

## TG002. LUBRICANTS STORAGE & HANDLING

*“Good storage practices are essentials to promote high quality and performance Lubricants”.*

### **Storage Environment Considerations**

As the shelf life of lubricants are greatly affected by the storage environment. It is crucial that the following conditions are closely monitor to safeguard the quality of the lubricants.

**Light:** Lubricants are preferably stored in their original metal or plastic containers to prevent exposure of light that will cause changes to the colour and appearance of the lubricants.

**Temperature:** Storage temperature should be kept approximately between 0°C to 25°C, as under hot condition the oxidation rate will likely increase, which will lead to deposits formation and viscosity increase while under cold condition it will lead to formation of wax and other possible sediments.

**Water:** Lubricants are preferably stored in a dry indoor location to minimise water contamination, formation of insoluble matter and the growing of microbial.

**Contamination:** Ensure lubricant containers are always sealed or closed to prevent atmospheric contamination and particulate contamination.



### **Estimated Shelf Life**

<b>Product</b>	<b>Estimated Shelf Life (Years)</b>
Base Oils	5+
Lubricants (mineral or synthetic)	5
Coolants	5
Greases (mineral or synthetic)	3

These characteristics are typical of current production. While future production will conform to Opt-Max's specification, variations in these characteristics may occur.

## Possible Damage that can be caused by Contamination

Contaminant	Effects on Lubricant Chemistry Properties	Effects on Lubricant Physical Properties	Chemically Effects on Machine Surfaces	Mechanically Effects on Machine Surfaces
Solids	• Oxidation	• Viscosity effects	• Adherent Varnish	• Abrasion
	• Additive depletion			• Surface fatigue
Water	• Oxidation	• Viscosity effects	• Acidity destruction	• Cavitation
	• Additive depletion			• Scuffing
Fuel	• Additive depletion	• Lower flash point	• Sulfuric acid	• Film strength loss
	• Aromatics	• Lower viscosity		
		• Increase vapour pressure		
Glycol (antifreeze)	• Oxidation	• Viscosity increase	• Acidity increase	• Film strength loss
	• Sludge			
Atmospheric	• Oxidation	• Oxidation	• Rust and Corrosion	• Cavitation
Heat	• Thermal degradation	• Viscosity increase	• Varnish	• Film strength loss
	• Oxidation		• Acidity	

### Recommended practices

- For highly sensitive lubricants such as Refrigeration oils and Brake Fluids, they must not be stored outdoor to avert any possible contamination.
- Always wipe off the tops and edges of containers before opening them and ensure containers are tightly covered or closed after used to avoid contamination.
- Usage of clean tools and equipment when discharge or handling the lubricants.
- Set inventory levels so that product is used within specified maximizing storage periods.
- Preferably to practice First-In First-Out (FIFO) inventory control to allow the oldest lubricant to be always used first.
- Do not use products that have been stored for long periods unless their condition and performance properties are verified with oil analysis and deemed suitable for use.

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