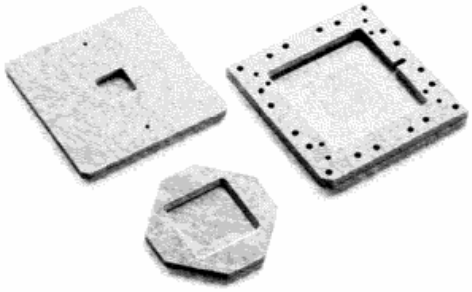
PROFESSIONAL PLASTICS, INC.

Exclusive Supplier of TPS Topfine ® R1000 Test Socket Material

TPS TOPFINE ® R1000 [Composite Engineering Plastic Plate for Precision Micro Hole Drilling Processes]

Ultra dimensional stability, stiffness, and precision machinability

TOPFINE R1000 was jointly developed by Toyo Plastic Seiko Co., Ltd. and the resin manufacturer Toray Industries, Inc. This material boasts excellent dimensional stability and is specially designed for precision hole drilling. Producing holes with a diameter of several tens of microns in conventional super engineering plastics is associated with various problems caused by flash, the need for postprocessing, probe pin errors, and other factors. So far, only a limited number of wholly aromatic polyester resins could be used for plates and other parts requiring ultra-fine holes. Special resin treatment and proprietary molding technology make TOPFINE R1000 a super engineering plastic that largely eliminates flash related problems during precision machining. Consequently, there is now a wider choice of material for applications requiring ultra-fine precision holes.
TOPFINE R1000 is based on PPS resin featuring high dimensional stability. Because the composition also contains a high percentage of different kinds of special inorganic particles, it can be described as a compound super engineering plastic resin material. It not only boasts improved cutting and boring workability but also has excellent stiffness on a par with fiber-reinforced resin which is notoriously difficult to cut.

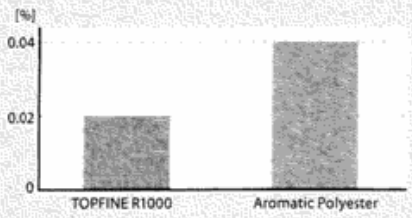


Features

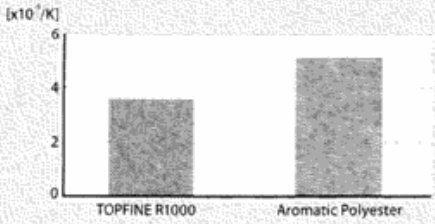
- Low water absorption and low linear expansion coefficient result in high dimensional stability.
- Highly suitable for machining, minimal flash when producing ultra-fine holes.
- Best elasticity of unreinfored resin.

Ultra dimensional stability

Water absorption comparison



Linear expansion coefficient comparison



Product lineup

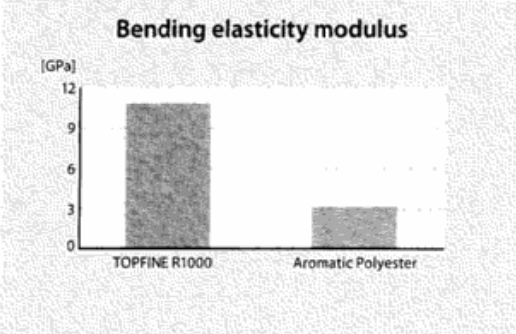
TOPFINE R1000 [Unit: mm]

	Thickness	Width	Length
Plate	3 - 5	100	200

* For details, see separate "Specifications List".

Outstanding stiffness

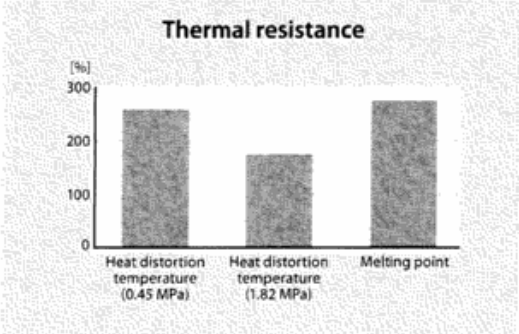
TOPFINE R1000 features a high bending elasticity modulus of 10 GPa which means that even very thin products will not suffer from flexing, distortion and similar problems. It can be used in place of materials such as ceramics, bakelite, and glass-reinforced epoxy which are hard to machine but whose stiffness so far was unavailable in resin material.



Thermal resistance

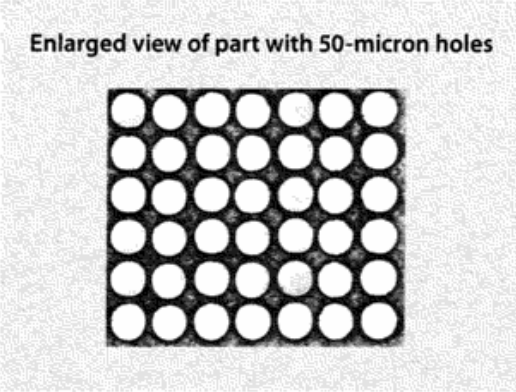
As the figures below demonstrate, TOPFINE R1000 has a thermal resistance that is in effect sufficient for testing tool applications.

- Melting point 278°C
- Heat distortion temperature
  260°C (0.45 MPa)
  175°C (1.82 MPa)



Suitable for Precision Micro Hole Processing

TOPFINE R1000 is eminently suited for high-precision machining. Parts with 50-micron diameter holes have been successfully produced. (Since practical results will differ depending on machining conditions, shape, etc., careful evaluation is required before implementation.)



Precautions for machining and use

Because TOPFINE R1000 has high hardness for a resin material, drill selection, workpiece support and other factors are critical. Due to its composition, the material has little elongation and can get chipped easily. This should be taken into consideration during the parts design process.
The glass temperature is lower than for aromatic polyester. Use under high loads and high temperatures must be based on thorough tests prior to implementation.