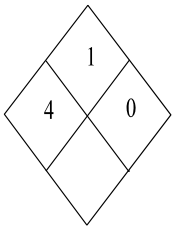
MATERIAL SAFETY DATA SHEET



1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME(S): THIMET® 20-G SOIL AND SYSTEMIC INSECTICIDE; THIMET® 20-G LOCK'n LOAD®; THIMET® 20-G SMARTBOX®; THIMET® 20-G EZ LOAD
CHEMICAL NAME (Active Ingredient): O,O-Diethyl-S-[(ethylthio)methyl]phosphorodithioate
SYNONYMS (for active ingredient): Phorate; Thimet®
GENERAL USE: Organophosphorus pesticide
PRODUCT DESCRIPTION: Beige granules
EPA Registration Number: 5481-530
MSDS No.: 338_5
Current Revision Date: 6 October, 2010

MANUFACTURER:
AMVAC CHEMICAL CORPORATION
4100 E. Washington Blvd.
Los Angeles, CA 90023-4406
Ph: 323-264-3910
FAX: 323-268-1028

EMERGENCY TELEPHONE NUMBERS:
MANUFACTURER: 323-264-3910
TRANSPORTATION (24 HOURS)
CHEMTREC: 800-424-9300
OTHER (24 HOURS)
AMVAC: 323-264-3910

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT	WT %	CAS No.
Phorate	20.0	298-02-2
Inert Ingredients (May contain clay which may contain >0.1% crystalline silica)	80.0	

OSHA HAZARDOUS COMPONENTS (29 CFR1910.1200)

COMPONENT	HAZARD	OSHA PEL*(skin)	ACGIH TLV*(skin)
PHORATE	POISON		0.05 mg/m^3 STEL: 0.2 mg/m^3
Respirable crystalline quartz (CAS No. 14808-60-7)	Carcinogen, irritation	0.1 mg/m^3	0.05 mg/m^3
Nuisance Dust, Total	Irritation	15 mg/m^3	10 mg/m^3 (Inhalable)

* Exposure Limits 8 hrs. TWA

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

DANGER! POISON! Poisonous if swallowed, inhaled or absorbed through skin. Rapidly absorbed through the skin. Inhalation or skin contact may, without symptoms, progressively increase susceptibility to PHORATE (Thimet®) poisoning. Do not swallow or get in eyes, on skin or on clothing. Do not breathe vapors.

Keep out of reach of children! Do not contaminate food or feed products.

Toxic to fish, birds and other wildlife. Do not contaminate bodies of water.

POTENTIAL HEALTH EFFECTS

ROUTE(S) OF ENTRY: Poisonous if swallowed, inhaled or absorbed through skin. Rapidly absorbed through skin. Inhalation or skin contact may, without symptoms, progressively increase susceptibility to Phorate poisoning.

SIGNS OF ACUTE OVEREXPOSURE: Symptoms include weakness, headache, tightness in chest, blurred vision, non-reactive pinpoint pupils, salivation, sweating, nausea, vomiting, diarrhea, and abdominal cramps. In extreme cases unconsciousness, convulsions, severe respiratory depression and death may occur.

SIGNS OF CHRONIC OVEREXPOSURE: Repeated exposures to small doses of Phorate (Thimet®) and other organophosphates may lower the cholinesterase to levels where the above symptoms of acute overexposure are observed.

OTHER POTENTIAL HEALTH EFFECTS: Laboratory studies have shown no carcinogenic and reproductive effects in laboratory animals.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Preexisting skin or respiratory disorders may be aggravated by exposure to components of this product. Preexisting conditions which lower cholinesterase levels increase vulnerability to cholinesterase depression. These include: (for plasma) chronic alcoholism; malnutrition; dermatomyositis; existing toxicity from exposure to carbon disulfide; benzalkonium salts, organic mercury compounds, ciguatoxins or solanines; and (for RBC) hemolytic anemia.

CARE MUST BE TAKEN WHEN HANDLING PHORATE AND ITS FORMULATIONS.

4. FIRST AID MEASURES

PHORATE (THIMET®) IS A SEVERE CHOLINESTERASE INHIBITOR. A PHYSICIAN SHOULD BE CONTACTED IN ALL CASES OF EXPOSURE TO PHORATE AND ITS FORMULATIONS. WEAR PROTECTIVE EQUIPMENT WHEN TREATING SOMEONE EXPOSED TO PHORATE TO PREVENT EXPOSURE OF THE RESCUER.

EYES: Immediately flush the eyes with copious amounts of clear, cool running water for a minimum of 15 minutes. Hold the eyelids apart during the flushing to ensure rinsing of the entire surface of the eyes and lids with water. Contact a physician immediately. If there will be a delay in getting medical attention, rinse the eyes for at least another 15 minutes.

INHALATION: Remove victim to fresh air. If breathing has ceased, clear the victim's airway and start mouth-to-mouth artificial respiration. If breathing is difficult, give oxygen. Contact a physician immediately. Be sure the contact areas are clean to prevent contamination of the rescuer.

INGESTION: Immediately dilute the swallowed product by giving large quantities of water. Induce vomiting by giving Syrup of Ipecac according to directions on the bottle or by sticking a finger down the throat. Never give anything by mouth to an unconscious or convulsing person. Contact a physician immediately. Be sure the mouth is clean or wear a rubber glove to prevent contamination of the rescuer.

SKIN: Immediately flush all affected areas with large amounts of clear water for at least 15 minutes. Remove contaminated clothing. Do not attempt to neutralize with chemical agents. Wash clothing before reuse. If skin irritation develops, contact a physician immediately.

NOTE TO PHYSICIANS: This is an Organophosphate (OP) Insecticide. Do not wait for laboratory confirmation to treat patients with strong clinical evidence of poisoning. In the USA and other countries, contact your local or national poison control center for more information.

Do Not handle the patient without the following protective equipment in place: chemical resistant gloves and apron (preferably nitrile). Remove contaminated clothing and do not reuse without thorough cleaning with detergent and hot water. Dispose of heavily contaminated clothing, including shoes, as a hazardous waste.

Establish airway and oxygenation. IV Atropine sulfate is the antidote of choice against parasympathetic nervous stimulation. If there are signs of parasympathetic stimulation, Atropine Sulfate should be injected at 10 minute intervals in doses of 1 to 2 milligrams until complete atropinization has occurred. Pralidoxime chloride (2-PAM chloride) may also be used as an effective antidote in addition to and while maintaining full atropinization. In adults, an initial dose of 1 gram of 2-PAM should be injected, preferably as an infusion, in 250 cc of saline over a 15 to 20 minute period. If this is not practical, 2-PAM may be administered slowly by intravenous injection as a 5% solution in water over not less than 2 minutes. After about an hour, a second dose of 1 gram of 2-PAM will be indicated if muscle weakness has not been relieved. For infants and children, the dose of 2-PAM is 0.25 grams. Avoid morphine, aminophylline, phenothiazine, reserpine, furosemide and ethacrynic acid. Clear chest by postural drainage. Oxygen administration may be necessary.

4. FIRST AID MEASURES, cont'd

Observe patient continuously for 48 hours. Repeated exposure to cholinesterase inhibitors may without warning cause prolonged susceptibility to very small doses of any cholinesterase inhibitor. Allow no further exposure until time for cholinesterase regeneration has been attained as determined by a blood test.
Bathe and shampoo contaminated skin and hair. If ingested, empty stomach; activated charcoal is useful to further limit absorption. If victim is alert, Syrup of Ipecac (2 tablespoons in adults, 1 tablespoon in small children) followed by water (2 glasses for adults, 1 glass for children) is indicated. If symptoms such as loss of gag reflex, convulsions, or unconsciousness occur before emesis, gastric lavage should be considered following intubation with a cuffed endotracheal tube.

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5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

Flash Point:	Not applicable
Autoignition Temperature:	278˚C (for active ingredient)
Flammable Limits:	
Lower flammable limit:	Not determined
Upper flammable limit:	Not determined
Flammability:	This is a noncombustible granule coated with an organic compound that will support fire in a direct flame (NFPA rating = 1)

EXPLOSIVITY

Mechanical Impact:	Not explosive
Static Discharge:	Will not occur

HAZARDOUS COMBUSTION PRODUCTS: Heating or burning may release highly toxic vapors or fumes. Containers exposed to intense heat from fires should be cooled with water to prevent vapor pressure buildup, which could result in container rupture.

EXTINGUISHING MEDIA: Water fog, "Alcohol" Foam, Dry Chemical, CO_2.

FIRE FIGHTING INSTRUCTIONS: Evacuate nonessential personnel to a safe area upwind of the fire. Wear self-contained breathing apparatus. Wear full protective equipment to prevent skin contact. Runoff from fire control may be a pollution hazard. Wash all equipment thoroughly with detergent and water before reuse.

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6. ACCIDENTAL RELEASE MEASURES

GENERAL: Evacuate personnel and thoroughly ventilate the area. Use adequate ventilation and appropriate personal protective equipment (PPE, Section 8). Keep bystanders upwind and away from the spill.

SMALL SPILL: Sweep or shovel into an open drum. Decontaminate the area and equipment with dilute alkali or ammonia (less than 5% solution) and detergent. Absorb and sweep into the same open drum. Rinse with water, absorb, and add to the waste drum. Close the drum and dispose of properly, according to hazardous waste disposal procedures for your locality.

6. ACCIDENTAL RELEASE MEASURES, cont'd

LARGE SPILL: Dike the spill to prevent contamination of local water sources. Sweep, vacuum, or shovel the spilled granules into drums for use or disposal, depending on the circumstances. Clean the area as described for a small spill.

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7. HANDLING AND STORAGE

HANDLING: Avoid exposure to dust and vapors by wearing appropriate personal protective equipment (PPE, section 8) and adequate ventilation. Always wash hands, face, and arms with soap and water before smoking, eating, drinking, or going to the toilet.

STORAGE: Store in the original container in a secure, temperate, dry place. Keep away from heat and open flame. Do not contaminate water, food, or feed. Do not contaminate bodies of water.

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Ventilation should be sufficient to keep exposures to vapors below the TLV for Phorate. Use of mechanical or local exhaust systems are recommended.

RESPIRATORY PROTECTION: When respiratory protection is required, or concentrations may exceed the PEL, use a NIOSH/MSHA approved air-purifying respirator equipped with organic vapor cartridges or canisters. It is recommended that the canisters be changed whenever breakthrough occurs or eight (8) hours of use has occurred, whichever comes first. For emergency and other conditions where the exposure limit may be greatly exceeded, use an approved positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply.

SKIN PROTECTION: Prevent skin contact. Chemical resistant gloves(preferably nitrile), coveralls or long-sleeved shirt and pants, and chemical resistant shoes or boots, are necessary to prevent skin contamination. A chemical resistant apron or chemical resistant clothing will provide additional protection when there is a risk of spillage or splashing. Remove contaminated clothing as soon as possible. Wash dirty or contaminated clothing separately from other clothes. Wear clean clothes daily. Wash well with soap and water after handling this product. See the label for more specific instructions.

EYE PROTECTION: Safety glasses should be worn whenever working with chemicals. In addition, goggles or a faceshield are required if there is a chance of splashing.

OTHER PROTECTION: There should be an eyewash station and a safety shower in the work area.

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9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	Solid
APPEARANCE:	Beige granule
ODOR:	Skunk-like
ODOR THRESHOLD:	Not available
BOILING POINT:	38-45˚C @ 0.005 mm Hg
FREEZING/MELTING POINT:	Not available
DENSITY:	50-60 lb/ft^3
VAPOR PRESSURE:	6.4 x 10^{-4} torr @ 25˚C (a.i.)
VAPOR DENSITY:	Heavier than air
PERCENT VOLATILE BY VOL:	Not available
SOLUBILITY (Water):	Negligible
SOLUBILITY (Other):	The active ingredient is miscible in aromatic and aliphatic hydrocarbons, alcohols, ketones, ethers, esters, chlorinated solvents and vegetable oils
PARTITION COEFFICIENT (O/W):	8410 (K_{ow}) (a.i.)
pH:	4-7, depending on carrier
REACTIVITY WITH WATER:	Slowly decomposes (hydrolysis) over several days (a.i)
EVAPORATION RATE:	Not available

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY (Conditions to avoid): Stable at normal temperatures and storage conditions. Decomposes on prolonged heating at 120˚C (248˚F) or higher. The autoignition temperature is 278˚C.

INCOMPATIBILITY: Strong oxidizers, strong acids, and strongly alkaline materials.

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition products may include but are not limited to hydrogen sulfide, mercaptans (including methyl mercaptan), thiophosphates, dialkylsulfides (including dimethylsulfide) and non-specified oxides of carbon, phosphorus, and sulfur.

HAZARDOUS POLYMERIZATION: This product will not polymerize.

11. TOXICOLOGICAL INFORMATION

INGESTION:	Oral LD_{50} (rat):	13.5/5.1 mg/kg (male/female)
INHALATION:	Inhalation LC_{50} (rat):	0.06/0.011 mg/L (male/female, 1 hr, for a.i. only)
DERMAL:	Skin LD_{50} (rabbit):	113/86/67 mg/kg (male/female/combined)
IRRITATION:	Eye irritation (rabbit):	Irritating
	Skin irritation (rabbit):	Not available
SENSITIZATION:	Skin sensitization: (guinea pig)	Not available

11. TOXICOLOGICAL INFORMATION, cont'd

TERATOGENICITY: Testing of Technical Phorate showed no evidence of teratogenicity in laboratory animals.

MUTAGENICITY: Phorate is not considered to be mutagenic.

CARCINOGENICITY: Phorate is not classified as carcinogenic by EPA, NTP, OSHA, ACGIH, or IARC.

REPRODUCTIVE TOXICITY: Phorate has not shown any reproductive effects in laboratory animals.

TOXICOLOGICAL SYNERGISTIC PRODUCTS: No data are available.

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12. ECOLOGICAL INFORMATION

GENERAL: This product is highly toxic to fish and wildlife. Keep out of surface waters, sewers, and waterways entering or leading to surface waters. Notify authorities if any exposure to the general public or environment occurs or is likely to occur.

SPECIFIC RESULTS: The following information is for Technical Phorate.

Rainbow Trout, 96 hr LC_{50}	0.045 mg/L
Bluegill Sunfish, 96 hr LC_{50}	0.012 mg/L
Catfish 96 hr LC_{50}	2.2 mg/L
Sheephead minnow 96 hr LC_{50}	0.0082 mg/L
Daphnia magna, 48 hr EC_{50}	0.031 mg/L
Mayfly nymphs, 96 hr LC_{50}	0.065 mg/L
Paratanytarsus parhenogenical larvae, 48 hr EC_{50}	0.041 mg/L

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13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture or rinsate is a violation of Federal law. If these wastes cannot be disposed by use according to label instructions, contact your nearest State Pesticide or Environmental Control Agency, the Hazardous Waste representative at the nearest EPA regional office or national equivalent to these agencies, for guidance. Open dumping is prohibited.

CONTAINER DISPOSAL: Empty LOCK'n LOAD containers and empty SMARTBOX® containers should be returned to the point of purchase. DO NOT attempt to open the SMARTBOX® container. Empty EZ LOAD containers should be disposed according to the current regulations applicable for hazardous materials. Contact your nearest State Pesticide or Environmental Control Agency, the Hazardous Waste representative at the nearest EPA regional office or national equivalent to these agencies, for guidance. Open dumping is prohibited.

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14. TRANSPORTATION INFORMATION

DOT CLASS:	6.1
UN NUMBER:	2783
IMDG CLASS (sea):	6.1
IATA CLASS (air):	6.1
MARINE POLLUTANT:	Yes (Severe)
PACKING GROUP:	II (See Note below)
HAZARD LABEL(s):	TOXIC
ADR CLASS (road):	6.1
PROPER SHIPPING NAME(S):	Organophosphorus pesticide(s), solid, toxic, (Phorate)
REPORTABLE QUANTITY: (DOT, 172.101, Appendix A)	Yes (10 lbs Phorate/50 lbs Product)

PACKAGING

GENERAL DESCRIPTION:	LOCK'n LOAD Containers (40 lb, 20 kg); Bag in a Box (15 kg); SMARTBOX® Containers (50 lb); EZ LOAD Containers (40 lb)

Note: The packing group of II is based on the fact that this product will not meet the dust criteria found in DOT, 173.132(b)(3) and therefore the LC_{50} is not applicable for shipping purposes.

15. REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS: This product is registered under EPA/FIFRA Regulations as a RESTRICTED USE PESTICIDE. It is a violation of Federal Law to use this product in any manner inconsistent with its labeling. Read and follow all label directions. This product is excluded from listing requirements under EPA/TSCA.

SARA TITLE III DATA

Section 311 & 312 Hazard Categories:

Immediate Health Hazard:	Yes
Delayed Health Hazard:	Yes
Fire Hazard:	No
Reactive Hazard:	No
Sudden Pressure Release Hazard:	No

Section 302 Extremely Hazardous Substances: Phorate (CAS No. 298-02-2)
TPQ - 10 lbs; Product - 50 lbs

Section 313 Toxic Chemicals: None

CERCLA Reportable Quantity (RQ): Phorate (CAS No. 298-02-2) - 10 lbs; Product - 50 lbs

EPCRA Threshold Planning Quantity (TPQ): Phorate (CAS No. 298-02-2)
TPQ - 10 lbs; Product - 50 lbs

STATE REGULATIONS:

CALIFORNIA (Proposition 65): This product contains a chemical known to the state of California to be carcinogenic: Crystalline silica.

16. OTHER INFORMATION

MSDS STATUS:

Date This Revision: 6 October, 2010
Date Previous Revision: 11 September, 2007
Person Responsible for Preparation: Gary A. Braden

REASONS FOR REVISION: Annual Review. Grammar and word selection changes were made throughout to make the MSDS easier to read. A product name was updated in section 1. The typical packaging was updated in section 14.

DISCLAIMER: This information is provided for the limited guidance to the user. While AMVAC believes that the information is, as of the date hereof, reliable, it is the user's responsibility to determine the suitability of the information for its purposes. The user is advised not to construe the information as absolutely complete since additional information may be necessary or desirable when particular, exceptional, or variable conditions or circumstances exist (like combinations with other materials), or because of applicable regulations. No express or implied warranty of merchantability or fitness for a particular purpose or otherwise is made hereunder with respect to the information or the product to which the information relates.

ABBREVIATIONS:

ACGIH	-	American Conference of Governmental Industrial Hygienists
ADR	-	European Agreement Concerning the International Carriage of Dangerous Goods by Road
CERCLA	-	Comprehensive Environmental Response, Compensation, and Liability Act
DOT	-	Department of Transportation
EHS	-	Extremely Hazardous Substances
EPA	-	Environmental Protection Agency
EPCRA	-	Emergency Planning and Community Right-to-Know Act
FIFRA	-	Federal Insecticide, Fungicide, and Rodenticide Act
IARC	-	International Agency for Research on Cancer
IATA	-	International Air Transport Association
IMDG	-	International Maritime Dangerous Goods
NTP	-	National Toxicology Program
OSHA	-	Occupational Safety and Health Agency
SARA	-	Superfund Amendments and Reauthorization Act
TSCA	-	Toxic Substances Control Act