

# Lubricant Storage and Handling Guide: Store, Transfer, Identify, and Protect

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**Effective storage and handling protocols for lubricants are essential for maintaining their quality and performance. Many facilities are unaware of the danger improper lubricant storage and handling practices create and what inevitable fate it can lead to in terms of equipment reliability and lifecycles. Proper lubrication is not only about the right amount at the right time at the right place, but also about keeping lubricants clean, cool, and properly identified. By following these protocols, businesses can optimize lubricant performance, prolong their shelf life, and minimize the risk of contamination or degradation.**

## **Storage Room Conditions**

The storage environment significantly impacts lubricant quality and longevity. Some store lubricants on warehouse shelves or even outdoors, but the ideal option is a designated lube storage room. A properly designed lube room must be functional, safe, and expandable, and provide all necessary storage and handling requirements for the facility. Lube room designs should allow the maximum storage capacity without allowing for too much bulk oil and grease storage. Limiting the amount of bulk oil and grease storage will allow the oils that are stored to be used in a timely manner.

Some key features to consider are a limited access door, which will allow for logging of who and when a lube technician enters and leaves the room; visible landing area for new lubricants; log for all new lubricant deliveries; easy filtration of lubricants; proper safety devices; enough floor space for fire proof storage cabinets to store top-up containers, grease guns, etc.; and a desk and computer to track inventory, sampling, filtration, receiving, etc. It's no secret that incorporating these elements takes time and resources, although ultimately a worthwhile investment. At minimum, the following factors should be considered when establishing storage conditions:



## **Temperature**

Lubricants should be stored at temperatures recommended by the manufacturer. Extreme temperatures, both high and low, can adversely affect lubricant properties. Excessive heat can lead to viscosity decrease, thermal degradation, oxidation, and evaporation of volatile components, while low temperatures can cause viscosity increase and potential solidification.

## **Segregation**

Different types of lubricants, such as oils, greases, or specialty lubricants, should be stored separately to prevent cross-contamination. A good example of this is the need to separate food-grade from non-food-grade lubricants. If those two lubricants mix, the consequences could not only be costly, but a serious hazard to human health. Segregation can be achieved by using dedicated storage areas, shelving, or cabinets for each lubricant type. Proper labeling and identification of containers also aid in avoiding mix-ups.

## **Cleanliness**

The storage area should be clean and free from dirt, dust, and other contaminants. Regular cleaning and maintenance of storage containers, shelves, and equipment prevent the buildup of debris that can contaminate lubricants. Implement good housekeeping practices to minimize the risk of contamination.

By following proper storage conditions, lubricant users can maintain the quality and performance of their lubricants, minimize the risk of contamination or degradation, and maximize their longevity and effectiveness.





## Bulk Storage and Dispensing

[Bulk storage systems](#) for industrial lubricants are commonly used in industries where large quantities of lubricants are required, such as manufacturing plants, refineries, or transportation companies. These systems provide efficient storage, handling, and dispensing of lubricants. Here are some key components and considerations for bulk storage systems:

### Bulk Oil Storage Tank Design Features

A proper tank or vessel is necessary to avoid contamination and to prolong the life of the lubricant in storage. These tanks are available in various sizes and materials, such as steel, stainless steel, or high-density polyethylene (HDPE), based on the specific requirements of the lubricants being stored. The tanks should be compatible with the lubricant to prevent chemical reactions or contamination. Good practice involves using modifications including breathers and sight gauges.

### Sight Gauges

Sight gauges are commonly used in bulk oil storage systems to provide visual indication of the oil level in storage tanks. They are simple and cost-effective devices that allow operators to monitor the oil level without the need for complex electronic or automated systems.

Regular maintenance is essential to keep sight gauges in optimal working condition. The [sight glass](#) should be inspected for cracks, scratches, or cloudiness that could impair visibility. Cleaning the sight glass periodically with a suitable cleaning agent and lint-free cloth helps remove dirt, residue, or oil film that may accumulate and obstruct the view.





## **Breathers and Ventilators**

Above the tank's oil level and beneath the roof of the same tank lies the headspace. Every tank produces different conditions within its headspace as the contents of oil mist, dirt and water vapor vary considerably. A high percentage of moisture and solid contaminants that enter lubricating oils and hydraulic fluids in storage vessels must pass through the headspace.

[Breathers](#) are necessary to exclude contamination because they're designed to allow the passage of air while preventing contaminants and moisture from entering the tank. They are typically mounted on the tank's vent port or a separate breather port and require periodic maintenance and replacement of the desiccant and filters.

## **Filtration and Conditioning Equipment**

Filtration and conditioning equipment can be installed in the storage system to maintain lubricant cleanliness and quality. This may include the use of dedicated filtration units or conditioners to remove contaminants, water, or impurities from the lubricants. The reason for this is because new oil is not necessarily clean oil.

The containers used to store lubricants are often reused and may be subjected to many extreme conditions before they reach your plant. Currently, lubricant manufacturers are not required to ensure cleanliness of the lubricant they provide unless it is advertised as meeting a specified cleanliness rating, or cleanliness is written into the lubricant purchase specification. Cleanliness of new oils typically ranges between ISO 4406 codes of 20/17 - 22/19. Considering most hydraulic and lubrication systems require ISO cleanliness of 17/14 or better, the new oil contamination level is frequently too high for immediate service without conditioning. Routine analysis of new oils should be employed to ensure effective contamination control.



Lubricants in storage are also subject to particle agglomeration. Agglomeration occurs when smaller particles combine to form larger, more harmful particles. These harmful particles will typically fall to the bottom of the container. Remember that while drum agitation is effective at re-suspending additives, it is also effective at re-suspending settled contamination.

### **Overfill Protection Devices and Secondary Containment Systems**

Overfill protection devices help prevent accidental overfilling of storage tanks, which can lead to spills and safety hazards. These devices can include automatic shutoff valves, level sensors, or alarms that provide visual or audible alerts when the tank reaches a specified maximum fill level.

Secondary containment systems provide an additional layer of protection against spills or leaks from storage tanks. This can include containment berms, spill trays, or double-walled tanks. These help prevent environmental contamination and minimize the risk of accidents.





## Oil Transfer Equipment

[Oil transfer containers and equipment](#) are specifically designed to safely and efficiently handle the transfer of lubricants from one location to another. These containers and equipment help prevent spills, minimize contamination, and ensure accurate and controlled oil transfers. Below are some commonly used oil transfer equipment:

### Oil Drums and Barrels

Oil drums and barrels are commonly used for the storage and transfer of bulk quantities of oil. They are available in various sizes and are typically made of steel or high-density polyethylene (HDPE) to ensure durability and compatibility with different types of oils. These containers often feature bungs or openings for easy access during filling and pouring, and they can be equipped with pumps or faucets for controlled dispensing.

### Extension Hoses

Extension hoses are flexible tubes that connect to pumps or dispensing equipment, allowing for extended reach during oil transfer. They are available in various lengths and diameters to accommodate different transfer distances and flow rates. Extension hoses are commonly made of materials such as rubber or PVC and are designed to handle the specific viscosity and compatibility requirements of oil. They are essential for transferring oil to equipment that is located farther away or in areas that are difficult to access.



## Quick Connects

Quick connects, also known as quick couplings or quick-disconnect fittings, are used to establish fast and secure connections between hoses, pumps, and other components during oil transfer. These fittings feature a mechanism that allows for quick attachment and detachment, eliminating the need for threaded connections or wrenches. [Quick connects](#) are available in various sizes and configurations to accommodate different hose diameters and connection requirements. They provide convenience and efficiency in setting up and dismantling oil transfer systems.

## Pumps

Pumps are used to facilitate the movement of oil from one container to another during transfer. They create fluid flow and pressure, ensuring efficient and controlled oil transfer. Different types of pumps are available, including manual hand pumps, electric pumps, and air-operated pumps. The choice of pump depends on factors such as the volume of oil, desired flow rate, and the availability of a power source. Pumps can be equipped with features like flow control, filters, and metering systems to enhance accuracy, filtration, and monitoring during the transfer process.

## Importance of Labeling

A good [tagging system](#) is frequently overlooked as a key part of proper storage and handling practices. There are many solutions for color-coding devices that are commonly used in lubrication programs. Some of these devices include top-up containers, filter carts, grease guns, totes, pumps and other similar products.

Although color-coding is a great practice, simply using a color for a single lubricant is often ineffective. With most facilities having more than 10 different lubricants, it can become difficult to distinguish between subtle differences in color, and more clarification is needed.



Some organizations have taken the additional step of utilizing a symbol along with a color to specify a particular lubricant for an application. By adding a second identifier, such as a shape scheme, you can exponentially expand the number of unique color and shape combinations to suit the number of lubricants in your facility.



*OilSafe Identification Labels*

## Bottom Line

Implementing appropriate storage and handling protocols for lubricants is paramount to maintaining their quality, extending their shelf life, and ensuring optimal equipment performance. Though a lube room with all the bells and whistles may require a heavy investment in time and resources, it is undoubtedly a worthwhile investment when you consider the resulting benefits and cost savings achieved by ensuring clean, cool, and dry lubricants.

## About OilSafe

OilSafe® is the reliable choice for smart, safe storage, transfer, identification, and protection. Our color-coded Lubrication Management line establishes best practices throughout your workflow – from bulk storage to point of use. The Contamination Control line offers superior fluid and equipment protection. Lube Room Accessories improve lubrication practices and management. Condition Monitoring ensures fluid cleanliness. Every step eliminates risks of cross-contamination and human error, simplifying maintenance while extending the life of the fluids and equipment that keep your business running.

For more information, visit [www.oilsafe.com](http://www.oilsafe.com)



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