



PALADIN[®]

Storage and Handling Guide

This guide is to provide information on the product for storage and handling of containers within the United States. The information provided describes the practices and equipment that have been identified as suitable for the product. The guidelines provided are offered related to current domestic regulations.

The guide is not intended and should not be considered as legal advice and should not be used as a replacement for applicable storage and handling within your control. Your handling and storage 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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Emergency Response Information

A written emergency response plan should be in place to ensure proper and safe response in the event of an incident during the handling or storage of this product.

Arkema Inc. is a member of Chemtrec. In the event of an emergency involving an Arkema 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.

Always consult MSDS and label prior to handling product.

General Storage and Handling Requirements

- **Ship PALADIN[®] 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[®] produces a strong exothermic reaction with oxidizers, do not transport near or with oxidizers.**
- **PALADIN[®] 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 pertain to the specific local conditions of storage and use, including OSHA 29 CFR 1910.106 and NFPA 30, 55, 70, 77 and 497.**
- **Ensure handling of this material is limited to those authorized individuals who have been trained on the hazards and potential hazards associated with this material.**
- **Employ proper protective equipment for individuals handling this material or containers filled with this material.**
- **All containers must be grounded and bonded during product transfer.**
- **Storage of PALADIN[®] filled containers must comply with DOT, NFPA*, and any other applicable regulations regarding storage of flammable materials.**
- **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.**
- **Adequate ventilation must be available during product transfer.**
- **Store only in areas that are authorized for flammable material storage.**

*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 transferring 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. Avoid overfilling 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 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. Never leave the fill process unattended.
3. Do not use compressed air, air compressor or oxygen to remove PALADIN® from the cylinder, USE NITROGEN ONLY.
4. The proper filling weights/amounts* in the cylinder are: 10% headspace
*Material must meet cylinder filling limits and must not completely fill the cylinder
5. Site-specific filling requirements must be developed to adequately address any issues unique to the location.
6. Valves must be open on the fill lines.
7. Vapor exchange valve(s) on the cylinder and on the fill lines must be open.
8. Cylinder must be placed on the scale and properly grounded prior to any filling or transfer activity.
9. 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.
10. Start the pump to begin process.
11. Monitor flow and weight of cylinder continually to avoid potential for overfilling.
12. Once fill weight has been reached stop pump and close fill valves- closing fill valve first and container valve as target weight is reached.
13. Always use nitrogen displacement and proper fittings.
14. Record information regarding container weight and date as required.
15. 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

Return used cylinders to the place of purchase, as directed on the container or by the container supplier/distributor. Cylinders must never be refilled by the consumer or used for any other purpose.

- 1) The valve protection bonnet and safety cap must be removed only when fumigant is about to be removed from the cylinder. The safety cap and valve protection bonnet must be replaced when cylinder is not in use.**
- 2) Cylinders must never be subjected to rough handling or to abnormal mechanical shock such as dropping, bumping, dragging or sliding.**
- 3) Ropes, slings, hooks, tongs and similar handling devices must not be used for unloading cylinders.**
- 4) A suitable hand truck, fork truck, or similar device to which cylinders can be firmly secured must be used for transporting the heavier cylinders. If cylinder retains any unused material and there are no further requirements for the product, contact the distributor representative for return instructions.**
- 5) Ensure all valves are closed.**
- 6) Ensure no product residue or other contaminants are present on the outside of the cylinder.**
- 7) Ensure appropriate DOT labels are attached to the cylinder (Labels must be unobstructed and legible)**
- 8) Ensure all required markings are placed on the cylinder**
- 9) Ensure all documentation associated with the cylinder return is completed**
- 10) Ensure all required DOT regulations relating to the cylinder and its contents have been met**
- 11) Ensure individuals handling the activities associated with the cylinder return have current DOT certification.**

Cylinder Storage

- 1. Cylinders must be stored in compliance with NFPA requirements, and any other applicable regulations, for flammable liquids.**
- 2. Store in an area designated for cylinders.** Store only in areas that are authorized for flammable material storage. **Store in well-ventilated area away from heat and sources of ignition such as flame, sparks, and static electricity**
- 3. Make certain cylinder tops are closed and cylinder remains in an upright position during storage.**
- 4. Individuals responsible for storage of this flammable material must have current HAZMAT training and certification.**
- 5. Information relating to the potential hazards associated with this material must be readily available to off-site emergency response personnel.**
- 6. Store only in original containers.**

Cylinder Security

- Proper steps need to be in place to ensure that cylinders are properly and securely stored.**
- Limit access to only those individuals who have authorization to handle the cylinders.**
- Have written steps in place to confirm cylinder location and condition at all times.**
- Those locations which meet DOT requirements of 49 CFR 172.800 & 173.802 must have written security plans in place.**