

HIPEX GREASE AND LUBRICANT STORAGE AND HANDLING

A. INTRODUCTION

Lubricants are delivered to end users in different types of packaging. Some methods are necessary for reasons of hygiene, safety and environmental impact while others ensure that the lubricant is not contaminated when it is about to be used. Lubricants are manufactured and packed in clean and closed packages, labeled with the necessary markings. In the manufacturing facilities, every precaution is taken to avoid pollution and to deliver high-quality pollution-free products. All these precautions would be totally pointless if the end user failed to comply with certain storage and handling precautions.

- Damaged packaging can result in leaks and/or the pollution of the product.
- A lack of attention paid to suitable storage can allow the ingress of pollutants like dust and water. These pollutants then get into the lubricated equipment.

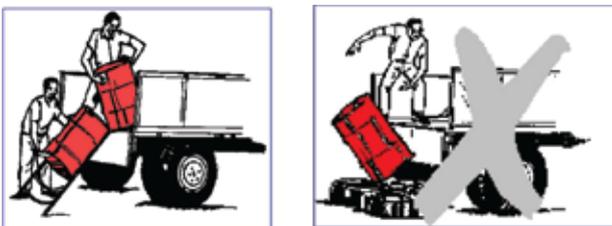
- Incorrect practice during implementation of lubricants may result in the ingress of pollutants into the equipment can eventually cause equipment breakage and accordingly, unforeseen production outage.
- Mixing some lubricants together may cause equipment breakage.
- Incorrect lubricant identification can result in an unsuitable lubricant being added to a machine, causing damage to the equipment.

It is relatively easy to avoid these potential problems by applying basic rules which are usually a simple matter of common sense.

In this document we will try briefly to go over these essential rules for the correct storage and handling of lubricants.

B. UNLOADING AND HANDLING

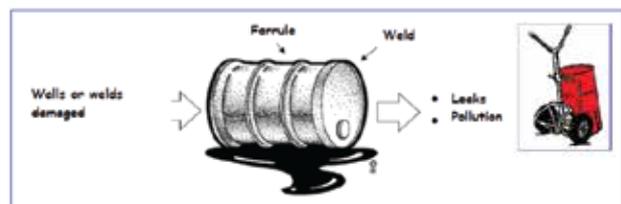
The best way of unloading lubricants is to use a platform or a forklift truck. Oil or grease drums weigh more than 180 kg. They are also difficult to handle because they are cylindrically shaped. If there is no forklift truck or platform available, it is strongly advised to use wooden or metal ramps to skid the drum gently down to the floor, as shown in the figure below.



Never drop drums from the bed of the truck onto a pile

of tires or a foam mattress. A fall like this can damage the welds or the walls or even cause the drum to burst.

Once they have been unloaded, drums may possibly be rolled on the floor with a little effort, as long as the floor surface is not too hard. In any case, drums and more especially grease drums, must not be rolled over excessively long distances. This would cause damage to the welds, ferrule and ends of the drums. It could cause leaks to occur. Therefore, it is preferable to use a drum-carrier cart.



C. STORAGE

1. Indoor storage:

In theory, all lubricants should be stored in a room or building designed for the purpose. The place must be lighted and ventilated sufficiently, if possible with dust-free air. The location must not be exposed to extreme hot or cold temperatures. If possible, the storage location must be under lock and key. It is highly advisable to have fire extinguishers in the lubricant storage area. The floor of the storage area must be sealed, that is, flat and hard-built. New drums can be stored vertically on pallets or laid down on racks that are purpose made. It is advisable to use drum handling equipment to put the drums in the racks.

It is highly advisable to have retention areas designed to prevent any possibility of pollution in case of leakage.

For information, French regulations require the setting up of retentions with the following capacities: -For containers with a capacity exceeding 250 liters (1000 L containers and bulk tanks), the volume of retention must be equal to or greater than the larger of these 2 volumes:

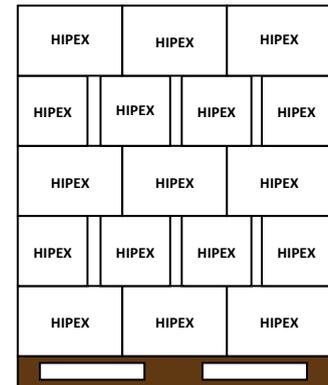
- Either 100% of the tank capacity.
- Or 50% of the sum of all the tank capacities.

For containers having a volume per unit of less than 250 liters (drums, barrels, cans, cartridges), the retention volume must be equal to or greater than the larger of these 2 volumes:

- 20% of the total capacity of the containers
- At least 800 liters or 100% of the total capacity if this capacity is less than 800 litres

When the lubricants are not stored on racks or shelves, apply the following rules:

For cartons: avoid stacking pallets and avoid having more than 6 carton tiers on the same pallet.



For 20 liter cans: use pallets with laths on top of and underneath them so that the cans stand on a flat surface.

For drums: the drums are stored in 4's on a pallet. Do not stack more than 2 pallets high.

2. Outdoor storage:

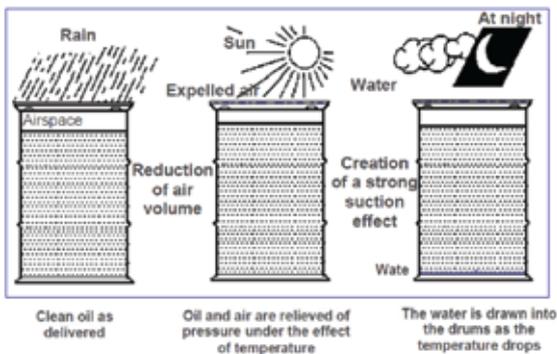
Avoid outdoor storage whenever possible. However, if there is not enough room in the shelter, a number of precautions must be applied. First of all, for obvious environmental reasons, it is absolutely essential to store the products on a sealed surface, for instance, a hard-built flat slab. This will prevent the pollution of the soil and accordingly of any groundwater, in the event of accidental spillage. For oil drums, systematic preference should be given to the lying-down position. This can be accomplished using storage racks or on the ground as long as a number of precautions are taken. It is also preferable to use storage racks with protection from

bad weather, or outdoor storage cabinets. Storing the drums lying down prevents the ingress of water or pollutants.

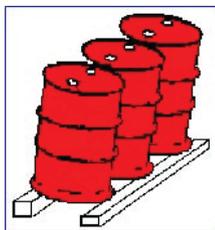


What happens with vertical storage?

If the drums are stored vertically, rain will accumulate on top of them. Since the sun heats the product in the drum, it will expand and expel part of the airspace inside the drum. Accordingly, at night, when the temperature drops, it will reduce the volume of the product in the drum causing a strong suction effect. Accordingly, the water that has accumulated on top of the drum is drawn in, mixes with the lubricant and is decanted to the bottom of the drum.



However, if the drums have to be stored standing vertically, they must be placed on beams at different heights and the plugs turned suitably to prevent any possibility of water getting into the drums.



This is more particularly the case of grease drums which must be stored vertically systematically.

3. Specific products:

If indoor storage possibilities are limited, it is essential to give indoor storage priority to the following products:

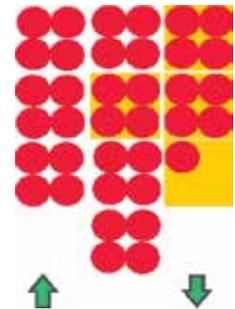
- Transformer oils
- Thermal fluids
- Refrigerating compressor oils
- Brake fluids
- Soluble cutting oils
- Hydraulic oils



Transformer oils must always be stored indoors because any pollution (water and/or dust) would cause a major degradation of their properties.

4. Storage management:

First of all, if the lubricants are stored outdoors, the stock must be kept to a low limit to favor rotation and therefore the exposure time of the products to bad weather and pollutants. In addition, a FIFO (First-In / First-Out) stock management



system should be preferred so that the products stored first are used first. It is also a way of avoiding the product being kept in stock too long.