



## **RATHBUN HEAT SPREADER LABEL**

**RBCP-101951**

### **Description**

The Heat Spreader Label RBCP-101951 is an acrylic and copper based heat spreading transfer label designed to provide a preferential heat transfer path away from heat generating sources.

The Rathbun Heat Spreader Label is made up entirely of 3M materials, including a high performance label for heat transfer printing, a heat spreader layer complete with a polymeric coating for extra dielectric protection, and unique edge protection providing electrical insulation.

### **Key Features**

- ✓ **Heat Spreading Core. Thermally conductive in X-Y-Z directions**
- ✓ **Electrically insulated; Top, Bottom, all 4 edges**
- ✓ **Dielectric**
- ✓ **Zebra printer compatible label on top**
- ✓ **Slim .18mm thick, more robust .20mm thick, a powerful .25mm thick**
- ✓ **Halogen-free**
- ✓ **Silicone-free**
- ✓ **UL V-0**
- ✓ **Strong acrylic Pressure Sensitive Adhesive (PSA) on bottom, specific to electronics**
- ✓ **High tack PSA provides high initial adhesion and good shear holding power.**
- ✓ **High Humidity has little effect on adhesive**



## Typical Physical Properties and Performance Characteristics

**Note:** The following technical information and data should be considered representative or typical only, and should not be used for specification purposes.

| Property   | Method              | Heat Spreader Label       | Heat Spreader Label       |
|--|---------------------|---------------------------|---------------------------|
|  |                     | RBCP-101951-18            | RBCP-101951-18            |
|  |                     | Value                     | Value                     |
|  |                     | <i>Room Temp</i>          | <i>1000 hours at 110C</i> |
| Color  | -                   | White top / Copper bottom | White top / Copper bottom |
| Thickness  | Gauge               | .18mm / .20mm / .25mm     | .18mm / .20mm / .25mm     |
| Thermal Conductivity (W/m-K)                       | ASTM C1113          | 118 (x-y) / 0.28 (z)      | 153 (x-y) / 0.27 (z)      |
| Flammability                                       | UL94                | V-O (pending)             | V-O (pending)             |
| Density (g/cm <sup>3</sup> , @ 25°C)               | GB/T<br>1423-1996   | 2.96                      |                           |
| Volume Resistivity (Ω-cm)                          | ASTM D257           | 8.32E + 14                | 9.36E + 13                |
| Dielectric Strength (kV/mm)                        | ASTM 149            | 52.6                      | 79.5                      |
| Specific Heat Capacity (J/g C)                     | ASTM-1269-11        | 0.654                     |                           |
| Thermal Diffusion Coefficient (mm <sup>2</sup> /s) | ASTM-1461-13        | 25.8 (x-y) / .124 (z)     |                           |
| Peel Adhesion - 90 degree                          | kg/25.4mm           | 1.67                      |                           |
| Peel Adhesion - 180 degree                         | kg/25.4mm<br>(N/mm) | 1.2 (0.65)                | 1.7 (0.85)                |
| Thermal Resistance (Km <sup>2</sup> /W)            | ASTM 5470-17        | 0.0007986                 |                           |
| Operating Range                                    |                     | -30C to 110C              |                           |
| Silicone Outgassing                                |                     | No Silicone detected      |                           |



## PSA Application Techniques

Bond strength is dependent upon the amount of adhesive-to-surface contact developed. Firm application pressure (15psi) helps develop better adhesive contact and improve bond strength. To obtain optimum adhesion, the bonding surfaces must be clean, dry and well unified. Some typical surface cleaning solvents are isopropyl alcohol or heptane.\*

**\*Note:** Carefully read and follow the manufacturer's precautions and directions for use when using solvents. Ideal tape application temperature range is 21°C to 38°C (70°F to 100°F). Initial tape application to surfaces at temperatures below 10°C (50°F) is not recommended because the adhesive becomes too firm to adhere readily. However, once properly applied, low temperature holding is generally satisfactory.

## PSA Environmental Performance

**Humidity Resistance:** High humidity has minimal effect on adhesive performance. No significant reduction in bond strength is observed after exposure for seven days at 32°C (90°F) and 90% relative humidity.

**UV Resistance:** When properly applied, nameplates and decorative trim parts are not adversely affected by exposure to direct sunlight.

**Water Resistance:** Immersion in water has no appreciable effect on the bond strength. After 100 hours at room temperature, the high bond strength is maintained.

**Temperature Cycling Resistance:** High bond strength is maintained after cycling four times through:

- 4 hours at 70°C (158°F)
- 4 hours at -29°C (-20°F)
- 4 hours at 22°C (73°F)

**Chemical Resistance:** When properly applied, nameplate and decorative trim parts will hold securely after exposure to numerous chemicals including oil, mild acids and alkalis.

## Print Label Characteristics

3M™ Thermal Transfer Polyester Label Materials are durable polyester label stocks that offer excellent moisture resistance and thermal stability. These label products utilize 3M™ Adhesive 310 which is a firm adhesive which resists oozing.

Top-coated for improved ink receptivity and thermal transfer printing. Resin ribbons are recommended for optimum durability. The topcoat also provides improved ink anchorage for traditional forms of press printing. It is printable by all standard roll processing methods including flexography, hot-stamp, letterpress, and screen printing.



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(patent pending)

### **Life Span Testing**

No appreciable change (slight yellowing of label), or performance deterioration, after 1,000 hours at 110C, 50% humidity, attached to stainless steel (3M Test).

### **Storage and Shelf Life**

The shelf life is 24 months from the date of manufacture when stored in the original packaging materials at 16°C to 27°C (60° to 80°F) and 40 to 60% relative humidity.

### **Technical Information**

The technical information, recommendations and other statements contained in this document are based upon tests or experience that Rathbun and 3M believe are reliable, but the accuracy or completeness of such information is not guaranteed.

### **Product Use**

Many factors beyond Rathbun's control and uniquely within user's knowledge and control can affect the use and performance of a Rathbun and 3M product in a particular application. Given the variety of factors that can affect the use and performance of a Rathbun and 3M product, user is solely responsible for evaluating the Rathbun and 3M product and determining whether it is fit for a particular purpose and suitable for user's method of application.

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48890 Milmont Drive Suite 111D Fremont California 94538 USA  
(510)661-0950 (510)668-0369(fax) Email: sales@rathbun.com  
Website: www.rathbun.com



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