



ColdMark® Technical Data Sheet

Introduction

ColdMark, a single-use descending temperature indicator, is designed to help shippers identify and correct gaps in their cold chain. The ColdMark turns from clear to violet when the temperature goes below a predetermined threshold.

FEATURES
<ul style="list-style-type: none"> • Irreversible color change when temperature breach occurs • Wide variety of temperatures to accommodate customer requirements

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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 (see Appendix B)
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

Product Selection

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

Part Number	Activation Temp
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

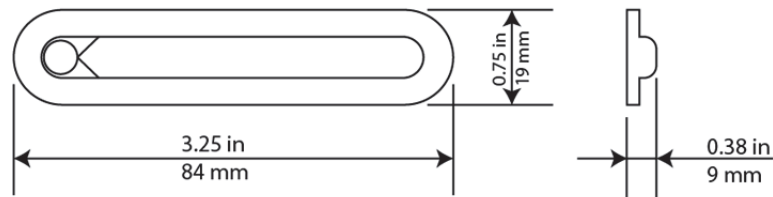
How to Mount

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



Related Products

The WarmMark family of temperature indicators is available to monitor ascending temperatures. Contact your ShockWatch Regional Manager or local distributor for more information.

Ordering Information

Part Number	Description	Minimum Order Quantity
ColdMark Temperature Indicators		
CM -3/-26	ColdMark -3C/ -26F	100
CM 0/32	ColdMark 0C / 32F	100
CM 2/36	ColdMark 2C / 36F	100
CM 5/41	ColdMark 5C / 41F	100
CM 10/50	ColdMark 10C/ 50F	100

Technical Support

If you are unsure of how to use or interpret the WarmMark, please contact ShockWatch Technical Support at (800) 527-9497 or (214) 736-4580.

Warranty

If a Product fails to conform to the specifications stated in this document, the product may be returned to ShockWatch at any time prior to the product's specified expiration date or, if no expiration date is specified, within one year from the date of shipment. ShockWatch shall either refund the purchase price (without interest), or repair and/or replace the product (or, in the case of services, re-perform such services) at no additional cost. The warranty is void if the defect has resulted from accident, misuse, abuse or misapplication. Any product which is identified as defective during the warranty period and is returned to ShockWatch with a Return Material Authorization (RMA) number (which must be obtained from ShockWatch prior to any return) within thirty (30) days after discovery of the defect with a written description of the defect will be replaced by ShockWatch.

Limitation of Liability

Seller makes no warranty, expressed or implied, except that the Products sold hereunder shall conform to Seller's written specifications for such Products as in effect and provided to Buyer by Seller at the time of sale of such Products to Buyer ("Seller's Specifications").

WARRANTY SET FORTH ABOVE IS EXCLUSIVE AND IN LIEU OF ANY AND ALL OTHER WARRANTIES, REPRESENTATIONS, AND COVENANTS, EXPRESS OR IMPLIED, STATUTORY, UNDER COMMON LAW OR OTHERWISE. EXCEPT AS PROVIDED IN THE SELLER'S TERMS & CONDITIONS, SELLER MAKES NO, AND EXPRESSLY DISCLAIMS, AND BUYER HEREBY EXPRESSLY WAIVES, IN EACH CASE TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, ANY AND ALL WARRANTIES, GUARANTEES, PROMISES, OR REPRESENTATIONS WITH RESPECT TO THE PRODUCTS, WHETHER WRITTEN, ORAL, EXPRESSED, OR IMPLIED, AND WHETHER IN FACT OR BY OPERATION OF LAW, STATUTORY, OR OTHERWISE, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR SUITABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR ANY WARRANTY OF NON-INFRINGEMENT (INCLUDING PATENT INFRINGEMENT, BOTH DIRECT AND INDIRECT, AND INCLUDING BOTH CONTRIBUTORY AND INDUCING PATENT INFRINGEMENT).

CONDITIONS, BUYER ASSUMES ALL RISK WHATSOEVER, AND SELLER (AND SELLER'S SHAREHOLDERS, DIRECTORS, MANAGERS, OFFICERS, EMPLOYEES, AND OTHER AFFILIATES (COLLECTIVELY, "SELLER'S AFFILIATES")) SHALL NOT BE LIABLE, FOR ANY LOSS, DAMAGE, OR LIABILITY INCURRED BY BUYER OR BY ANY USER OF ANY PRODUCTS ARISING OUT OF THE USE OF SUCH PRODUCTS, WHETHER SINGLY OR IN CONJUNCTION WITH ANY OTHER EQUIPMENT OR PROCESS, AND WHETHER DUE TO THE NEGLIGENCE OF SELLER OR ANY OTHER PERSON OR ENTITY. THE LIABILITY OF SELLER AND SELLER'S AFFILIATES FOR ANY FAILURE OF A PRODUCT TO CONFORM TO SELLER'S SPECIFICATIONS SHALL BE LIMITED EXCLUSIVELY TO, AT SELLER'S ELECTION, EITHER (1) REFUND OF THE PURCHASE PRICE PAID BY BUYER FOR SUCH PRODUCT (WITHOUT INTEREST) OR (2) REPAIR OR REPLACEMENT OF SUCH PRODUCT (OR, IN THE CASE OF SERVICES, REPERFORMANCE OF SUCH SERVICES). IN THE EVENT A COURT OF COMPETENT JURISDICTION SHOULD RULE THAT SELLER OR ANY OF SELLER'S AFFILIATES IS ANSWERABLE IN DAMAGES NOTWITHSTANDING THE LIMITATION OF LIABILITY SET FORTH HEREIN, THE AGGREGATE AMOUNT OF SUCH DAMAGES FOR WHICH SELLER AND SELLER'S AFFILIATES ARE LIABLE SHALL NOT EXCEED THE TOTAL OF ALL PAYMENTS MADE BY BUYER TO SELLER UNDER THE AGREEMENT WITH RESPECT TO THE RELEVANT PRODUCTS. SELLER AND SELLER'S AFFILIATES SHALL IN NO EVENT BE LIABLE TO BUYER OR ANY OTHER PERSON OR ENTITY FOR INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL, PUNITIVE, OR EXEMPLARY DAMAGES, OR FOR DIMINUTION IN VALUE, LOST PROFITS, OR LOST BUSINESS OPPORTUNITY DAMAGES OF ANY NATURE, ARISING OUT OF OR RELATING IN ANY WAY TO THE PERFORMANCE UNDER OR BREACH OF THE AGREEMENT OR THE PURCHASE OR SALE OR USE OF THE PRODUCTS.

NOTWITHSTANDING ANYTHING TO THE CONTRARY CONTAINED HEREIN, BUYER EXPRESSLY ACKNOWLEDGES THAT SELLER HAS TESTED THE PRODUCTS ONLY AS SET FORTH IN THE SELLER'S SPECIFICATIONS AND NOT FOR USE WITH OR INCORPORATION INTO ANY PARTICULAR APPLICATION, AND BUYER ASSUMES AND BEARS ALL RISK AND RESPONSIBILITY OF DETERMINING THE SUITABILITY OF THE PRODUCTS FOR THE PURPOSE INTENDED BY BUYER OR BUYER'S CUSTOMER. BUYER SHALL NOT MAKE ANY REPRESENTATION TO ANY THIRD PARTY (1) REGARDING THE RELIABILITY OR ACCURACY OF THE PRODUCTS EXCEPT AS EXPRESSLY SET FORTH IN SELLER'S SPECIFICATIONS OR (2) TO THE EFFECT THAT SELLER HAS TESTED THE PRODUCTS FOR THE USE INTENDED BY BUYER OR SUCH THIRD PARTY.

BUYER SHALL INDEMNIFY, DEFEND, AND HOLD SELLER AND SELLER'S AFFILIATES HARMLESS FROM AND AGAINST ANY AND ALL CLAIMS, DEMANDS, LOSSES, DAMAGES, RESPONSIBILITIES, OBLIGATIONS, LIABILITIES, COSTS AND EXPENSES (INCLUDING WITHOUT LIMITATION ATTORNEY FEES, COURT COSTS, COSTS OF ALTERNATIVE DISPUTE RESOLUTION PROCEEDINGS, AND COSTS OF SETTLEMENT) BROUGHT BY ANY PARTY REGARDING PRODUCTS SOLD BY SELLER AND INCORPORATED INTO OTHER ITEMS MANUFACTURED OR SOLD BY BUYER, INCLUDING BUT NOT LIMITED TO ANY CLAIM OF DIRECT OR INDIRECT PATENT INFRINGEMENT.

Appendix A – How to Use the ColdMark

How to Use the ColdMark®

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

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 $\pm 1^{\circ}\text{C}^*$, 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 $5^{\circ}\text{C} / 9^{\circ}\text{F}$ above the indicator's stated activation temperature and up to $43^{\circ}\text{C} / 110^{\circ}\text{F}$.

For more information visit www.shockwatch.com or call +1.214.736.4580, toll-free 800.527.9497

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Appendix B – Product Safety Information: ColdMark

PRODUCT AND COMPANY IDENTIFICATION

Product Name: ColdMark®
Product Use: Descending temperature indicator
Company: ShockWatch, Inc.
510 Corporate Drive
Graham, TX 76450
Phone: +1 214-736-4580

COMPOSITION/INFORMATION ON INGREDIENTS

Water, Ethylene Glycol (CAS No 107211), dyes, other components

This product contains no known hazardous or carcinogenic components at concentrations requiring reporting under OSHA 1200.

HAZARDS IDENTIFICATION

There are no known hazardous ingredients or components present.

HMS Ratings: Health; 2, Flammability: 0, Reactivity: 1, Contact: 3

Warning: Harmful if swallowed, inhaled, or absorbed through skin. May cause irritation to skin, eyes, and respiratory tract.

Routes of Entry: Skin Contact, Eye Contact

Target Organs: No organs known to be damaged from exposure to this product

Medical Conditions Aggravated by Exposure: None

Immediate (Acute) Health Effects by Route of Entry:

Inhalation Irritation - No hazard in normal industrial use
Skin Contact - Can cause minor skin irritation, defatting, and dermatitis
Skin Absorption - Possible with extended contact
Eye Contact - Can cause irritation, pain, damage
Ingestion - Since solution is sealed in glass, release may contain glass shards.

Long Term (Chronic) Health Effects:

Carcinogenicity: None of the substances have been shown to cause cancer.

Not a carcinogen according to NTP, IARC, or OSHA

Reproductive / Developmental Toxicity: Ethylene glycol has shown teratogenic effects in laboratory animals

EMERGENCY AND FIRST AID PROCEDURES

Inhalation: Remove to fresh air.

Eye Contact: Flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention.

Skin Contact: Wash with soap and water. Remove contaminated clothing and launder. Get medical attention if symptoms develop.

Ingestion: Do not induce vomiting. Seek medical attention. Glass may have been ingested with liquid.

FIRE AND EXPLOSION HAZARD DATA

Flammability Summary: Not combustible

Auto-ignition Temperature: Not Determined

Lower Explosive Limit: Not Determined

Upper Explosive Limit: Not Determined

Extinguishing Media: Not combustible. Use extinguishing media appropriate for surrounding fire.

Fire Hazards: Material will not ignite or burn except when evaporated to dryness.

Fire Fighting Instructions: Will not burn, no special instructions available. Use methods appropriate for surrounding materials.

ACCIDENTAL RELEASE MEASURES

Special Protection: No adverse health effects expected from the cleanup of spilled material.

Cleanup: Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. See Disposal Considerations section.

HANDLING AND STORAGE

Handling: No special handling instructions due to toxicity.

Storage: Store in a cool dry place. Isolate from incompatible materials. Keep from freezing. Use prior to expiration date.

EXPOSURE CONTROLS / PERSONAL PROTECTION

No engineering controls or respiratory protection required under normal conditions of use. In case of release of chemistry due to breakage, see Disposal Consideration section.

STABILITY AND REACTIVITY

Stability: Stable under normal conditions.

Conditions to Avoid: Avoid exposure to activation temperature until applied to shipping container

Chemical Incompatibility: None known

Hazardous Decomposition Products: Carbon monoxide and carbon dioxide.

TOXICOLOGICAL INFORMATION

No additional toxicology information available.

ECOLOGICAL INFORMATION

Overview (for ingredients): This product is not expected to produce significant ecotoxicity exposure to aquatic organisms and aquatic systems.

DISPOSAL CONSIDERATION

Unit volumes are so small that there are no special disposal requirements. Use safety glasses, normal industrial clothing and rubber gloves. Solids may be included in routine waste containers and liquid may be cleaned up with soap and water. Follow Federal, State and local disposal regulations.

TRANSPORTATION INFORMATION

Not regulated by DOT or IATA

Appendix C – 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.*