Transportation Guide

Paladin® Soil Fumigant

This guide is to provide information on the PALADIN® Soil Fumigant (dimethyl disulfide) product for shipments made within the United States. The information provided describes the practices and equipment that have been identified as suitable for transporting the product. The guidelines provided are offered related to current transportation regulations.

The guide is not intended and should not be considered as legal advice and should not be used as a replacement for proper assignment for transportation. Your use, handling, and shipment of this product must be assessed to include conditions relating to your unique location conditions and parameters. In addition, all applicable local, State, and Federal regulation and code compliance are the responsibility of the shipper.

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General Transport Requirements

- Ship PALADIN® Soil Fumigant in steel or stainless steel containers. Steel and stainless steel are preferred materials for valves and fittings. PALADIN® will corrode brass and other copper alloys over time. Use fluoropolymer (PTFE, PFA or PVDF) hoses (with steel or stainless steel overbraid if pressurized) to transfer PALADIN®.
- Non-fluoropolymer plastic materials are not recommended as they may dissolve or swell upon contact.
- PALADIN® Soil Fumigant produces a strong exothermic reaction with oxidizers, do not transport near or with oxidizers.

PALADIN® Soil Fumigant is FLAMMABLE – Store in a well-ventilated area away from heat and sources of ignition such as flame, sparks and static electricity. Ensure that all storage and handling equipment is properly rated, grounded and installed to satisfy electrical classification requirements. Static electricity may accumulate and create a fire hazard. All storage containers must be bonded and grounded during filling operations. Store away from oxidizers and reactive materials. Keep container tightly closed. Precautions must be taken to prevent ignition of flammable vapors when/where present by sources such as open flames, lightning, hot surfaces, radiant heat, smoking, cutting and welding, spontaneous ignition, frictional heat or sparks, static electricity, electrical sparks, stray currents, ovens, furnaces, and heating equipment. Observe all federal, state and local regulations and National Fire Prevention Association (NFPA) Codes which

Emergency Response Information

ARKEMA INC. IS A MEMBER OF CHEMTREC. IN THE EVENT OF A TRANSPORTATION EMERGENCY INVOLVING ARKEMA INC. PRODUCT, IMMEDIATELY CALL CHEMTREC AT 800.424.9300.

(CHEMTREC is a 24/7 resource that coordinates and communicates a broad range of critical information that may be needed by emergency responders in mitigating a hazardous material related incident.)

IN THE EVENT OF POISONING, CONTACT THE ROCKY MOUNTAIN POISON CONTROL CENTER AT 866.767.5089.

Carriers/transporters must have a written emergency response plan in place prior to any movement of product.

Always consult MSDS and label prior to handling.

PALADIN® SOIL FUMIGANT

pertain to the specific local conditions of storage and use, including OSHA 29 CFR 1910.106 and NFPA 30, 55, 70, 77 and 497.

- Observe proper grounding procedures in transit.
- All containers must comply with DOT regulations and any other applicable Federal, state, or local regulations.
- Containers must be thoroughly cleaned, dry and free of any dust or contaminants prior to filling.
- Any transfer equipment must comply with NFPA* flammable liquid requirements.

*NFPA – National Fire Protection Association

Cylinders (Use Carbon Steel or 304 SS Cylinders)

1. Cylinders must comply with current Federal, State, and local regulations including DOT, EPA, and OSHA for use and transportation within the US.
2. Cylinders must meet all testing requirements i.e. test pressure, marking, test confirmation documentation, etc.
3. Cylinders must be inspected and confirmed to be free and clean of contaminants prior to filling or refilling.
4. Dedicated cylinders must be used for the primary formulations. Non-dedicated cylinders may be used for secondary mixing. When non-dedicated cylinders are used for secondary mixing, **ALL** cylinders used for these processes **MUST** be properly cleaned and meet the requirements listed.
5. Cylinder storage must be in an area as designated by local and State requirements.
6. Connections must have closed end couplers and made of material that is compatible with product.
7. Make certain to bond and ground cylinders during filling or when performing product transfers.
8. Make certain adequate ventilation is available.
9. Emergency shut off must be available when filling or transfer of product into cylinders.
10. Do not fill cylinders in areas near open flame or other ignition sources.

11. Never leave the cylinder when filling or product transfer is in progress.

12. Do not overfill cylinders.

13. Make certain all individuals associated with filling or product transfer and handling of this material in cylinders have received proper training and have current certifications, as applicable.

FILLING OR PRODUCT TRANSFER OF PALADIN® OR PALADIN® EC SOIL FUMIGANT IN CYLINDERS IS TO BE HANDLED BY PROPERLY TRAINED AND CERTIFIED INDIVIDUALS

1. Emergency procedures must be in place and known to all individuals involved in the filling/transfer process.

2. Always use appropriate PPE. See MSDS for PPE requirements.

3. Never leave the fill process unattended.

4. Do not use compressed air, air compressor or oxygen to remove PALADIN® Soil Fumigant from the cylinder.

USE NITROGEN ONLY

5. The proper filling weights/amounts in the cylinder are: 10% headspace.

6. Site-specific filling requirements must be developed to adequately address any issues unique to the location.

7. Valves must be open on the fill lines.

8. Vapor exchange valve(s) on the cylinder and on the fill lines must be open.

9. Cylinder must be placed on the scale and properly grounded prior to any filling or transfer activity.

10. The target filling weight for the cylinder must be identified and a manual shut off valve must be present to avoid overfilling and to ensure product fill/transfer can be halted in the event of an emergency.

11. Start the pump to begin process.

12. Monitor flow and weight of cylinder continually to avoid potential for overfilling.

13. Once fill weight has been reached stop pump and close fill valves-closing fill valve first and container valve as target weight is reached.

14. Always use nitrogen displacement and proper fittings.

15. Record information regarding container weight and date as required.

16. Pressure transfer from a tank with nitrogen pressure. The vapor return from the cylinder that is filling needs to be scrubbed or flared.

CYLINDER RETURN:

(ALSO SEE PALADIN® SOIL FUMIGANT RETURN INSTRUCTIONS)

- Ensure all valves are closed.
- Ensure no product residue or other contaminants are present on the outside of the cylinder.
- Ensure appropriate DOT labels are attached to the cylinder (Labels must be unobstructed and legible).
- Ensure all required markings are placed on the cylinder.
- Ensure all documentation associated with the cylinder return is properly completed.
- Ensure all required DOT regulations relating to the cylinder and its contents have been met.
- Ensure individuals handling the activities associated with the cylinder return have current DOT certification.

PALADIN®
SOIL FUMIGANT

Shipping Descriptions

FOR ALL PACKAGE SIZES

The transportation classification associated with the product carries a Flammable primary label and Poison/Toxic secondary label.

The proper shipping description for this domestic ground transportation of this material is:

UN2381; Dimethyl disulfide, 3(6.1), PG II

- AIR Transportation of this material is **not authorized.**
- Subsidiary (6.1) included as per MSDS and required by 49CFR §172.402(a).

Placarding and Labeling Requirements

VEHICLE PLACARDING REQUIREMENTS:

Flammable placard and Toxic placard, as required under 49 CFR 172.504.

NOTE: If other hazardous materials are transported on the same vehicle as the material the placarding requirements need to be considered for other materials if they are considered DOT hazardous materials. All DOT requirements regarding placarding, container size and amount of hazardous materials present must be reviewed and addressed prior to transport. It is the responsibility of the individuals loading the vehicle and the carrier to comply with all applicable vehicle placarding requirements.

LABELING REQUIREMENTS

Product labels are required to be placed on each container.

This product has a primary hazard of Flammable and a subsidiary hazard of Toxic. The applicable DOT hazard labels that are required to be placed on each container are the Flammable diamond and the Toxic diamond. The diamonds' display and placement must meet the requirements of current DOT regulations.

All labels or markings required for cylinders relating to manufacture, inspection, and testing must be present on the container prior to shipment.

Department of Transportation regulations require documentation, labeling, marking, placarding, and package authorization for all regulated materials. The responsibility for compliance with the requirements must be met by the location filling, labeling, and preparing the documentation and by anyone who offers for transport or ships regulated materials.

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