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Engineering Thermal Solutions

STANDARD HEATER SPECIFICATIONS, STACK UP AND FAQs

OHM'S LAW

$$V = IR \quad W = \frac{V^2}{R}$$

$$R = \frac{V^2}{W} \quad V = \sqrt{RW}$$

V: VOLTAGE (VOLTS)

I: AMPERAGE/CURRENT (AMPS)

R: RESISTANCE (OHMS)

W: WATTAGE (WATTS)

Temperature Capabilities

Standard Heaters can run continuously up to 200°C

Foil Backing

0.005" Aluminum

Provides more uniform heat distribution.

PSA - Pressure Sensitive Adhesive

0.005" 3M 9755

Rated up to 232°C for short term use (minutes, hours) and 149°C for long term use (days, weeks)

- Standard heaters are RoHS Compliant
- No maximum voltage or wattage. Heaters are limited by the amperage and thus the lead wire
- $\text{AMPERAGE} = \text{WATTAGE} / \text{VOLTAGE}$
- 30 AWG Leads Max Amperage: 2 amps
- 24 AWG Leads Max Amperage: 5.5 amps
- No maximum watt density. The higher the watt density, the hotter the heater will get in a shorter amount of time. Customer needs to monitor temperature to not go over maximum temp.



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Frequently Asked Questions Cont. Lead Locations

Lead Location A: 3504-3518, 3520-3540, 3547-3553,
3555-3558

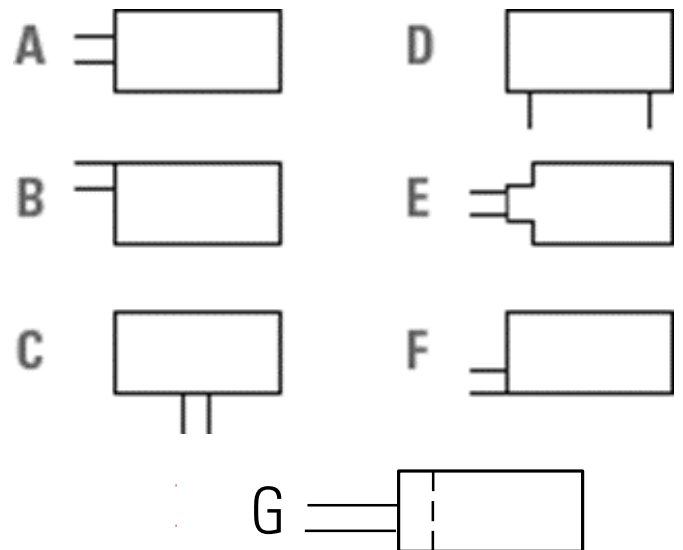
Lead Location B: 3519

Lead Location D: 3554, 3559

Lead Location E: 3561 (INCLUDES UNHEATED TAB)

Lead Location F: 3563

Lead Location G: 3542-3546, 3501-3503
(INCLUDES UNHEATED TAB)



- Leads are done under cover layers of Kapton® and Silicone
- Standard lead color is red
- Available lead lengths: 12" or 24"
- Lead gauges are 30AWG or 24AWG depending on heater
(inquire for specific P/N's)
- Lead area thickness: In general, add 0.060" to heater thickness

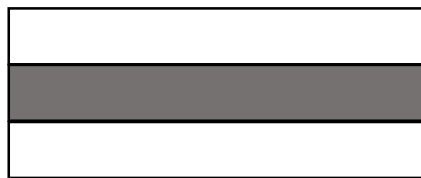


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Birk Standard Heaters Build up: Resistance Option 1

Kapton®
Heater:

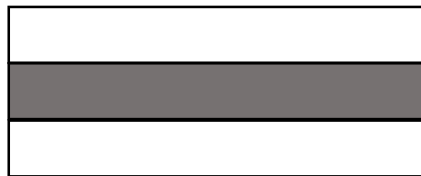


Kapton®: 0.0025"

Foil: 0.0005"

Kapton®: 0.0025"

Silicone
Heater:



Silicone: 0.015"

Foil: 0.0005"

Silicone: 0.015"

Birk Mfg. Standard Tolerances

Resistance: +10%/-5%

Die Cut Kapton®

Die Cut Silicone

Min. Dist. Edge to Conductor:

<12" +/- 0.020"

< 12" +/- 0.030"

Sil. 0.060" Kap. 0.020"

12 < 24" +/- 0.040"

12 < 24" +/- 0.040"

Stripped Lead Wire length +/- 0.062"

< 24" +/- 0.080"

< 24" +/- 0.080"

Quality Policy: Through continuous improvement, Birk Manufacturing, Inc. is dedicated to providing superior parts and service to our customers.

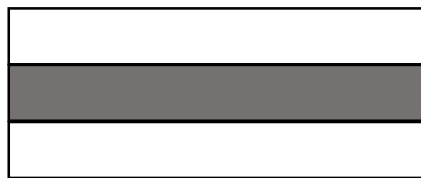


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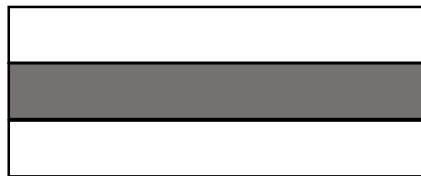
Birk Standard Heaters Build up: Resistance Option 2

Kapton®
Heater:



Kapton®: 0.0025"
Foil: 0.001"
Kapton®: 0.0025"

Silicone
Heater:



Silicone: 0.015"
Foil: 0.001"
Silicone: 0.015"

Birk Mfg. Standard Tolerances

Resistance: +10%/-5%

Die Cut Kapton®

Die Cut Silicone

Min. Dist. Edge to Conductor:

<12" +/- 0.020"

< 12" +/- 0.030"

Sil. 0.060" Kap. 0.020"

12 < 24" +/- 0.040"

12 < 24" +/- 0.040"

Stripped Lead Wire length +/- 0.062"

< 24" +/- 0.080"

< 24" +/- 0.080"

Quality Policy: Through continuous improvement, Birk Manufacturing, Inc. is dedicated to providing superior parts and service to our customers.

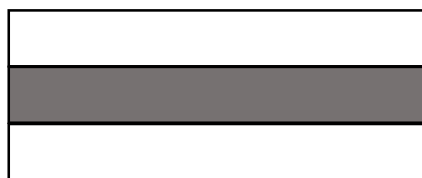


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Birk Standard Heaters Build up: Resistance Option 3

Kapton®
Heater:

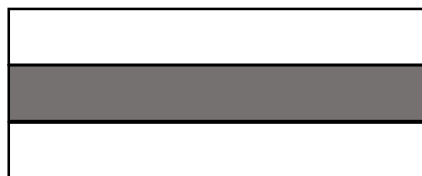


Kapton®: 0.0025"

Foil: 0.0015"

Kapton®: 0.0025"

Silicone
Heater:



Silicone: 0.015"

Foil: 0.0015"

Silicone: 0.015"

Birk Mfg. Standard Tolerances

Resistance: +10%/-5%

Die Cut Kapton®

Die Cut Silicone

Min. Dist. Edge to Conductor:

<12" +/- 0.020"

< 12" +/- 0.030"

Sil. 0.060" Kap. 0.020"

12 < 24" +/- 0.040"

12 < 24" +/- 0.040"

Stripped Lead Wire length +/- 0.062"

< 24" +/- 0.080"

< 24" +/- 0.080"

Quality Policy: Through continuous improvement, Birk Manufacturing, Inc. is dedicated to providing superior parts and service to our customers.

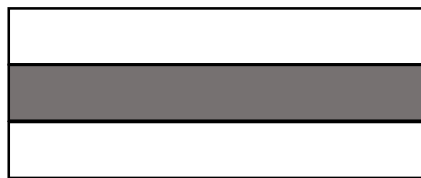


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Birk Standard Heaters Build up: Resistance Option 4

Kapton®
Heater:

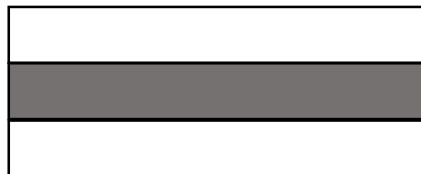


Kapton®: 0.0025"

Foil: 0.00125"

Kapton®: 0.0025"

Silicone
Heater:



Silicone: 0.015"

Foil: 0.00125"

Silicone: 0.015"

Birk Mfg. Standard Tolerances

Resistance: +10%/-5%

Die Cut Kapton®

Die Cut Silicone

Min. Dist. Edge to Conductor:

<12" +/- 0.020"

< 12" +/- 0.030"

Sil. 0.060" Kap. 0.020"

12 < 24" +/- 0.040"

12 < 24" +/- 0.040"

Stripped Lead Wire length +/- 0.062"

< 24" +/- 0.080"

< 24" +/- 0.080"

Quality Policy: Through continuous improvement, Birk Manufacturing, Inc. is dedicated to providing superior parts and service to our customers.

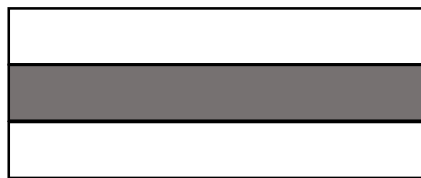


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Birk Standard Heaters Build up: Resistance Option 5

Kapton®
Heater:

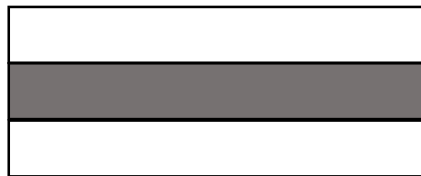


Kapton®: 0.0025"

Foil: 0.002"

Kapton®: 0.0025"

Silicone
Heater:



Silicone: 0.015"

Foil: 0.002"

Silicone: 0.015"

Birk Mfg. Standard Tolerances

Resistance: +10%/-5%

Die Cut Kapton®

Die Cut Silicone

Min. Dist. Edge to Conductor:

<12" +/- 0.020"

< 12" +/- 0.030"

Sil. 0.060" Kap. 0.020"

12 < 24" +/- 0.040"

12 < 24" +/- 0.040"

Stripped Lead Wire length +/- 0.062"

< 24" +/- 0.080"

< 24" +/- 0.080"

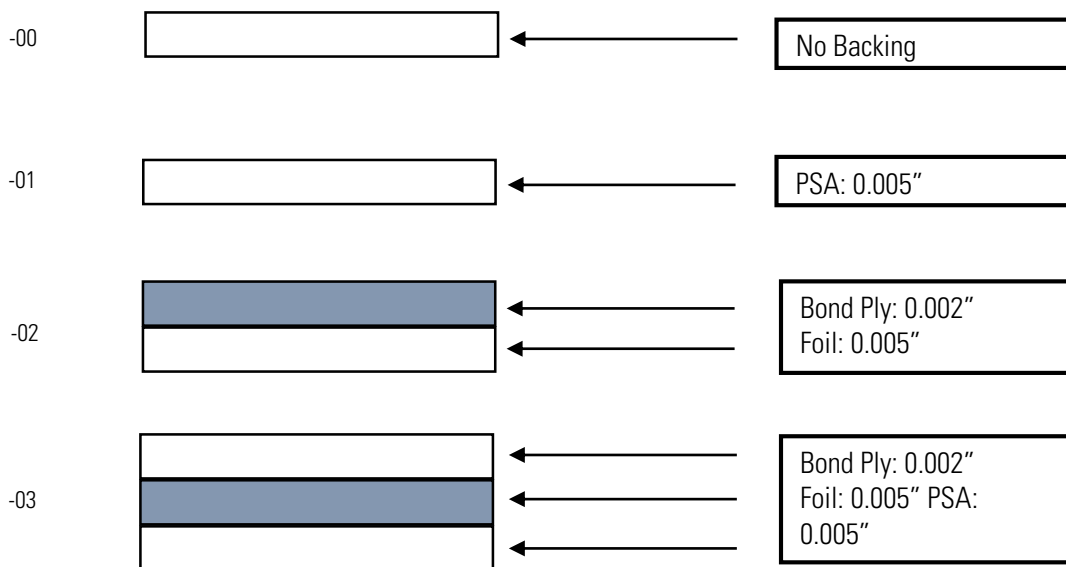
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Birk Kapton® Standard Heaters Backing Options Build up



Birk Silicone Standard Heaters Backing Options Build up

