

Flexsys America L.P.

Material Safety Data Sheet

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Draft Date: 2/11/00

MSDS Number: FLXP0106

SULFASAN DTDM-wgr

Section 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product: **SULFASAN DTDM-wgr**
MSDS Number: FLXP0106
Chemical Name: 4,4'-Dithiodimorpholine; Di-morpholino-disulfide
Synonyms: Sulfasan R Wax Pellets; DTDM Wax Pellets

Supplying Company: Flexsys America L.P.
260 Springside Drive
Akron, Ohio 44333 USA

**EMERGENCY NUMBERS: CHEMTREC 800-424-9300 TOLL FREE [USA and TERRITORIES]
703-527-3887 ELSEWHERE [COLLECT CALLS ACCEPTED]
CANUTEC 613-996-6666 [Canada] SETIQ 91-800-00-214 [Mexico]**

Section 2. COMPOSITION/INFORMATION ON INGREDIENTS

Component:	CAS Number:	Usage Percentage:
4,4'-Dithiodimorpholine *	103-34-4	80
Paraffin Wax *	64742-51-4	20
Morpholine *	110-91-8	<1

* This material is identified as a hazardous chemical under the criteria of OSHA Hazard Communication Standard (29 CFR 1910.1200).

Section 3. HAZARDS IDENTIFICATION

WARNING!

Emergency Overview: CAUSES EYE, SKIN AND RESPIRATORY TRACT IRRITATION
MAY CAUSE ALLERGIC SKIN REACTION
MAY REACT WITH NITROSATING AGENTS TO FORM NITROSOAMINES - SUSPECT CARCINOGENS

Potential Routes of Exposure:

Eye Contact: This material causes eye irritation.

Skin Contact: Causes skin irritation.
Prolonged or repeated exposures may cause allergic skin reactions in sensitive persons.

Inhalation: May cause respiratory tract irritation.

Ingestion: Practically non-toxic if swallowed, based upon animal data.

MARKETED BY
HARWICK STANDARD
DISTRIBUTION CORPORATION
60 S. Seiberling Street · Akron, Ohio 44305

Section 4. FIRST AID MEASURES

IN EYES: Immediately flush with water for at least fifteen minutes. Remove contact lenses if worn. Hold eyelids apart to ensure complete rinsing of entire eye surface. Get medical attention if irritation develops.

ON SKIN: Immediately flush skin with plenty of water and wash gently with soap. Remove contaminated clothing promptly. Launder clothing and clean protective equipment before reuse. Get medical attention if irritation develops.

INHALED: Remove victim to fresh air. If not breathing, begin artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

SWALLOWED: Call a physician or Poison Control Center immediately. If victim is conscious and alert, give several glasses of water to drink. Induce vomiting as directed by a medical professional. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON.

Section 5. FIRE FIGHTING MEASURES

Off-white pellets

Flash Point °F/°C: 309°F / 154°C

Autoignition Temp °F/°C: Not available /

Flash Method: Cleveland Open Cup

Extinguishing Method: Water spray, foam, dry chemical, CO2 or any Class A extinguishing agent.

Procedures and Equipment: As in any fire, prevent human exposure to fire, smoke, gases or products of combustion. Evacuate non-essential personnel from the fire area. Firefighters and other emergency responders should wear positive pressure/pressure demand self-contained breathing apparatus, impervious protective clothing and boots. If possible, move containers from the fire area. High pressure water may spread material from broken containers, increasing contamination or fire hazard. Dike fire water for later disposal. Do not allow contaminated water to enter storm sewers, watersheds or water ways. Firefighting equipment should be thoroughly decontaminated after use.

Hazardous Products: Hazardous products of combustion include carbon monoxide, oxides of nitrogen, sulfur and morpholine vapors.

Fire & Explosion Hazards: See "Hazard Products" above.

Section 6. ACCIDENTAL RELEASE MEASURES

SPILL OR LEAK:

Avoid skin contact. Avoid breathing dust. Wear a NIOSH/MSHA approved respirator, appropriate protective clothing and chemical resistant gloves.

Sweep or scoop up spilled material and transfer to an appropriate clean, dry container for reuse or disposal. Flush the spill area with water and detergent. Keep this material out of storm sewers, watersheds and waterways.

CERCLA REPORTABLE QUANTITY (RQ): Not Applicable

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Section 7. HANDLING AND STORAGE

Handling: Avoid contact with eyes, skin and clothing.
Keep away from heat, sparks and flame.
Keep container closed when not in use.
Wash exposed skin with soap and water after handling.
Use with adequate ventilation.
Empty containers retain product residue. Observe all label safeguards until container is destroyed.
Do not reuse this container for other materials.

Storage: Store closed containers in a cool, dry, well-ventilated area.
Store away from foodstuffs and animal feeds.
Store away from insoluble sulfur and strong acids.
Morpholine vapors may cause insoluble sulfur to revert to the soluble form.
On aging or heating, this material will release morpholine and turn yellow.
Avoid exposure to direct sunlight.

Section 8. EXPOSURE CONTROL/PERSONAL PROTECTION

EYE PROTECTION:

This material is slightly irritating to the eyes. Where there is a significant potential for eye contact, wear chemical goggles and have eye flushing equipment available in the immediate handling/use area.

SKIN PROTECTION:

Wear chemical resistant gloves and long sleeved clothing. Wash contaminated skin immediately and thoroughly with soap and water. Launder contaminated clothing and decontaminate protective equipment before reuse. Wash thoroughly with soap and water after handling and before eating, drinking, smoking or applying cosmetics.

ATTENTION: REPEATED OR PROLONGED CONTACT MAY CAUSE ALLERGIC SKIN REACTION IN SENSITIVE PERSONS.

RESPIRATORY PROTECTION:

Avoid breathing the dust of this material. Use NIOSH/MSHA approved respiratory protection equipment when airborne exposure is excessive. Observe all respirator use limitations specified by NIOSH/MSHA or the manufacturer. Respiratory protection programs must comply with 29 CFR 1910.134.

VENTILATION:

Provide natural or mechanical ventilation to minimize exposure. If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

AIRBORNE EXPOSURE LIMITS

Product: 4,4'-Dithiodimorpholine

OSHA PEL/8-Hr TWA: None Established

ACGIH TLV/8-Hr TWA: None Established

Component: Paraffin Wax

OSHA PEL/8-Hr TWA: 2 mg/m³ (fume)

ACGIH TLV/8-Hr TWA: 2 mg/m³ (fume)

Possible component: Morpholine

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OSHA PEL/8-hr TWA: 70 mg/m3 (20 ppm)
OSHA STEL: 105 mg/m3 (30 ppm)
ACGIH TLV/8-hr TWA: 70 mg/m3 (20 ppm)
ACGIH STEL: 105 mg/m3 (30 ppm)

Section 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Off-white pellets
Odor: Amine-like
Specific Gravity: 1.26 @ 25° C
Water Solubility: 8.2 mg/100 ml
Other Solubility: Acetone: 5.0g/100ml Naphtha: 7.5g/100ml
Density: Not available at this time.
Note: Melting Point: 115-126.0°C
Molecular Formula: C8-H16-N2-O2-S2

Section 10. STABILITY AND REACTIVITY

Stability: Thermally stable to 88°C (190°F).

Materials to avoid: Avoid contact with acids or reducing agents. Reaction with nitrosating agents may form N-nitrosomorpholine, considered to be an animal carcinogen. Storage near insoluble sulfur (Crystex) can cause reversion to soluble sulfur.

Conditions to avoid: If strongly heated this material may ignite and emit toxic vapors and gases. Under moist or acidic conditions, this material may degrade and release morpholine and polysulfides. Reaction with reducing agents may release free morpholine and hydrogen sulfide gas.

Hazardous Decomposition Products: Carbon monoxide, oxides of nitrogen and sulfur and morpholine vapors can evolve when this material is ignited.

Hazardous Polymerization: Does not occur.

Section 11. TOXICOLOGICAL INFORMATION

Target organs: Skin, eyes, respiratory system, liver

Toxicity testing has not been done on the wax pelleted form of this material. The following information is from test results on the powder form:

Oral LD50 (rat):	5600 mg/kg	Practically Non-Toxic
Dermal LD50 (rabbit):	>5010 mg/kg	Practically Non-Toxic
Eye Irritation (rabbit):	8.4/110.0	Slightly Irritating
Skin Irritation (rabbit):	0.5/8.0	Practically Non-Irritating

Skin contact and inhalation are expected to be the primary routes of exposure to this material. This material has been reported to cause eye, skin, and respiratory irritation. Skin allergies have been reported in workers.

Inhalation: Repeated inhalation studies using rats showed some clinical signs of toxicity and depressed body weight gain at very high levels.

Reproductive effects: No birth defects were noted in a study in rats. Adverse effects

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were reported in chicken embryos following direct exposure to this material.

Carcinogenicity/mutagenicity: Standard tests for genetic changes generally produced no genetic changes in animals, animal cells, yeast and bacterial cells. One positive response was observed in a test using bacterial cells.

MORPHOLINE

Certain conditions of use or storage may result in the formation of morpholine from this material. Morpholine is irritating to eyes, skin and mucous membranes and has been reported to cause lung and liver damage following repeated inhalation.

4,4'-Dithiomorpholine can react with nitrosating agents to form N-nitrosomorpholine. This chemical is listed as a substance that "may reasonably be anticipated to be carcinogenic" by the National Toxicology Program (NTP) and is classified as "possibly carcinogenic to humans" by the International Agency for Research on Cancer (IARC). N-nitrosomorpholine has been shown to cause tumors in animal studies and cause genetic changes in standard tests.

Section 12. ECOLOGICAL INFORMATION

Aquatic toxicity and environmental fate data are not available for the wax pelleted form of this material. The following results were obtained from testing the powder form:

Acute aquatic toxicity:

96-Hr LC50 Bluegill	1.6 mg/l	Moderately Toxic
96-Hr LC50 Trout	1.8 mg/l	Moderately Toxic
96-Hr LC50 Fathead Minnow	3.5 mg/l	Moderately Toxic
96-Hr EC50 Algae	29.0 mg/l	Slightly Toxic
48-Hr EC50 Daphnia Magna	4.5 mg/l	Moderately Toxic

Octanol/water partition coefficient:	310
Bioconcentration factor:	29 (calculated)
Aqueous photolysis:	half life = 3 hours

Section 13. DISPOSAL CONSIDERATIONS

When discarded, this material is not a "hazardous waste" as that term is defined in RCRA (40 CFR 261). Disposal via incineration is recommended.

Burn in an approved incinerator or landfill in a secure landfill in accordance with all applicable federal, state and local regulations.

Empty containers retain product residue. Burn in an approved incinerator or landfill in a secure landfill in accordance with all applicable federal, state and local regulations.

Section 14. TRANSPORT INFORMATION

Not regulated in transport.

Section 15. REGULATORY INFORMATION

Worldwide chemical inventory status: TSCA USA
DSL Canada
AICS Australia
EINECS Europe 203-103-0

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ENCS 5-892
ECL KE-12730

RCRA: Not Regulated
CERCLA: Not Applicable
DOT: Not Regulated

SARA Hazard Notification

Hazard Categories under Title III rules: Immediate, Delayed, Fire
Title III Section 313 Toxic Chemicals: None

FDA - Regulated For Use under the following sections of 21 CFR:
175.105 Components of Adhesives
177.2600 Articles Intended for Repeated Contact/Use with Food

Component "Morpholine" appears on the following:

WHMIS Ingredient Disclosure List (Canada)
Massachusetts Substance List
New Jersey Right-To-Know Hazardous Substance List
Pennsylvania Hazardous Substance List
Clean Air Act Section 111 Volatile Organic Compounds (VOC)

Hazard Rating	Health	Flammability	Reactivity	Other
HMIS	1	1	0	N/A
NFPA	1	1	0	N/A

Section 16. OTHER INFORMATION

Last Revision: Add CANUTEC and SETIQ phone numbers (Section 1)

FOR NON-EMERGENCY INFORMATION: FLEXSYS AMERICAS PRODUCT SAFETY (330) 668-8281

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