

Lansdowne Chemicals safe packaging and dispense of Hydrazine Hydrate

Hydrazine Hydrate is a colourless liquid that is used in chemical manufacturing eg. agrochemicals, pharmaceutical syntheses and as boiler feed water treatment. It is classified as toxic, corrosive and dangerous to the environment. In the Seveso II Directive 96/82/EC, Hydrazine Hydrate was brought underneath the scope of thresholds relating to Carcinogens. Exposure to Hydrazine Hydrate by inhalation may cause carcinogenic affects. The chemical is toxic via ingestion or absorption.

Lansdowne Chemicals Plc (www.lansdownechemicals.com) is a medium sized chemical company, specialising in Hydrazine Hydrate dilutions and nitrations. They supply the product mainly to power stations, where it is used to treat boiler feed water, acting as an oxygen scavenger to minimise corrosion. The company has invested heavily in safety equipment, chemical handling and storage systems in order to be compliant with COMAH regulations, which refer to the quantities and concentrations of hazardous chemicals that can be stored at a specific site.



Range of Packaging for Hydrazine Hydrate

Lansdowne switches to Micro Matic Drum Valve

"Lansdowne Chemicals has adopted the Micro Matic closed dispense system, supplied by [IPI Global](#), because it offers the best security and safest system to handle and dispense Hydrazine Hydrate" - reports Stuart Alexander, Product Manager Aroma & Performance Chemicals at the company headquarters near Oxford (UK) - "Previously, our customers dispensed Hydrazine Hydrate using a plastic dry-break valve and coupling system. Due to our emphasis on product development, we sourced the Micro Matic system, which is superior in terms of safety and handling".

The previous valve system had a number of weak points:

- ◆ Disconnection of the coupler sometimes led to splashing as the dry-break valve stayed open momentarily on disconnection. This led to Lansdowne having to recommend to its customers that a splash guard was fitted to all couplers.
- ◆ Plastic one-shot IBCs had to have a separate vent line with the old plastic type dip tubes. The IBCs would implode on emptying, as the dip tubes had limited air inlet capacity.
- ◆ There were occasions, where the Hydrazine drums/IBC's were returned with valves having been unscrewed and removed. This led to increased risk for employees, logistics operators and to higher labour costs, since Lansdowne needed to inspect each returned container. The valve system could not guarantee product integrity and Lansdowne did not have the confidence to refill the drums without first checking them.
- ◆ Closed system filling was not available.
- ◆ There was potential of container leakage through the valve in transit.

Hydrazine Hydrate safe handling best practices

Lansdowne imports Hydrazine Hydrate in bulk from various manufacturers in 80% concentration and dilutes it according to specific customer demands. Lansdowne's major product is Hydrazine Hydrate 7.5 % solution (~4.9% Hydrazine concentration) necessary to be compliant with the Seveso II Directive (if not a registered low or top tier COMAH site). They deliver it in a range of containers:

- ◆ 25L rotationally moulded polydrums from Francis Ward
- ◆ 220 L L-ring drum
- ◆ 1000L HDPE IBC—one shot
- ◆ 1000L rotationally moulded IBC from Francis Ward.

All containers are equipped with the Micro Matic Drum Valve from IPI Global.

Lansdowne currently operates a manual system for filling drums and IBCs. This features the Micro Matic Drum Valve, self venting Fill-Head. The system has been extensively tested and meets the COSHH criteria for acceptable operator and environmental exposure. In April 2007, Lansdowne will commission their new dilution and automated filling plant, which will use the Fill-Head interface. This will improve their filling rates and reduce manual handling of the Hydrazine Hydrate containers.

At the customers' facilities, emptying of containers takes place via the Micro Matic Drum Valve dry-break coupler (DVC1800), connected to a pump, which delivers the Hydrazine Hydrate to its required destination.

The customers pay a deposit on the containers, which are collected, returned to Lansdowne and re-filled. The rotationally moulded containers have a lifetime of 5 years, whereas the blow moulded ones achieve on average 3 trips. Lansdowne estimate they will achieve a project payback of 2-3 years.



25L drum with DVC1800



Filling containers

IPI Products

Containers are fitted with the **Drum Valve** dispensing system from **Micro Matic** with **EPDM seal material**:

- ◆ **Drum Valve Extractor** with plastic dip-tube inserted in IBCs and drums
- ◆ **Fill-Head** to fill in the containers at Lansdowne Chemicals
- ◆ **Drum Valve Coupler (DVC1800)** to extract the Hydrazine Hydrate from the containers at the customer site. This features a special **dry-break valve** that eliminates any leakage on transfer.

Key benefits of the Micro Matic Drum Valve System

The Micro Matic closed liquid transfer system allows Lansdowne to store, fill and transport Hydrazine Hydrate very safely, eliminating any risks of contact with the dangerous chemical as well as any liquid or vapour leakage and spillage, that may harm people or contaminate the environment. At power stations, operators are able to extract and dispense hydrazine safely, quickly and very efficiently without the need for respiratory protection equipment.

At the same time the Micro Matic Drum Valve system provides:

- ◆ Ease of handling, simplifying container changeovers.
- ◆ Product integrity, since the Drum Valve cannot be easily unscrewed and hence no other liquids can be inserted.
- ◆ Savings: it decreases waste disposal costs, since it's used on returnable IBCs and drums and it reduces labour costs related to inspecting returned drums.
- ◆ Robust and durable, it lasts for many years.
- ◆ It's a true closed liquid transfer system and allows safe filling and emptying of containers.