MATERIAL SAFETY DATA SHEET

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

TMTD-OP
Tetramethylthiuram Disulfide (Min 96%) Oiled Powder
Special Rubber Grade (syn: Thiram, TMTD, Bis [Dimethlythiocarbamyl] Sulfide)
Product Use: Vulcanizing Agent

Company: **Taminco, Inc.**
3350 Riverwood Pkwy Suite 1900
Atlanta, Georgia 30339

MSDS Date or Preparation/Revision: June 30, 2008

For Emergencies Involving a Spill, Leak, Fire, Exposure or Accident Contact CHEMTREC (800) 424-9300
For Product Information: (800) 223-3258

SECTION 2: HAZARDS IDENTIFICATION

This product is a slightly off-white beige powder with no odor.

EMERGENCY OVERVIEW:

WARNING!
Causes eye irritation.
May be harmful if swallowed, inhaled or absorbed through the skin.
May cause skin and respiratory tract irritation.
May cause allergic skin reaction.
May cause damage to blood, liver and kidneys based on animal studies.

Not defined as flammable or combustible but will burn under fire conditions. Very high concentrations of dust in the air may present a dust explosion hazard. Do not get in eyes, on skin or on clothing. May cause systemic poisoning with symptoms of nausea, vomiting, tremor, numbness, weakness and death. Use with adequate ventilation. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash clothing before reuse. Consumption of alcoholic beverages increases the toxic effects of Thiram

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENTS	CAS NO.	WT.%
Tetramethylthiuram disulfide	137-26-8	96 minimum

Refer to Section 8 for occupational exposure limits.

SECTION 4: FIRST AID MEASURES

INGESTION: Call a poison control center or doctor immediately for treatment advice. If conscious, have the person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Never give anything by mouth to or induce vomiting in a person who is unconscious or convulsing. Get immediate medical attention.
SKIN CONTACT: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
EYE CONTACT: Hold eyes open and rinse thoroughly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing the eye. Call a poison control center or doctor for treatment advice.
INHALATION: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for treatment advice.
NOTE: Tetramethylthiuram Disulfide is the methyl analog of antabuse. Consumption of small amounts of alcohol and acute or chronic tetramethylthiuram disulfide exposure will cause similar effects as antabuse. These include palpitations, nausea, vomiting, headaches and dyspnea.

SECTION 5: FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Not defined as flammable or combustible. Product may support combustion under fire condition. Use carbon dioxide, dry chemicals, foam, water or water fog.
SPECIAL FIRE FIGHTING PROCEDURES: Evacuate area of all non-emergency personnel. Firefighters should wear full emergency equipment and NIOSH approved positive pressure self-contained breathing apparatus. Fight fire from upwind and cool exposed intact containers and structures with water spray or stream at maximum range. Decontaminate all protective equipment after use, prevent skin contact. This product is toxic to fish. Contain all water run-off with diking.
UNUSUAL FIRE AND EXPLOSION HAZARDS: Decomposition products are toxic. Very high concentrations of this product suspended in air may present an explosion hazard.

SECTION 6: ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Wear appropriate protective clothing as described in Section 8 to prevent eye and skin contact and appropriate respirator to prevent overexposure. Isolate area and keep out unprotected persons. Stop leak at source. Carefully sweep up dry spilled material and collect into labeled containers for proper disposal. If liquid, dike and absorb with inert material. This material is toxic to fish. Prevent run-off to storm sewers and ditches leading to natural waterways. Report spill as required by local and federal regulations.

SECTION 7: HANDLING and STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Protect containers from physical damage. Store in a cool, well-ventilated area away from excessive heat, oxidizers and acids. Store in original container only. Do not put concentrate or dilute material into food or drink containers. Do not contaminate water, food or feed by storage, disposal or cleaning of equipment. Prevent eye and skin contact. Do not breathe dusts, mists or aerosols. Use only with adequate ventilation and appropriate protective equipment. Carefully open containers. Immediately remove and launder contaminated clothing before re-use. Wash thoroughly after handling and before eating, drinking, smoking or using toilet facilities.

OTHER PRECAUTIONS: Keep containers tightly closed. Empty containers retain product residues and are hazardous. Follow all MSDS precautions in handling empty containers.

SECTION 8: EXPOSURE CONTROLS and PERSONAL PROTECTION

INGREDIENTS	CAS NO.	EXPOSURE LIMITS
Tetramethylthiuram disulfide	137-26-8	5 mg/m3 TWA-PEL 0.05 mg/m3 (IFV)TWA-TLV (IFV=inhalable fraction + vapor)

RESPIRATORY PROTECTION: Use NIOSH approved full face-piece respirator with organic vapor/dust/mist cartridges or supplied air respirator (with escape bottle if required) if needed. Selection of respiratory protection depends on the contaminant type, form and concentration. Select in accordance with OSHA 1910.134 and good Industrial Hygiene practice.
ENGINEERING CONTROLS: Use with appropriate local or general exhaust to maintain exposures below exposure limits.
PROTECTIVE CLOTHING: Rubber or other impervious gloves are required. Impervious apron, boots and other clothing are recommended if needed to prevent contact or if splashing is possible.
EYE PROTECTION: Chemical safety goggles or face shield required.
OTHER PROTECTIVE EQUIPMENT: For operations where contact can occur, a safety shower and an eye wash facility should be immediately available.

SECTION 9: PHYSICAL and CHEMICAL PROPERTIES

APPEARANCE AND ODOR: Slightly off-white beige powder with no odor.

BOILING POINT (@760 mmHg): Not applicable
VAPOR PRESSURE (@ 20 c mm Hg): Not applicable
VAPOR DENSITY (Air=1): Not applicable
SOLUBILITY IN WATER: Insoluble
COEFFICIENT OF WATER/OIL: 1.73
FLASH POINT: Not applicable

FREEZING POINT @ 760 mmHg): Not
SPECIFIC GRAVITY (H20=1): 0.3 kg/l
EVAPORATION RATE: Not applicable
VISCOSITY: Not applicable
pH: Not available
METHOD: Not applicable

FLAMMABLE LIMITS: (vol. % in air) 30 g/m3 as dust at 270°C **AUTOIGNITION TEMPERATURE:** Not available

SECTION 10: STABILITY and REACTIVITY

STABILITY: Stable
CONDITIONS TO AVOID: Avoid excessive heat.
INCOMPATIBILITY: Acids, oxidizers, copper.
HAZARDOUS DECOMPOSITION PRODUCTS: Decomposed by excessive heat and acids. Heating to decomposition generates carbon disulfide and oxides of carbon, nitrogen and sulfur. Acid decomposition may evolve carbon disulfide and hydrogen sulfide.
HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11: TOXICOLOGICAL INFORMATION

EYE CONTACT: May cause irritation based on a study in rabbits.
SKIN CONTACT: May cause irritation and possibly sensitization. May be slightly absorbed through the skin based on animal studies.
INHALATION: Dust may cause mucous membrane and respiratory irritation with coughing, sneezing, choking and labored breathing.
INGESTION: May cause systemic poisoning with symptoms of weakness, nausea, vomiting, diarrhea, confusion, dizziness, delirium, tremor, hallucinations, ataxia, ascending paralysis, hypothermia and peripheral neuropathy (pain, numbness and weakness of the extremities). Respiratory paralysis and death may occur.
OTHER TOXIC EFFECTS: An antabuse-like reaction with flushing, sweating, headache, weakness and hypotension may occur when ethyl alcohol (alcoholic beverages) is ingested following exposure to this material.
CARCINOGENICITY: This product is not listed as a carcinogen or suspect carcinogen by ACGIH, NTP, IARC or OSHA.
CHRONIC EFFECTS of OVEREXPOSURE: Prolonged exposure may cause raised, reddened and itching of the skin, dermatitis and thyroid gland enlargement. Thiram has been shown to cause irritation to the stomach lining, blood changes (decreased red blood cells and hemoglobin concentration) and liver and kidney damage in tests with laboratory animals. Thiram has been found to be mutagenic in some test systems and to cause adverse reproductive effects in laboratory animals.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Individuals with chronic respiratory and skin diseases may be at increased risk from exposure to this material.
TOXICOLOGY DATA:

	LD50	LC50
Tetramethylthiuram disulfide	2.6 g/kg oral rat >5 gm/kg dermal rat >2 gm/kg dermal rabbit *	4.42 mg/L/4 hr rat *

* Taminco Proprietary Study

SECTION 12: ECOLOGICAL INFORMATION

ENVIRONMENTAL PRECAUTIONS: This product is toxic to fish. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water by cleaning of equipment or disposal of equipment washwaters. Drift or runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Apply this product only as specified on this label.

Ecotoxicity Values for Thiram: LC50 Salmo (trout) 0.13 mg/L
LC50 Xenopus Laevis (amphibian) stage 47 0.017 ppm/24 hr
LD50 Redwing Blackbird oral >100 mg/kg

SECTION 13: DISPOSAL INFORMATION

WASTE DISPOSAL METHOD: Dispose in accordance with all local, state/provincial and federal regulations. . Do not reuse empty container. This product is a hazardous waste in the United States, RCRA Waste Code U244.

Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations

SECTION 14: TRANSPORTATION INFORMATION

DOT SHIPPING NAME: UN3077, Environmentally Hazardous Substance, Solid, N.O.S. (Thiram), 9, PG lll, RQ
DOT HAZARD CLASSIFICATION: Class 9 (Miscellaneous Hazardous Material)
DOT LABELS REQUIRED (49CFR 172.101): Class 9
UN NUMBER: UN3077
REPORTABLE QUANTITY: 10 lbs (4.54 kg) Product RQ = 10.4 lbs. (4.7 kg)

SECTION 15: REGULATORY INFORMATION

OSHA HAZARD CLASSIFICATION: Irritant, target organ effect, sensitizer
EPA SARA 311 HAZARD CLASSIFICATION: Acute health, chronic health
SARA TITLE 111 SECTION 313 INFORMATION: The following components are regulated under SARA Title 313

COMPONENT	CAS#	WT%
Thiram (Tetramethylthiuram disulfide)	137-26-8	96 minimum

CERCLA HAZARDOUS SUBSTANCE (40CFR116): Thiram (Tetramethylthiuram disulfide)
REPORTABLE QUANTITY: 10 lbs (4.54 kg)

EPA TSCA INVENTORY STATUS: All chemical components are listed on TSCA inventory

STATE R-T-K COMPOSITION INFORMATION

COMPONENT	CAS #	WT%	PA	NJ
Tetramethylthiuram disulfide (Thiram)	137-26-8	96 Min.	Y	Y

CALIFORNIA PROPOSITION 65 INFORMATION: This product contains no California Proposition 65 regulated chemicals.

WHMIS CLASSIFICATION: Toxic material causing other toxic effects (Class D-Subdivision 2, Subdivision B)

This MSDS has been prepared according to the criteria of the Controlled Products Regulation (CPR) and the MSDS contains all of the information required by the CPR.

SECTION 16: OTHER INFORMATION

HMIS HAZARD RATINGS: Health 2 Flammability 1 Reactivity 0
0=Minimal; I=Slight; 2=Moderate; 3=Serious; 4=Severe

DISCLAIMER: The information contained herein is accurate to the best of our knowledge. We do not suggest or guarantee that any hazards listed herein are the only ones which exist. Taminco, Inc. makes no warranty of any kind, express or implied, concerning the safe use of this material in your process or in combination with other substances. Effects can be aggravated by other materials and/or this material may aggravate or add to the effects of other materials. User has the sole responsibility to determine the suitability of the materials for any use and the manner of use contemplated. User must meet all applicable safety and health standards and regulations.

Approved By: Denise A. Deeds **Dated: 06/30/08**
Denese A. Deeds, CIH
IH&SC, Inc.

MSDS updated on 05/08/95	Revised to ANSI Standard Format
MSDS updated on 04/19/96	Section 15 - SARA 313
MSDS updated on 03/24/00	Revised Sections 4, 6, 11, 13, 15 and 16
MSDS updated on 01/05/04	Sections 2, 4, 8 and 11
MSDS updated on 02/11/08	Header: Updated address and phone number
MSDS updated on 06/25/08	Section 8: Updated exposure limits.
MSDS updated on 06/30/08	Section 1, 2, 3, 4 format changes, 8 updated exposure limits, 11 added chronic toxicity data