



**BIRK**

Engineering Thermal Solutions

AS9100 | ISO 13485 | ISO 9001

ITAR, UL & CSA Certified

www.birkmfg.com

## Standard Thermal Solution Products

Available in stock for quick prototyping. All standard thermal products are RoHS compliant.

### Flexible Heaters

Available in either Silicone or Kapton® Polyimide. Contact us for available sizes, lead lengths, backing options, and temperature ranges.



### Cartridge Heaters

Available in various sizes. Contact us for available voltage, wattage, lead lengths, and temperature ranges.



### Temperature Sensors

RTDs, Thermocouples, Thermistors. Value-added options include Probes, Bolt-On, and Surface Mount. Contact us for available classes, lead lengths, gauges, diameters, backing options, and temperature ranges.



## Full Engineering Support Services

Birk's Design, Applications and Manufacturing Engineering Teams provide timely and knowledgeable support throughout the entire product life-cycle. Our flexible heaters, temperature sensors and value-added capabilities offer plug and play thermal solutions for dynamic and critical applications in the medical, diagnostic, instrumentation, semiconductor, aerospace, defense, transportation, detection and light industrial industries. Our experienced and personable team is at your service to discuss your specific application needs, ensuring you receive precisely what you need.

## Custom Thermal Solution Products

We offer one of the fastest lead times in the industry on custom thermal solutions.

### Kapton® Polyimide Heaters

Etched circuits laminated to acrylic or FEP bonded polyimide, with thin profile and rapid heat up time. Can incorporate complex geometries, formed shapes, multiple layers, sensors, thermal cutoffs, wiring harnesses, shielding, cabling, termination/connectors, PSA and foil backing options.

**Temperature:** up to 260°C (500°F)

**Dimensions:** 22" x 30" or 7" x 70"

**Watt Density:** up to 120 Watts/in<sup>2</sup>



### Silicone Rubber Heaters

Wire wound or etched circuit. Can be made in varying thicknesses with different types of silicone rubber. Durable and rugged material suited well for dynamic applications where heaters need to be removed and re-installed many times.

**Temperature:** up to 200°C (400°F)

**Dimensions:** Etched foil 22" x 28",

Wire Wound 35" x unlimited length

**Watt Density:** up to 30 Watts/in<sup>2</sup>



### All-Polyimide (AP)/ High-Temperature (HT) Heaters

AP and HT heaters surpass traditional polyimide heater temperature limits and enable customers to reach a maximum temperature of 300°C. Typically used in aerospace applications where extreme operating temperatures and low out-gassing is important.

**Temperature:** up to 300°C (572°F)

**Dimensions:** 23" x 23"

**Watt Density:** up to 120 Watts/in<sup>2</sup>



### Butyl Rubber Heaters

Wire wound or etched circuit. Can be made in varying thicknesses. Water, chemical and UV resistant, this material is suitable for submersible applications or use in harsh and hazardous environments.

**Temperature:** up to 121°C (250°F)

**Dimensions:** Etched foil 22" x 28",

Wire Wound 35" x unlimited length

**Watt Density:** up to 5 Watts/in<sup>2</sup>



# Custom Thermal Solution Products (Continued)

## Mica Heaters

Birk can create a clamped assembly consisting of a heat sink, mica heater, ceramic backing paper, backing plate, and any required hardware.

**Temperature:** up to 600°C (1112°F)

**Dimensions:** 22" x 28"

**Watt Density:** up to 150 Watts/in<sup>2</sup>



## Cartridge Heaters

Cartridge heaters can be made in many different diameters, lengths and temperature ranges to meet your application needs.

**Temperature:** up to 600°C (1112 °F)

**Watt Density:** up to 150 Watts/in<sup>2</sup>



# Custom Temperature Sensors

## RTDs

RTDs are highly accurate and fast-responding sensing elements that have broad temperature ranges and are less susceptible to EMF resistance, vibration and temperature shock. See value-added options.

## Thermocouples

Thermocouples are temperature-sensing devices that have greater temperature range than a traditional RTD, provide accelerated response times, and are extremely robust. See value-added options.

## Thermistors

Both negative (NTC) and positive (PTC) temperature coefficient models available in many shapes, sizes, lengths and encapsulated in either epoxy, ceramic or glass. See value-added options.



### VALUE-ADDED OPTIONS

#### Bolt-On

Sensor mounted inside of a ring terminal or machined part. Ring terminal available in nickel plated copper.

#### Surface Mount

Sensor encapsulated by Kapton® or silicone rubber.

**Backing Options:** PSA, foil backing, or foil backing with PSA

**Max Temp:** 260°C Kapton® encapsulated

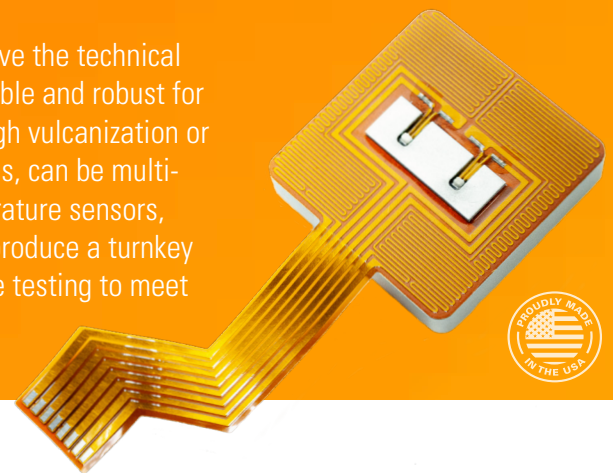
200°C silicone rubber encapsulated

#### Probes

Sensor mounted inside of a stainless-steel probe or Kapton® tube.

# Full Assembly Services

Birk's production and advanced manufacturing teams are IPC certified and have the technical ability, skill, and knowledge to produce high-quality assemblies that are reliable and robust for the most demanding applications. Our heaters can be factory mounted through vulcanization or lamination, can be formed to specific shapes, can include complex geometries, can be multi-layered or combined with flex circuits or rigid boards, can incorporate temperature sensors, thermal cutoffs, wiring harnesses, shielding, termination and connectors to produce a turnkey assembly. Birk has the ability, experience and knowledge to perform in-house testing to meet NASA S-311-P-079 & NASA S-311-P-841 requirements.



For more information visit [www.birkmfg.com](http://www.birkmfg.com)  
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