

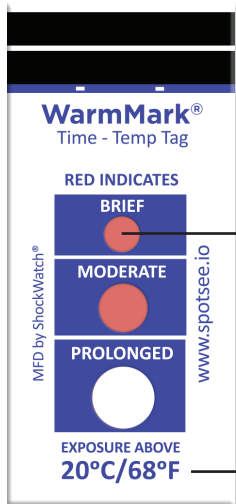
# WarmMark Data Sheet

## Specifications

<b>Indication Type</b>	Visual, irreversible white to red color change in activation window
<b>Activation Method</b>	Manual: Pull-tab
<b>Activation Temperature Levels</b>	Sensitivities available between -18°C and 37°C. See Product Selection table for details
<b>Temperature Accuracy</b>	+1°C / +2°F
<b>Run Out Time</b>	See Product Selection for details
<b>Product Life</b>	2 years from date of sale
<b>Mounting Method</b>	Pressure-sensitive adhesive (see Appendix B)
<b>Storage Conditions</b>	Store in a cool dark environment, below the response temperature of the indicator; 35-55% RH
<b>Dimensions</b>	Short-Run: 1.81 x 0.75 x 0.06in / 46 x 19 x 1.5mm Long-Run & Duo: 3.88 x 0.75 x 0.06in / 98.1 x 19 x 1.5mm

## WarmMark

WarmMark Part Number	Activation Temp	Run-Out Time*		
		Window 1 Brief	Window 2 Moderate	Window 3 Prolonged
WM -18/0	-18°C/0°F	1 hour	3 hours	12 hours
WM 0/32	0°C/32°F	2 hours	12 hours	48 hours
WM 5/41	5°C/41°F	30 minutes	2 hours	8 hours
WM 8/46	8°C/46°F	2 hours	12 hours	48 hours
WM 8/46 - 8	8°C/46°F	--	--	8 hours
WM 8/46 - 12	8°C/46°F	--	--	12 hours
WM 10/50	10°C/50°F	2 hours	12 hours	48 hours
WM 20/68	20°C/68°F	2 hours	12 hours	48 hours
WM 25/77	25°C/77°F	30 minutes	2 hours	8 hours
WM 25/77 - 8	25°C/77°F	--	--	8 hours
WM 30/86	30°C/86°F	30 minutes	2 hours	8 hours
WM 37/99	37°C/99°F	30 minutes	2 hours	8 hours

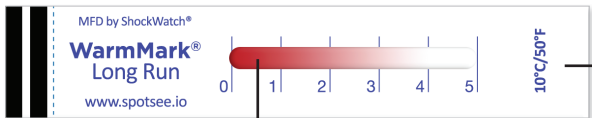


Color indicates exposure to warmer-than-acceptable conditions

Response temperature

## WarmMark Long-Run

WM Long-Run Part Number	Threshold Temp	Run-Out Time*				
		Line 1	Line 2	Line 3	Line 4	Line 5
WL 10/50	10°C/50°F	12 hours	30 hours	60 hours	110 hours	168 hours
WL 31/88	31°C/88°F	12 hours	30 hours	60 hours	110 hours	168 hours



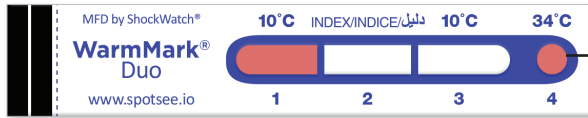
Response temperature

Color indicates exposure to warmer-than-acceptable conditions

## WarmMark Duo

WarmMark Duo Part Number	Threshold Temp	Run-Out Time*			
		Window 1	Window 2	Window 3	Window 4
WD 10-34	10°C/50°F	3 days	8 days	14 days	-
WD 10-34	34°C/93°F	-	-	-	Within 30 mins

\*Run-out times are based on a 2°C excursion above the response temperature. Readings are affected by severity of temperature excursion. Higher temperatures will cause run-out to occur faster than stated.



Provides a second indicator for higher temperature set point of 34°C (93°F)

## Pressure-Sensitive Adhesive Data

### Product Description

- High performance, acrylic pressure-sensitive adhesive (2 mil thick film) that provides excellent adhesion to most smooth surfaces
- Provides aggressive tack and high shear strength
- Excellent UV light stability and elevated temperature resistance

Physical Properties	Typical Values*
<b>Quick Tack</b> Stainless Steel	4.0 lbs./sq.in.
<b>Peel Adhesion</b> Stainless Steel - 30 minute residence	4.1 lbs./in.
<b>Shear</b> Stainless Steel - 1000 g/sq. in.@ 72°F	300+ hours to fail
<b>Thickness</b> Adhesive only	.002 inches

### Temperature Range Guidelines

**Application:** Above 10°C/50°F for best performance

**End Use:** -40°C to 121°C/-40°F to 250°F

### Chemical Resistance

Resistant to water, detergent, alcohol, aliphatic and some aromatic hydrocarbons. Not recommended for use in contact with active solvents such as ketones, esters, and some chlorinated hydrocarbons.

\*Values given are typical and are not necessarily for use in specifications. Product reinforced with 2 mil PET during adhesion tests.

## How to Mount

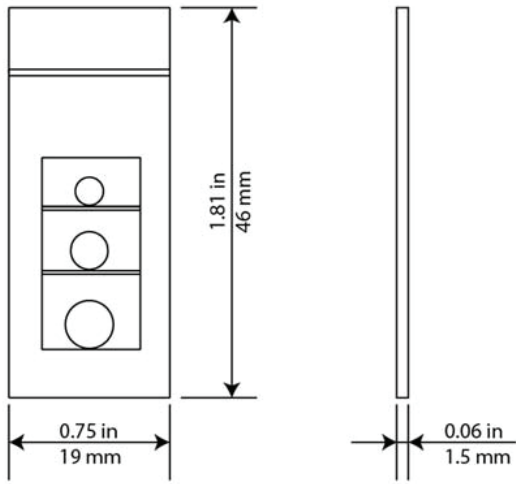
Temperature indicators are best suited for monitoring product or the controlled environment of the product.

WarmMark ascending temperature indicators are best used when mounted directly to the product being monitored or when placed inside the product shipper. Indicators should not be placed directly on gel packs, phase change materials, etc. as this will result in measuring the temperature of the packaging material components instead of the temperature of the product or environment.

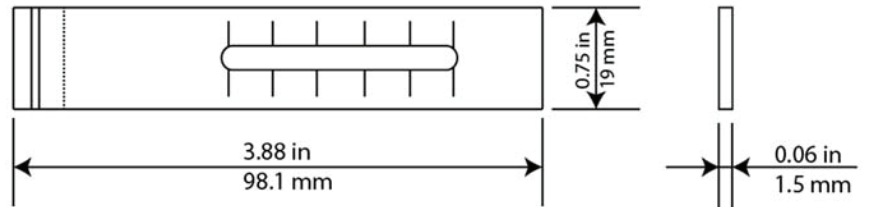
In rare cases, temperature indicators are mounted on external packaging to monitor ambient temperature conditions.

Drawings

WarmMark Short-Run



WarmMark Long-Run



WarmMark Duo

