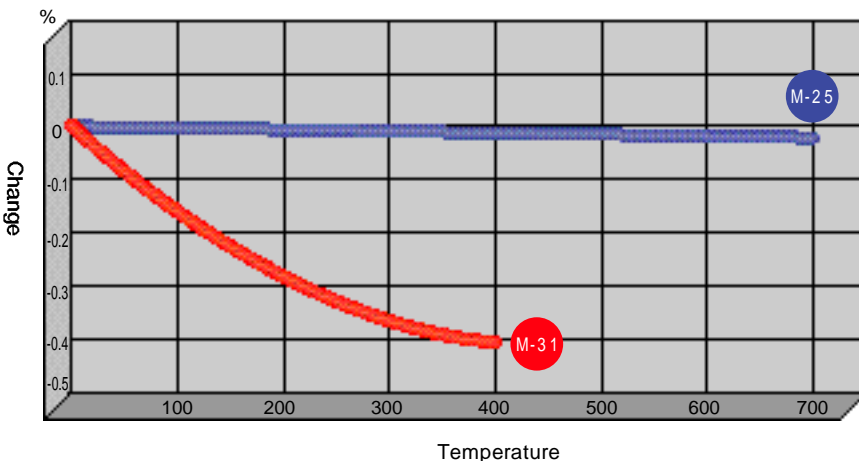
Insulation resistance in high humidity.

The chart on the left shows the transition of insulation resistance as time passes in 95% humidity. MICALEX has high insulation performance even in high humidity and displays excellent water and oil resistance.



Thermal expansion curve

Thermal expansion is minimized, strain and distortion are prevented well with MICALEX. It can maintain excellent dimensional accuracy even at high temperatures. MICALEX displays a special ability as a component of devices related to semiconductors and heat-resistant materials for heaters.



Change in weight upon heating

Upon heating matter, organic substances are burned and they lose weight. MICALEX is composed of an inorganic substance. M-31 is made from natural mica and, therefore, it shows greater changes of weight compared with M-25.