ColdMark® Temperature Indicators

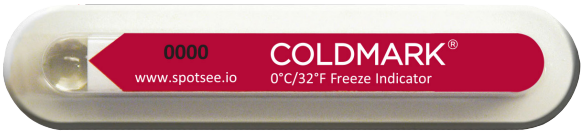
ColdMark indicators help you determine if your products have gone below an acceptable temperature. Without them, your product may be compromised from an unnoticed breach in your cold chain.

How can you be sure that unacceptable temperature during transit has not compromised your product's quality and efficacy?

Temperatures can vary dramatically during transit. The cargo hold of an aircraft can be colder than you planned. Your product may encounter unexpected delays and be stored in less than ideal conditions.

ColdMark temperature indicators provide a cost-effective tool for monitoring the temperature of your package. They are single-use devices that provide accurate, irreversible evidence of a below threshold deviation. The ColdMark turns from clear to violet when the temperature goes below a predetermined threshold.

With the information you gather from these indicators, you can make smarter decisions across your cold chain.



Unactivated

Activated

Key Specifications	
Temperature Threshold	-3°C / 26°F, 0°C / 32°F, 2°C / 36°F, 5°C / 41°F, 10°C / 50°F
Temperature Accuracy	± 1°C / ± 2°F
Storage Conditions	Unused product must be stored above activation temperature and below 43°C / 110°F
Shelf Life	2 years from date of sale

Benefits

- Delivers irreversible evidence of exposure to unacceptable temperature conditions
- Provides cost-effective solution for last mile monitoring
- Enables easy accept/reject decisions to be made
- Assists in verifying the adequacy of the cold chain packaging
- Aids in compliance with regulatory guidelines

This product contains Ethylene Glycol a chemical known to the state of California to cause birth defects or other reproductive harm. For more information go to www.p65warnings.ca.gov/product.

SpotSee®

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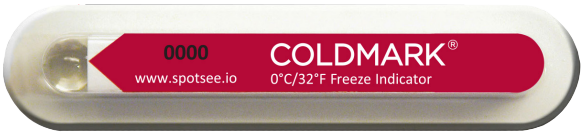
ColdMark® Data Sheet



Unactivated

Activated

Key Specifications	
Indication Type	Visual, irreversible clear to violet color change
Activation Temperature Levels	Sensitivities available between -3°C and 10°C. See Product Selection table for details.
Temperature Accuracy	+1°C / +2°F
Activation Temperature Exposure Time Period	30 minutes or less
Product Life	2 years
Mounting Method	Pressure-sensitive adhesive
Storage Conditions	Unused product must be stored above activation temperature and below 43°C / 110°F
Dimensions	3.3 x 0.8 x 0.4in / 83.82 x 20.32 x 10.16mm
Weight (Varies by Sensitivity)	3.06g

Part Number	Activation Temperature
CM -3/-26	-3°C/26°F
CM 0/32	0°C/32°F
CM 2/36	2°C/36°F
CM 5/41	5°C/41°F
CM 10/50	10°C/50°F

ColdMark should be used when monitoring products that must be maintained at temperatures above a specified temperature.

ColdMark® Data Sheet

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

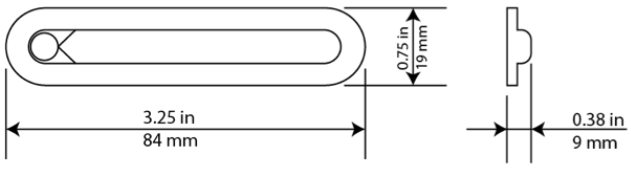
Chemical Resistance: Resistant to water, detergent, alcohol, aliphatic and some aromatic hydrocarbons. Not recommended for use in contact with active solvents such as ketones, esters, and some chlorinated hydrocarbons.

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

How to Mount

- Temperature indicators are best suited for monitoring product or the controlled environment of the product.
- ColdMark descending 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.
- In rare cases, temperature indicators are mounted on external packaging to monitor ambient temperature conditions.

Drawings



How to Use the ColdMark®

ColdMark® indicators visually alert users when a temperature breach has occurred so that the appropriate actions can be taken.

Unactivated

Activated

Using the ColdMark:

1. The ColdMark indicator bulb should appear clear prior to use. The ColdMark does not require special arming to be ready to use.
2. Remove the adhesive liner from the ColdMark and adhere the indicator to a clean, dry surface. The liner can be most easily peeled from the bulb end of the indicator.
    a. The ColdMark should be located where it will be visible to the receiver of the monitored shipment.
    b. The ColdMark can be adhered directly to the product being monitored or located inside the packaging.

Interpreting the ColdMark:

- When the ColdMark is exposed to temperatures below the stated activation temperature ±1°C*, the indicator's bulb will turn from clear to violet.
- If upon receipt the ColdMark bulb appears milky white, the ColdMark has been subjected to temperatures that caused the indicator itself to freeze. The indicator bulb will change to violet when it thaws.
- A milky white or violet bulb are both indications of a below temperature threshold breach.
- The indicator will respond in 30 minutes or less. Colder temperatures will speed the response time of the ColdMark.

Storage Recommendations:

ColdMark indicators should be stored at least 5°C / 9°F above the indicator's stated activation temperature and below 43°C / 110°F.