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INITIAL SUBMISSION: MATERIAL SAFETY DATA SHEET ON THIOFIDE VULCANIZATION ACCELERATOR WITH COVER LETTER DATED 01/10/84		
<b>Chemical Category</b>		
THIOFIDE VULCANIZATION ACCELERATOR		



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Contains No CBI  
**Monsanto**

will pay  
741-0799-00080

# 012484(14)

MONSANTO POLYMER PRODUCTS CO.  
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St. Louis, Missouri 63167  
Phone: (314) 884-1000

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January 10, 1984

Mr. Martin Greif  
Executive Secretary  
TSCA Interagency Testing Committee  
Environmental Protection Agency (TS-792)  
401 "M" Street, SW  
Washington, DC 20460

Dear Sir:

This letter is in response to the ITC listing of 2,2'-dithiobisbenzothiazole, CAS # 120-78-5, in the Federal Register of Wednesday, November 9, 1983, page 51520. Monsanto manufactures this chemical under the trade name THIOFIDE® accelerator. The chemical is also called MBTS and will be so referred to in the following statements.

Acute toxicologic effects have been investigated by Monsanto, and have been found to be relatively minor. Specifically, the oral LD<sub>50</sub> (Rats) is greater than 7940 mg/kg, or Practically Nontoxic. The acute dermal LD<sub>50</sub> (Rabbit) is also greater than 7940 mg/kg, Practically Nontoxic. Acute eye irritation (Rabbit) for MBTS is 0.6 on a scale of 110.0 (FHSA), Practically Non-irritating, and the acute skin irritation (Rabbit) is 0.0 on a scale of 8.0 (FHSA), Practically Non-irritating.

MBTS was evaluated for mutagenicity by Monsanto in the L5187TK mouse lymphoma mutation assay, which is known to be an extremely sensitive test, as well as in microbial mutagenicity assays. The microbial assays employed five strains of *Salmonella* and one yeast strain. No mutagenic effects were demonstrated with or without mammalian microsomal activation.

Human patch testing of MBTS with 53 subjects revealed no primary or cumulative irritation, nor sensitization potential.

MBTS is used as a rubber vulcanization accelerator, about equally for the production of vehicle tires, and for industrial rubber products. MBTS is chemically altered during the vulcanization process, and is chemically bound up in the rubber matrix.

Mr. Martin Greif

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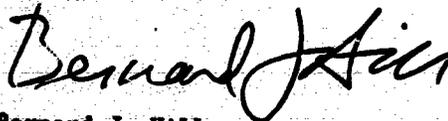
January 16, 1984

MBTS is used primarily by sophisticated manufacturers who recognize the need for an employee personal protective devices and processes designed to protect workers. The cost of MBTS is high enough to motivate manufacturers to avoid spills and conserve material for process use as much as possible.

To illustrate the extent to which rubber chemical manufacturers are informing workers about safety and handling of MBTS, enclosed is a Monsanto Material Safety Data Sheet covering this product.

Monsanto will be please to provide you with copies of toxicologic test results upon request.

Sincerely,



Bernard J. Hill  
Product Acceptability Manager  
Rubber Chemicals

Enclosure

7.958/EJ.2

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# Monsanto MATERIAL SAFETY DATA

MONSANTO PRODUCT NAME  
**THIOFIDE® VULCANIZATION  
ACCELERATOR**

MONSANTO COMPANY  
800 N. LINDBERGH BLVD.  
ST. LOUIS, MO 63167  
Emergency Phone No.  
(Call Collect)  
314-694-1000

## PRODUCT IDENTIFICATION

<b>Synonyms:</b>	Benzothiazyl Disulfide 2,2'-Dibenzothiazyl Disulfide	2,2'-Dithiobisbenzothiazole
<b>CAS No.:</b>	120-78-5	
<b>DOT Proper Shipping Name:</b>	Not Applicable	
<b>DOT Hazard Class/ I.D. No.:</b>	Not Applicable	
<b>DOT Label:</b>	Not Applicable	
<b>Hazardous Substance(s)/ RQ(s):</b>	Not Applicable	
<b>U.S. Surface Freight Classification:</b>	Rubber Accelerator, N.O.I.B.N.	

## WARNING STATEMENTS

WARNING!  
MAY CAUSE ALLERGIC SKIN REACTION

## PRECAUTIONARY MEASURES

Avoid prolonged or repeated contact with skin.  
Wash thoroughly after handling.

## EMERGENCY AND FIRST AID PROCEDURES

FIRST AID: IF ON SKIN, immediately wash with soap and plenty of water. Remove contaminated clothing. Wash clothing before reuse.

## OCCUPATIONAL CONTROL PROCEDURES

**Eye Protection:** Not required for handling this material.

**Skin Protection:** Wear impervious gloves and protective long sleeved clothing when there is potential for skin contact. Launder contaminated clothing before reuse.  
**Caution!** Repeated contact may cause allergic skin reaction.

**Respiratory Protection:** Use NIOSH approved equipment with full facepiece when airborne exposure is excessive. Consult respirator manufacturer to determine appropriate type equipment for given application.

(Occupational Control Procedures Continued On Next Page)

MATERIAL SAFETY DATA

Thiofide® Vulcanization Accelerator

# Monsanto MATERIAL SAFETY DATA

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## OCCUPATIONAL CONTROL PROCEDURES (Continued)

**Ventilation:** Provide sufficient ventilation to minimize exposure. Local exhaust ventilation preferred.

### **Airborne Exposure Limits:**

Product: 2,2'-Dibenzothiazyl disulfide wt. % 94

Although no specific exposure limit has been established for this material, OSHA and ACGIH have established limits for nuisance dusts.

OSHA PEL/TWA: Total 15 mg/m<sup>3</sup>; Respirable 5 mg/m<sup>3</sup>  
ACGIH TLV/TWA: Total 10 mg/m<sup>3</sup>; Respirable 5 mg/m<sup>3</sup>

These limits are stated only to indicate the least stringent airborne dust levels applicable to nuisance dusts. THIOFIDE® vulcanization accelerator may cause allergic skin reaction in some people at exposure concentrations below these limits.

## FIRE PROTECTION INFORMATION

**Flash Point:** 271°C **Method:** Cleveland Open Cup

**Ignition Temperature:** 360°C

**Flammable Limits:** Dust cloud explosive - 0.2 oz/ft.<sup>3</sup> of air (lcl)

**Extinguishing Media:** IN CASE OF FIRE, use water spray or other Class A extinguishing media.

**Special Firefighting Media:** Wear full protective equipment including self-contained breathing apparatus during a fire. As with any burning organic matter, nitrogen oxides, carbon monoxide, carbon dioxide and sulphur dioxide are liberated as toxic decomposition products when THIOFIDE is ignited.

## REACTIVITY DATA

Thermally stable.

**Materials To Avoid:** Reacts with oxidizing materials such as hydroperoxides; heat will be generated. May react with acids to produce toxic sulfur compound vapors.

**Hazardous Decomposition Products:** As with any burning matter, if ignited, can give off nitrogen oxides, carbon monoxide, carbon dioxide, sulfur dioxide fumes.

**Conditions To Avoid:** If strongly heated, will catch fire.

**Hazardous Polymerization:** Does not occur.

## PHYSIOLOGICAL EFFECTS SUMMARY

Oral LD<sub>50</sub> (Rats): >7,940 mg/kg, Practically Nontoxic  
Dermal LD<sub>50</sub> (Rabbit): >7,940 mg/kg, Practically Nontoxic  
Eye Irritation (Rabbit): (FHSA) 0.6 on a scale of 110.0, Practically Nonirritating  
Skin Irritation (Rabbit): (FHSA) 0.0 on a scale of 8.0, Practically Nonirritating

(Physiological Effects Summary Continued On Next Page)

Thiofide® Vulcanization Accelerator

MATERIAL SAFETY DATA

# Monsanto MATERIAL SAFETY DATA

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## PHYSIOLOGICAL EFFECTS SUMMARY (Continued)

THIOFIDE vulcanization accelerator was evaluated in the L5187TK mouse lymphoma mutation assay and in microbial mutagenicity assays. The microbial assays employed 5 strains of *Salmonella* and 1 yeast strain. No mutagenic effects were demonstrated with or without mammalian microsomal activation.

Industrial experience has suggested that some individuals may develop an allergic reaction to THIOFIDE following prolonged or repeated exposure.

## PHYSICAL DATA

<b>Appearance:</b>	Cream powder or pellets
<b>Odor:</b>	Aromatic
<b>Boiling Point @ 1 atm.:</b>	Decomposes >260°C
<b>Melting Point:</b>	160-170°C
<b>Specific Gravity @ 25°C:</b>	1.49-1.64
<b>Solubility In Water:</b>	Insoluble
<b>In Ethyl Alcohol:</b>	<0.2 g/100 ml
<b>In Diethyl Ether:</b>	<0.2 g/100 ml
<b>In Acetone:</b>	<0.5 g/200 ml
<b>pH:</b>	7.0-8.0
<b>Odor:</b>	Aromatic

**Note:** These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

## SPILL, LEAK & DISPOSAL INFORMATION

**Waste Disposal:** Dispose of in chemical landfill which complies with all local, state and federal regulations.

**Spill Or Leakage Procedures:** Vacuum or sweep up and place in clean dry container. Avoid skin contact. Wear dust mask and leather gloves.

**Containers:** Bury in chemical landfill which complies with all local, state and federal regulations.

## ADDITIONAL COMMENTS

Store in a cool place away from foodstuffs, acids and oxidizing materials.

Environmental Toxicity Information:  
96-hr LC<sub>50</sub> Fathead Minnow: >1000 ppm, Practically Nontoxic  
96-hr LC<sub>50</sub> Bluegill: 82 ppm, Slightly Toxic  
96-hr LC<sub>50</sub> Trout: 66 ppm, Slightly Toxic  
96-hr LC<sub>50</sub> Algae: 0.6-0.7 ppm, Highly Toxic  
Oral LD<sub>50</sub> Pheasants: 82 mg/kg, Highly Toxic

**DATE:** 7/30/82  
**MSDS NO.:** 000120785

**REVISED:** X

**SUPERSEDED:** 10/01/75

MATERIAL SAFETY DATA

Thiofide® Vulcanization Accelerator

# Monsanto MATERIAL SAFETY DATA

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FOR ADDITIONAL NON-EMERGENCY INFORMATION, CONTACT:

Manager, Product Acceptability  
Monsanto Polymer Products Company  
Rubber Chemicals Division  
(314) 694-1000

Thioloide® Vulkanization Accelerator

MATERIAL SAFETY DATA

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, Monsanto Company makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will Monsanto Company be responsible for damages of any nature whatsoever resulting from the use of our reliance upon Information. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.

This form has been approved by the Occupational Safety and Health Administration as "equivalent to" OSHA Form 20.

Thioloide® is a registered trademark of Monsanto Company.