



Equipment Guidelines for Rail Car Deliveries of MDI, TDI and Polyols

This checklist has been developed as part of Covestro's Product Safety First program to provide guidelines and requirements for unloading rail car quantities of MDI, TDI and polyol products.

The information furnished is not all-inclusive. However, it is intended to provide a fundamental starting point for new bulk installations and to determine whether an existing facility meets the minimum standards established by Covestro.

It is the responsibility of the receiving site to ensure compliance with all applicable local, state and federal regulations. References to specific regulations are for receiving sites within the United States. In addition to safely manufacturing and delivering quality products, Covestro provides valuable support and services to its customers. Our coordinated staff of technical, research and application development specialists works directly with systems suppliers, converters, distributors and endproduct manufacturers to assist in the safe handling of Covestro products.

Covestro's Transport & Logistics Safety Department promotes the safe handling and distribution of Covestro products by assisting customers with equipment guidelines and requirements, and well as best practices for receiving, unloading, storing and handling these materials. On site consultations are conducted to promote worker safety and to assist with regulatory compliance.



Equipment Guidelines for Rail Car Deliveries of MDI, TDI and Polyols

RAIL CAR UNLOADING AREA

| MDI & TDI | Polyols | Covestro Requirement Best Industry Practice |
|--|--|--|
| | | |
| | | DOT Haz-Mat Shipper registration for regulated materials (49 CFR 107.601 – 620) |
| ~ | ~ | Suitable location for unloading site |
| × | | Ties, rails and track ballast must be in good condition |
| • | • | Rail stop at end of track spur |
| • | • | Impervious spill containment |
| • | • | Access platform with retractable ramp to top of car |
| × | | Wheel chocks, rail warning flag and derail (49 CFR 173.31(g)) |
| | ✓ | Safety shower and eye wash |
| • | • | Fire extinguisher (as per specific SDS) |
| • | ٠ | Communications access (radio, telephone) |
| × | | Access to spill cleanup materials (as per specific SDS) |
| ✓ | | Written procedures covering receiving, heating, unloading and returning rail car |
| Image: A set of the set of the | ~ | Trained personnel – product, equipment, process and procedures |
| ✓ | | DOT training for regulated materials (49 CFR 172.700 – 704) |
| Image: A second s | ~ | Appropriate personal protective equipment utilized (as per specific SDS) |
| Image: A set of the set of the | | All fittings, piping, valves and tanks clearly identified |
| ✓ | ~ | Piping material to be constructed of carbon steel or stainless steel |
| • | • | Flanged, welded pipe connections |
| ✓ | ~ | Piping traced, insulated and jacketed as necessary for temperature control |
| • | | 2-inch hoses, connections and piping |
| | • | 3-inch hoses, connections and piping |
| • | • | 2-inch hoses, connections and piping for vapor return |
| ✓ | • | Top unloading |
| | • | Bottom unloading |
| • | • | Unloading hose/piping at level where connection to car is made |
| • | • | Vapor hose and air/nitrogen hose connections at top platform level |
| ✓ | ✓ | Suitable storage for unloading hose, vapor hose and unloading fittings |
| | Image: A second s | Hose inspection program |
| ✓ | ✓ | Isolation valve as close as possible to unloading hose connection |
| • | • | Check valve on storage tank side of unloading hose connection |
| • | • | Drain/vent valve between first isolation valve and unloading hose connection |
| ~ | ✓ | Fittings and drain valves capped or plugged when not in use |
| ✓ | Image: A second s | Source and means to heat rail car |
| ~ | ~ | Suitable thermometer to measure temperature of material in rail car |

Equipment Guidelines for Rail Car Deliveries of MDI, TDI and Polyols

PUMP UNLOADING

| MDI & TDI | Polyols | Covestro Requirement Best Industry Practice |
|-----------------------|--|--|
| | | |
| ✓ | • | Customer-supplied unloading pump |
| • | • | Sealless pump |
| • | • | Strainer on suction side of pump |
| • | • | Pumps, strainers and filters inside secondary containment |
| ✓ | Image: A second s | Piping system and equipment drain valves capped or plugged when not in use |
| • | • | Pressure gauge on pump discharge and on suction/discharge sides of filters |
| • | • | Bypass around unloading pump |
| • | • | Pressure/vacuum combination gauge on vapor return piping |
| ✓ | • | Rail cars to be returned with positive pad pressure (25-psig maximum) |

PRESSURE UNLOADING

| MDI & TDI | Polyols | Covestro Requirement Best Industry Practice |
|-----------|---------|--|
| | | |
| × | ✓ | Nitrogen or dry air source with -40°F/-40°C dew point |
| • | • | Pressure gauge on unloading piping |
| × | • | Rail cars to be returned with positive pad pressure (25-psig maximum) |

CONTROL OF VAPORS FROM STORAGE TANK

| MDI & TDI | Polyols | Covestro Requirement Best Industry Practice |
|---|---------|--|
| | | |
| • | | PMDI vapors properly controlled to prevent discharge to the atmosphere |
| Image: A set of the set of the | | TDI vapors properly controlled to prevent discharge to the atmosphere |
| | • | Polyol vapors properly controlled to prevent discharge to the atmosphere |

Notes _____



Always Raising the Bar in Managing Chemicals Safely

Today, it is not enough to publicly commit to preventing pollution, improving process safety, fostering employee health and safety, providing product stewardship, and building positive relationships with plant neighbors and communities. A responsible company must lead by example. At Covestro, we've taken the initiative in advancing the science of

chemical risk management both at our facilities and at our customers' sites. We consider such an effort progressive product stewardship and we call that effort our Product Safety First program.

Our product stewardship team continuously expands outreach programs for new and current customers. The multi-phased, comprehensive Product Safety First approach includes health, safety and environmental services to support and educate users



on the safe storage, handling, use and disposal of our products. Product Safety First initiatives, through our commitment to continuous improvement, encourage customers to elevate their procedures to "best industry practice" levels. At Covestro, we're never content to rest on our laurels. Our product stewardship program is not just another corporate activity; it's our upwardly mobile standard for conducting business.

Health and Safety Information

Appropriate literature has been assembled which provides information concerning the health and safety precautions that must be observed when handling Covestro products mentioned in this publication. Before working with any of these products, you must read and become familiar with the available information on their characteristics, proper use, and handling. This cannot be overemphasized. Information is available in several forms, e.g., safety data sheets (SDS) and product labels. Consult your Covestro representative or contact the Transport & Logistics Safety Department or Product Safety and Regulatory Affairs Department in Pittsburgh, Pennsylvania at 1-412-413-2000.

For materials that are not Covestro products, appropriate industrial hygiene and other safety precautions recommended by their manufacturer(s) must be followed.



Covestro LLC Transport & Logistics Safety Department Product Safety and Regulatory Affairs 1 Covestro Circle Pittsburgh, PA 15205

www.productsafetyfirst.covestro.com

The information contained herein is believed to be accurate as of the date of this document. The purpose for or manner in which you apply or utilize our products, technical assistance and information, whether verbal, written or by way of production evaluations, including any suggested formulations and recommendations, are beyond our control. It is imperative that you test our products to determine their suitability from a technical as well as health, safety, and environmental standpoint for your intended uses or applications. Unless we otherwise agree in writing, all products are sold strictly pursuant to the terms of our standard conditions of sale which are available upon request. All information and technical assistance is given without warranty or guarantee, expressed or implied, and is subject to change without notice. It is expressly understood and agreed that you assume and hereby expressly release us from all liability, in tort, contract or otherwise, incurred in connection with the use of our technical assistance and information. Any statement or recommendation not contained herein shall not bind us. Covestro assumes no legal responsibility for use of or reliance upon the information in this document. Nothing herein shall be construed as a recommendation to use any product in conflict with any claim of any patent relative to any material or its use. Before working with our products, you must read and become familiar with all available information on the risks, proper use, and handling. Information is available in several forms, e.g., safety data sheets, product labels and other safe use and handling literature for chemical substance(s). The most current health and safety information regarding our products, including Safety Data Sheets (SDSs), is available at the Product Safety First website (www.productsafetyfirst.covestro. com). For further information contact your Covestro representative or the Product Safety and Regulatory Affairs Department in Pittsburgh, PA.