

How to Use the WarmMark®

WarmMark is a single-use, ascending time-temperature indicator which alerts users of exposure to unacceptable temperature conditions.

Arming and Use: WarmMark Short Run, Long Run, Duo

- All WarmMark® breach window(s) should be white prior to arming the device.
- Before arming, the WarmMark indicator should be placed in an environment at least 5°C (9°F) below the WarmMark's activation threshold temperature for a minimum of 30 minutes.
- To arm the WarmMark indicator, fold up and pull out the indicator's activation tab until the tab and barrier film have been completely removed.
- If using a WarmMark indicator with an activation threshold temperature below the ambient temperature, immediately place the indicator in the environment to be monitored to avoid activation.
- Remove the adhesive liner from the WarmMark and adhere the indicator to a clean, dry surface.
 - The WarmMark should be located where it will be visible to the receiver of the monitored shipment.
 - The WarmMark can be adhered directly to the product being monitored or located inside the packaging.
- Any sign of color in the breach window(s) after arming, including light pink, pink, or red, is a sign of temperature excursion equal to or above the time and temperature specification.

Interpreting the WarmMark

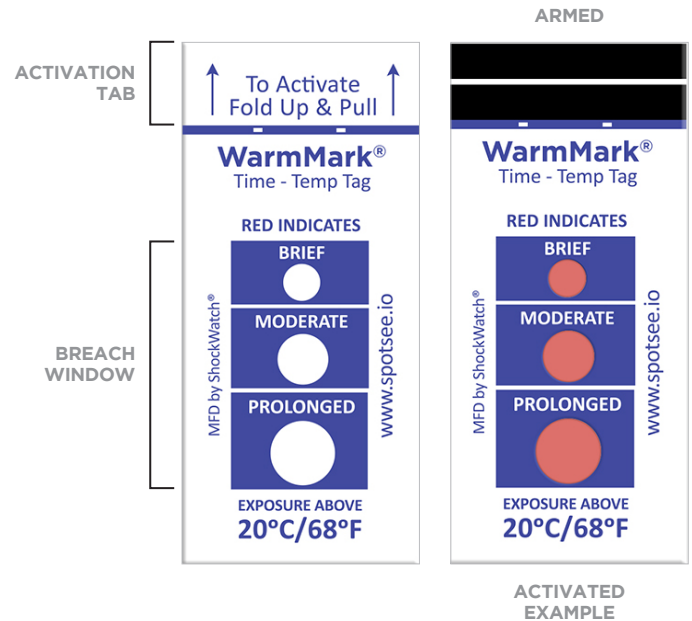
Reference #6 above. When the WarmMark is exposed to conditions above the indicator's activation temperature $\pm 1^\circ\text{C}$ ($\pm 2^\circ\text{F}$), a red dye will begin migrating through the run-out window(s).

Run-out times are based on a temperature 2°C (4°F) above the indicator threshold. If the temperature is greater than 2°C (4°F) above the activation temperature of the device, the run-out will occur faster.

Storage Recommendations

WarmMark indicators should be stored in a cool dark place below the activation temperature of the indicator and between 35-55% relative humidity (RH).

WarmMark Short Run:



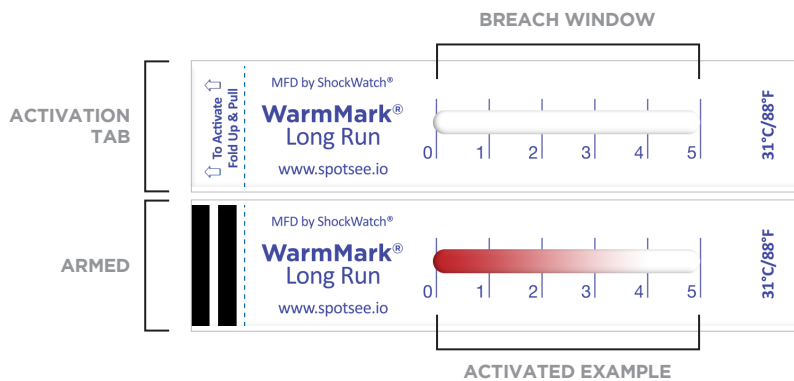
Threshold Temp	Run-Out Times		
	Brief	Moderate	Prolonged
-18°C / 0°F	1 hour	3 hours	12 hours
0°C / 32°F 8°C / 46°F 10°C / 50°F 20°C / 68°F	2 hours	12 hours	48 hours
5°C / 41°F 25°C / 77°F 30°C / 86°F 37°C / 99°F	30 minutes	2 hours	8 hours

Threshold Temp	Run-Out Times
8°C / 46°F	8 hours
8°C / 46°F	12 hours
25°C / 77°F	8 hours
25°C / 77°F	48 hours
26°C / 79°F	48 hours

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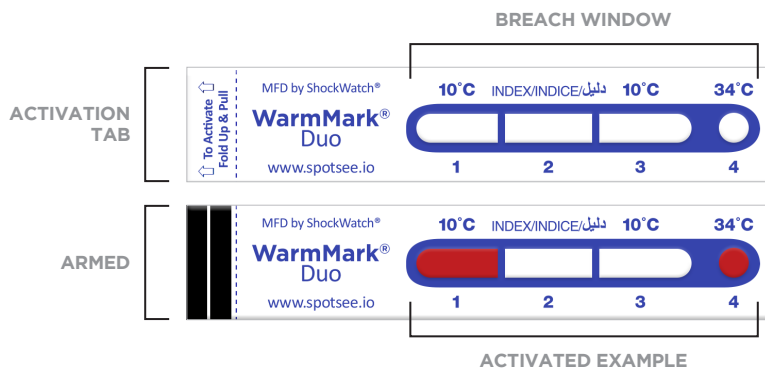
WarmMark Long Run:

Threshold Temp	Run-Out Times				
	Line 1	Line 2	Line 3	Line 4	Line 5
10°C / 50°F	12 hours	30 hours	60 hours	110 hours	168 hours
31°C / 88°F	12 hours	30 hours	60 hours	110 hours	168 hours



WarmMark Duo:

Threshold Temp	Run-Out Times			
	Window 1	Window 2	Window 3	Window 4
10°C / 50°F	3 days	8 days	14 days	-
34°C / 93°F	-	-	-	Within 30 mins



For questions or trouble shooting, please contact Technical Support at:

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