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Thermal Barrier Care Instructions

Introduction

This thermal barrier is capable of protecting the M.O.L.E.® Thermal Profiler for an extended time due to a special "Phase Change Material" (PCM) of which it can absorb a tremendous amount of heat without increasing in temperature. "Phase Change" is a technical way of saying "to melt" or change phase from solid to liquid, like ice melting on a hot day. The cool (pun intended) thing about any material that melts is that while it is melting, it holds its temperature at the melting point. So for ice, the temperature of the ice and water mix, as it melts remains at 0°C (32°F) until all the ice has melted, at which point the water is now free to increase in temperature to its next phase change point, the boiling point, where water goes (changes phase again) from liquid to a gas.

In this thermal barrier are stainless steel canisters of "Phase Change" (PCM) material which melts at about 33°C (91.4°F) and is called Glauber's salt, so named after Mr. Glauber who discovered it in Australian mineral water hundreds of years ago, and which had the dubious medical application as a laxative. Better known today as Sodium Sulfate Decahydrate, this salt has many industrial applications including the ability to store a lot of heat, which is why it is used in this thermal barrier.

Use Instructions

- 1) Because this salt absorbs heat while it is melting, it is critical that you remove this heat before you reuse these canisters. If fully melted, and left at room temperature, it will take between 8 and 12 hours for the material to fully release all the heat. If placed in a refrigerator, this time can be reduced to about 2 hours. The time it takes to fully cool will depend on how much of the PCM in the canister has melted during your heating process.



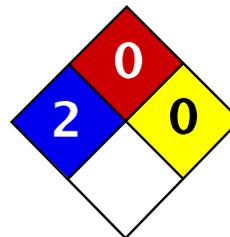
DO NOT SHORT CUT THE COOL DOWN PROCESS. Please make sure these canisters are fully cooled before reuse. Failure to do so may cause the PCM to boil at 100°C (212°F) which can cause the material to leak or rupture the canister, over heating or destroying the M.O.L.E.® Thermal Profiler.

- 2) Regularly check that the PCM bolts are "snug" to prevent PCM from leaking from the canisters.



Cleaning Instructions

Glauber's salt dissolves in water very nice so if some leaks out, it can be cleaned up with water. Refer to the MSDS data for further details on this material.



Health	2
Fire	0
Reactivity	0
Personal Protection	J

Material Safety Data Sheet

Sodium sulfate decahydrate MSDS

Section 1: Chemical Product and Company Identification

Product Name: Sodium sulfate decahydrate

Catalog Codes: SLS4138, SLS1924

CAS#: 7727-73-3

RTECS: WE1650000

TSCA: TSCA 8(b) inventory: Sodium sulfate decahydrate

CI#: Not applicable.

Synonym: Glauber's salt

Chemical Name: Sodium sulfate decahydrate

Chemical Formula: Na₂SO₄·10(H₂O)

Contact Information:

Sciencelab.com, Inc.

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:

1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Sodium sulfate decahydrate	7727-73-3	100

Toxicological Data on Ingredients: Sodium sulfate decahydrate LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects: Hazardous in case of skin contact (permeator), of eye contact (irritant), of ingestion, of inhalation.

Potential Chronic Health Effects:

CARCINOGENIC EFFECTS: Not available.

MUTAGENIC EFFECTS: Not available.

TERATOGENIC EFFECTS: Not available.

DEVELOPMENTAL TOXICITY: Not available.

Repeated or prolonged exposure is not known to aggravate medical condition.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes,

keeping eyelids open. Cold water may be used. Do not use an eye ointment. Seek medical attention.

Skin Contact:

After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Since the product can readily penetrate the protective epidermal layer and cause rashes or eczema, a good hand cream should be used after washing affected areas. Seek medical attention.

Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Serious Inhalation: Not available.

Ingestion:

Do not induce vomiting. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: Not applicable.

Explosion Hazards in Presence of Various Substances:

Risks of explosion of the product in presence of mechanical impact: Not available.

Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill:

Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill:

If the product is in its solid form: Use a shovel to put the material into a convenient waste disposal container. If the product is in its liquid form: Absorb with an inert material and put the spilled material in an appropriate waste disposal. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

Section 7: Handling and Storage

Precautions:

Do not breathe dust. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If you feel unwell, seek medical attention and show the label when possible. Avoid contact with skin and eyes. Keep away from incompatibles such as acids.

Storage:

No specific storage is required. Use shelves or cabinets sturdy enough to bear the weight of the chemicals. Be sure that it is not necessary to strain to reach materials, and that shelves are not overloaded.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection: Splash goggles. Lab coat. Gloves.

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits: Not available.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Crystals solid.)

Odor: Not available.

Taste: Not available.

Molecular Weight: 322.2 g/mole

Color: Colorless.

pH (1% soln/water): 7 [Neutral.]

Boiling Point: Decomposes. (100°C or 212°F)

Melting Point: 33°C (91.4°F)

Critical Temperature: Not available.

Specific Gravity: 1.46 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water.

Solubility:

Soluble in cold water, hot water.
Insoluble in methanol.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Reactive with acids.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: No.

Section 11: Toxicological Information

Routes of Entry: Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:

LD50: Not available.

LC50: Not available.

Chronic Effects on Humans: Not available.

Other Toxic Effects on Humans: Hazardous in case of skin contact (permeator), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Material is irritating to mucous membranes and upper respiratory tract.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are more toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information

Federal and State Regulations: TSCA 8(b) inventory: Sodium sulfate decahydrate

Other Regulations: Not available..

Other Classifications:

WHMIS (Canada): Not controlled under WHMIS (Canada).

DSCL (EEC): R36- Irritating to eyes.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 0

Reactivity: 0

Personal Protection: j

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 0

Reactivity: 0

Specific hazard:

Protective Equipment:

Gloves.

Lab coat.

Not applicable.

Splash goggles.

Section 16: Other Information

References:

-Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987.

-The Sigma-Aldrich Library of Chemical Safety Data, Edition II.

Other Special Considerations: Not available.

Created: 10/10/2005 08:28 PM

Last Updated: 10/10/2005 08:28 PM

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