

### WarmMark2 Time/Temperature Indicators Monitor Temperature During Shipping and Storage

WarmMark2 Time Temp Tags, with pressure sensitive adhesive backing, are a convenient and accurate device for cold chain temperature monitoring during shipping and storage of drug and medical products, vaccines, raw industrial materials, industrial chemicals, live animals, and refrigerated or fresh food products.

These devices monitor whether a product has been exposed to temperatures above a predetermined threshold. Response temperatures and run-out times (cumulative exposure time to a certain temperature value) vary with each WarmMark2 model.

When the WarmMark2 is exposed to conditions above the indicator temperature threshold, a blue front will appear in the run-out window. Run-out times are rated for 2°C above the temperature threshold of the device. Run-out indication will be faster at temperature greater than 2°C above the indicator response temperature. The time markers on the indicator indicate the longest period of time the product being monitored could have been exposed to temperatures above the threshold.

#### FEATURES

- Field activated
- Highest accuracy on the market
- Available in rolls
- Moisture resistant
- Standard & custom sensitivities available
- Irreversible indicator
- Tamper-proof design
- Individually serialized
- Self-adhesive backing on release liner
- Allows for variety of placement options

#### BENEFITS

- Can be shipped and stored under most conditions
- Tested in both real world applications as well as a lab environment
- Allows for rapid application if needed
- Moisture conditions cannot stop it from working accurately
- Complete flexibility for customer requirements
- Serial number allows internal tracking and chain of custody

#### APPLICATIONS

- Fresh/refrigerated food
- Vaccines
- Medicinal chemicals and botanicals
- Raw industrial materials
- Industrial chemicals
- Pharmaceuticals
- Films



**SHELF LIFE:** 2 years from date of shipment when stored at 22°C and 20-80% RH

**SHIPMENT:** No special packaging required for shipment.

**WARRANTY:** The following is made in lieu of all warranties, expressed or implied, including the implied warranties of merchantability and fitness of purpose: Seller's and manufacturers only obligation shall be to replace such quantity of the product proved by Telatemp Corporation to be defective.

**LIMITATION OF LIABILITY:** All physical properties, statements, and recommendations are either based on tests we believe to be reliable or our experience, but they are not guaranteed. Telatemp Corporation recommends each user determine the suitability of the products for the intended application. Telatemp Corporation shall not be liable for direct, indirect, special, incidental or consequential damages based upon breach of warranty, breach of contract, negligence, strict liability or any other legal theory.

*\*Prices and specifications are subject to change without notice.*



## WARMMARK2 SPECIFICATIONS:

- Indication Type: Visual, irreversible white to blue color change in activation window
- Activation Method: Manual: Blister-on-top or Blister-on-bottom
- Operating Temp Range (Activated State): -30°C to 55°C
- Activation Temperature: Sensitivities available between -20°C and 38°C. See product selection for details
- Threshold Temperature: Available between -20°C / -4°F and 38°C / 100°F
- Temperature Accuracy: ±1°C / ±2°F
- Run-Out Time: See WM2 Run-Out Time\* Comparison Chart
- Time Accuracy: ±15% under isothermal conditions
- Progress Isotherms: Run-out times are rated for 2° above the threshold temperature
- Moisture: Moisture resistant
- Mounting Method: Pressure sensitive adhesive
- Shelf Life: 2 years from date of shipment if stored in recommended environment
- Preconditioning\*\*: Must be preconditioned at a temperature higher than the threshold to be successfully activated - see activation instructions.
- Storage Conditions: Store in a cool dark environment. Recommended 22°C / 72°F at 20 - 80% RH
- Dimensions: 0.75 x 1.57 x 0.01 in./ 19mm x 40mm x 0.5mm Activation blister depth 0.12 in. / 3.0 mm max
- Weight: 0.55 grams

### Warmmark2 Run-Out Time\* Comparison Chart

Part Number	Threshold Temp	Stop Temp**	Run-Out Window	Time Marks in Hours	Activation Blister Location
WM2 -20/-4	-20°C / -4°F	-25°C / -13°F	8 Hours	1/2, 1, 2, 4, & 8	Top
WM2 -14/7	-14°C / +7°F	-20°C / -4°F	24 Hours	1, 2, 4, 8, 12, & 24	Top
WM2 0/32	0°C / 32°F	-7°C / 19°F	48 Hours	1, 2, 4, 8, 12, 24, & 48	Bottom
WM2 5/41	5°C / 41°F	0°C / 32°F	8 Hours	1/2, 1, 2, 4, & 8	Top
WM2 8/46	8°C / 46°F	6°C / 43°F	8 Hours	1, 2, 4, 8, 12, 24, & 48	Bottom
WM2 10/50	10°C / 50°F	8°C / 46°F	48 Hours	1, 2, 4, 8, 12, 24, & 48	Bottom
WM2 20/68	20°C / 68°F	18°C / 64°F	48 Hours	1, 2, 4, 8, 12, 24, & 48	Bottom
WM2 24/75	24°C / 75°F	18°C / 64°F	8 Hours	1/2, 1, 2, 4, & 8	Top
WM2 30/86	30°C / 86°F	25°C / 77°F	8 Hours	1, 2, 4, & 8	Top
WM2 38/100	38°C / 100°F	34°C / 93°F	8 Hours	1/2, 1, 2, 4, & 8	Top

\*Time required for the device to expend when exposed to a constant temperature of 2°C above the response temperature. The higher the exposure temperature is above the response temperature, the faster the run-out time.

\*\*Important user note, for proper performance of this time/temperature indicator, see the WarmMark2 Activation Instructions.

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