

# LIMITmarker<sup>®</sup> Reversible 18°C Indicators

## Self-adhesive reversible temperature indicator

Many products require refrigeration to maintain their efficacy, but are recommended for use at room temperature for optimal performance. Zebra LIMITmarker Reversible 18°C indicators can be applied to the primary packaging of products, providing a clear visual sign when a refrigerated product reaches 18°C. The indicator is solid blue when cold (at or below 8°C), then changes color and reveals “OK” when it approaches room temperature (18°C, plus or minus 2°).



Refrigerated temperature  
(8°C and below)



Approaching room temperature  
(18°C and above)

### Enhanced satisfaction

When a product performs best at room temperature but must be refrigerated to maximize its shelf life, it's hard to know when it reaches room temperature and is ready for use. Reduce instances of user dissatisfaction with your product's performance by providing visibility into its temperature with LIMITmarker Reversible 18°C indicators.

### Improved user experiences

Visible temperature indicators are especially helpful where users are concerned about the discomfort associated with using a refrigerated product while it is still cold. Zebra LIMITmarker Reversible 18°C indicators help manufacturers provide a unique visual cue on their product packaging that can enhance the user experience and help overcome reluctance associated with discomfort from using the product when it's too cold.

### Easy to understand

The indicators are solid blue at refrigerated temperatures, but they change color to reveal a clear “OK” message when they approach room temperature. This indicator is reversible, and the label darkens to solid blue again when refrigerated.

### Easy to apply

The indicators are 16 mm x 10 mm self-adhesive labels, easily applied to the primary packaging of products, where they can be viewed and intuitively understood by users.

**Zebra LIMITmarker Reversible 18°C indicators clearly show when a refrigerated product approaches room temperature. To learn more, please visit [www.zebra.com/tempmonitoring](http://www.zebra.com/tempmonitoring).**

# Specifications

| Material Construction |                            |
|-----------------------|----------------------------|
| Facestock             | White polypropylene film   |
| Adhesive              | Permanent acrylic adhesive |
| Liner                 | Polyester liner            |
| Dimensions            | 16 mm x 10 mm              |

| Indicator Temperature Performance |   |
|-----------------------------------|---|
| Discoloration (Heating)           | 18.0°C ± 2.0°C and above<br>Revealed text (i.e., OK is visible) |
| Coloration (Cooling)              | At or below 8.0°C<br>Dark blue color                            |
| Reverse Cycles                    | At least 100 cycles   |

| Adhesive Temperature Performance             |                                |
|--|--------------------------------|
| Minimum Application Temperature <sup>1</sup> | -12°C (10°F)                   |
| Service Temperature Range <sup>2</sup>       | -40°C to 93°C (-40°F to 200°F) |

| Adhesive Strength          |   |
|----------------------------|---|
| Permanence of Adhesion     | Single use application. Indicators are intended to adhere permanently once applied to a surface. Removal may cause damage, and indicators will not perform as specified.  |
| Surface Compatibility      | Indicators may be applied to a wide variety of surfaces, including paper and paperboard (e.g., primary or secondary packaging), polyester film, and glass. They have shown suitable adhesion to metal surfaces and plastic films such as polyethylene (PE), polypropylene (PP), rigid polystyrene, polyvinyl chloride (PVC) and polycarbonate. Due to the variable nature of these materials and the effect of printing and other surface treatments, you should always evaluate the suitability of your package material for application of the indicator. |
| Application Considerations | Affix the indicator to a clean, dry surface at refrigerated or room temperature. Adhesion of indicator may be affected by affixing it to a surface that is extremely rough, oily, wet and/or frozen.  |

| Product Performance and Suitability           |   |
|---|---|
| Material Testing in End Applications          | All products should be pre-tested to ensure they meet all intended requirements of specific end-use applications. |
| Recommended Storage Conditions and Shelf Life | 1-year duration from time of manufacture when stored below 25°C (77°F) away from light sources.                   |

**Warranty**

Environmental Sensors are warranted against defects in workmanship and materials for a period of 12 (twelve) months from the date of shipment. For the complete warranty statement, please visit: <http://www.zebra.com/warranty>

| Footnotes  |
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| 1. When the label is applied, the environment and surface should be above this temperature.                                      |
| 2. Following correct application and appropriate dwell time (usually 24 hours), the media will withstand this temperature range. |

## Markets and Applications

### Manufacturing

- Injectable medication
- Adhesives
- Sealants
- Solvents
- Some collagens



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