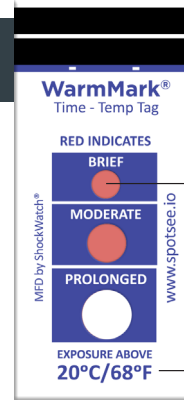


WarmMark Data Sheet

Specifications

Key Specifications

Indication Type	Visual, irreversible white to red color change in activation window
Activation Method	Manual: Pull-tab
Activation Temperature Levels	Sensitivities available between -18°C and 37°C. See product selection table for details
Temperature Accuracy	±1°C / ±2°F
Run Out Time	See product selection for details
Product Life	2 years from date of sale
Mounting Method	Pressure-sensitive adhesive (see Appendix B)
Storage Conditions	Store below the response temperature and below 55% relative humidity for optimal shelf life.
Dimensions	Mini: 0.75 X 1.08 X 0.06in / 19 X 27.4 X 1.5mm 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



Color indicates exposure to warmer-than-acceptable conditions

Response temperature

Single Window Indicators

Part Number	Temperature	Run-Out Time
WM 8/46 - 8	8°C / 46°F	8 hours
WM 8/46 - 12	8°C / 46°F	12 hours
WM 8/46 - S	8°C / 46°F	48 hours
WM 25/ 77	25°C / 77°F	8 hours
WM 26/79 - 48	26°C / 79°F	48 hours

WarmMark QR

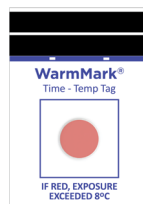
Part Number	Temperature	Run-Out Time
WM -18/0 - SQ	-18°C / 0°F	12 hours
WM 0/32 - SQ	0°C / 32°F	48 hours
WM 5/41 - SQ	5°C / 41°F	8 hours
WM 8/46 - 8Q	8°C / 46°F	8 hours
WM 8/46 - 12Q	8°C / 46°F	12 hours
WM 8/46 - SQ	8°C / 46°F	48 hours
WM 10/50 - SQ	10°C / 50°F	48 hours
WM 25/77 - SQ	25°C / 77°F	8 hours
WM 26/79 - SQ	26°C / 79°F	48 hours
WM 30/86 - SQ	30°C / 86°F	8 hours
WM 37/99 - SQ	37°C / 99°F	8 hours

WarmMark

Part Number	Temperature	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 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 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

WarmMark Mini

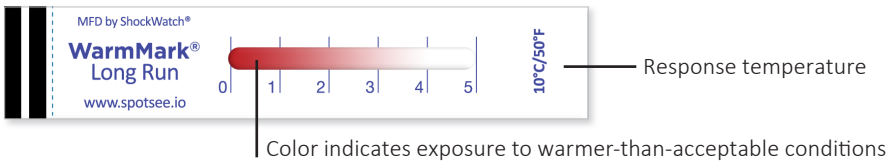
Part Number	Temperature	Run-Out Time
WM 8/46- SB	8°C / 46°F	2 hours
WM 25/77- SB	25°C / 77°F	2 hours



WarmMark Data Sheet

WarmMark Long-Run

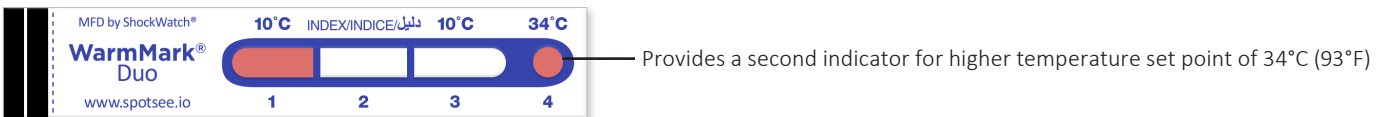
WM Long-Run Part Number	Threshold Temp	Run-Out Time*				
		Line 1	Line 2	Line 3	Line 4	Line 5
WL 10/50	10°C/50°F	12 hours	30 hours	60 hours	110 hours	168 hours
WL 31/88	31°C/88°F	12 hours	30 hours	60 hours	110 hours	168 hours



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 constant temperature 2°C above the indicator temperature threshold. Exposure to higher temperatures will result in faster run out. Brief (Window 1) and Moderate (Window 2) time figures are for guidance, while the Prolonged (Window 3 or only window) is controlled to the time specification.



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*
Quick Tack Stainless Steel	4.0 lbs./sq.in.
Peel Adhesion Stainless Steel - 30 minute residence	4.1 lbs./in.
Shear Stainless Steel - 1000 g/sq. in.@ 72°F	300+ hours to fail
Thickness 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.

WarmMark Data Sheet

How to Mount

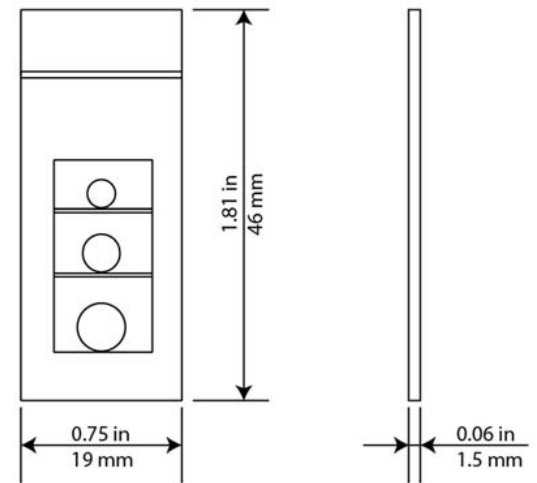
Temperature indicators are best suited for monitoring product or the controlled environment of the product.

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.

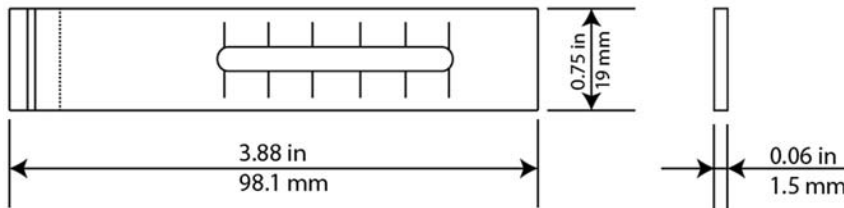
In rare cases, temperature indicators are mounted on external packaging to monitor ambient temperature conditions.

Drawings

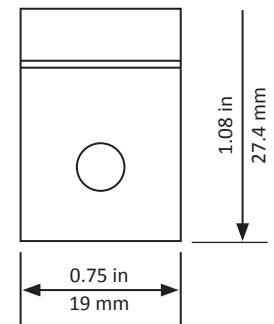
WarmMark



WarmMark Long Run



WarmMark Mini



WarmMark Duo

