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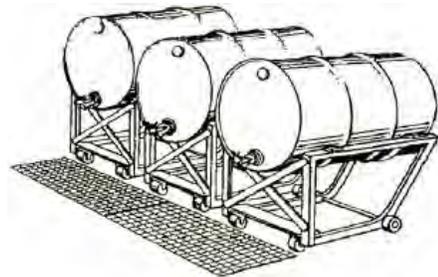
Storage and Handling of Lubricants

Storing Lubricants

Packages containing lubricants should, whenever possible, be stored under cover where they will not be exposed to the action of the weather.

Small packages such as tins should always be kept in covered storage, as should any package, whatever its size, once it has been opened and its contents partially used. When the outside storage of unopened drums is unavoidable, certain simple precautions must be observed.

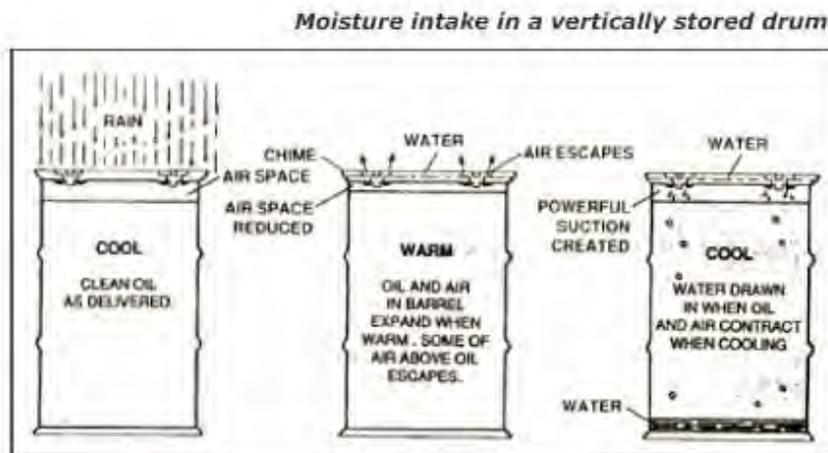
The drums should preferably be stored on their sides with bungs at 3 o'clock and 9 o'clock and wooden dunnage or runners should be used to keep them clear of the ground and to prevent rusting of the undersides. They should never be stacked directly on a surface containing clinker, which is particularly corrosive to metal. The drums at each end of a stack must be securely wedged to prevent movement. Regular inspection should be carried out with a view to the detection of leaks and to make sure that identification markings remain clear and legible.



Vertical drum rack with portable stacker

If, for any reason, drums have to be stored on their ends, they should be raised off the ground and stored upside down (i.e. with the bungs at the bottom). Failing this, they should be tilted so that rain water cannot collect round and submerge the bungs. Water contamination is undesirable, whatever the grade of lubricant, and it is not always realized that moisture can enter a drum through what appears to be a perfectly sound bung.

A drum standing in the open is subjected to the heat of the day and, of course, cools down again at night. This results in expansion and contraction of the contents with the effect that the air in the space above the oil level is subjected, during the day, to slightly higher than atmospheric pressure and, at night, to slight vacuum. These changes in pressure may be sufficiently great to cause a pumping action, known as breathing, in which air is forced out the drum during the day and drawn into it at night. If, therefore, the bungs through which this breathing takes place are surrounded by water, some of this water may be



problems with vertical storage of 55-gallon drums in an unsheltered environment. This can be prevented.

sucked into the drum and, in the course of time, quite considerable quantities may accumulate.

Once the seals have been broken and packages have been opened, there is always a danger that, unless the packages are kept properly closed when not in use, impurities such as dust, sand and fiber may enter them. Such contaminants, eventually finding their way into machinery, can cause damage or abrasion or, by blacking oilways, can result in a complete breakdown due to lack of lubrication.

An oil drum, or other package, should never be opened by cutting a large hole in it or by completely removing one end, since, even if the hole is kept covered by, for example, a wooden or metal lid, the chances of contamination are greatly increased. Similarly, it is a bad practice to dip an open container into the oil since, not only does this allow dust to enter, but the outside of the dipper itself may be dirty. Drums of oil should, therefore, be placed on their sides on wooden cradles of convenient height and the oil dispensed by means of a tap under which a drip tray is placed. Alternatively, a drum may be stood on its end and the oil withdrawn by means of a hand pump, the pump intake being inserted into the large bung-hole.

When oil is stored in bulk it is probable that water or condensation will accumulate and fine dust find its way into the tanks with the result that, eventually, a layer of sludge-like material builds up at the bottom of the tanks and leads, in time, to contamination of the oil. Consequently, it is advisable to have

storage tanks fitted with dished or sloping bottoms provided with drain cocks, which will enable dregs to be drawn off periodically. Where practicable, bulk storage tanks should periodically be cleaned out.

Insofar as greases are concerned, the drums must, of necessity, have a large opening and, to avoid as far as possible the entry of dirt and water, it is important that the lid or cover should always be replaced firmly and securely as soon as requirements have been taken.

Extremes of temperature are flat good for lubricants. They should not be stored in any unduly warm place; equally, it is not wise to leave them for long periods in conditions of extreme cold.

Handling Lubricants

The benefits of good, clean storage can be largely nullified if a lubricant becomes contaminated in transit from the store to the machines. The containers used for transporting lubricants on a site and for the storage of small working quantities must be kept clean and should be provided with lids to prevent the entry of dust and dirt. They should be washed periodically, care being taken to mop and dry them before using them again.

Similarly, funnels and other pieces of apparatus must always be kept scrupulously clean, rags and wipers being used for this purpose. Cotton waste or woolen rags should not be used as they tend to leave behind fibers which will eventually find their way into machinery and impair the flow of oil.

It is advisable to have separate, clearly marked containers of each grade of oil or grease so the contamination of one with another does not take place.

Used and dirty oil should be put into special containers and stored in separate, clearly labeled receptacles until disposed of. Every precaution must be taken to see that used lubricants are not allowed to contaminate fresh oils and greases.

In general, cleanliness precautions are even more important with grease than with oil. There is always the chance that impurities in oil may sink to the bottom of the tank or container out of harm's way; with grease this cannot happen and any grit or other contaminant which gets into the grease is bound to find its way into lubricators and machinery sooner or later.

Grease is more susceptible than oil to the effects of temperature and temperature cycling. High temperature or prolonged exposure to even moderately high temperatures (e.g., tropical sunshine) may cause oil to separate out with the result that the grease loses some of its lubricating properties. Petrolatum (petroleum jelly) and certain types of grease can be made liquid by heating and, on cooling, will regain their former condition; but these are

exceptions and most greases will be ruined if treated in this way. Never, therefore, heat a grease to make it fluid.