



## marine lubricants information bulletin 1

# lubricant storage, stability, and estimated shelf life



Most lubricating oils and greases deteriorate with time. However, good storage practices promote sufficient stock turnover so that lubricants are used before performance loss occurs.

### Storage conditions

The storage environment greatly affects the shelf life of lubricants and greases. The conditions to monitor are:

**Temperature:** High heat (greater than 45°C) and extreme cold (less than -20°C) can affect lubricant stability. Heat increases the rate of oil oxidation, which can lead to deposit formation and viscosity increase. Cold temperatures can cause wax and possible sediment formation. Additionally, alternating product exposure to heat and cold may draw air into drums, which may result in moisture contamination. A temperature range of -20°C to 45°C is acceptable for storing most lubricating oils and greases. Ideally, the storage temperature range should be from 0°C to 25°C.

**Light:** Exposure to light can change the color and appearance of lubricants. To prevent this change, keep lubricants in their original metal or plastic containers.

**Water:** Some lubricant additives may react with water, forming insoluble matter. Water can also promote microbial growth at the oil/water interface. Store lubricants in a dry location, preferably indoors.

**Particulate Contamination:** Do not store drums and pails in areas where there is a high level of airborne particles. This is especially important when storing a partially used container.

**Atmospheric Contamination:** Oxygen and carbon dioxide can react with lubricants and affect their viscosity and consistency. Keep lubricant containers sealed until the product is needed.

### Storage conditions affecting grease

Grease properties may change during storage depending on thickener type, its concentration, the base fluids and the additives used. One condition that commonly affects greases is:

**Oil Separation:** Oil naturally separates from most grease. Temperatures in excess of 45°C can accelerate oil separation. If grease is removed from drums or pails, the surface of the remaining grease should be smoothed to prevent oil separation into the cavity.

### Recommended storage conditions and practices

- Store lubricating oils and greases in a cool, dry indoor area where airborne particles are at a minimum. Indoor storage also prevents label deterioration and the container from weathering. The ideal storage temperature range is from 0°C to 25°C.
- If drums must be stored outside, apply one of the following options:
  - Store drums on their side or “blocked” into a tilted position, with drum bungs at the three and nine o’clock positions, to allow water to run off.
  - Place a plastic cover on top of the drum to keep the top protected from dust and water.
  - Use other equivalent methods to prevent the ingress of water or dust.

Refrigeration oils and brake fluids are highly sensitive to water contamination and must not be stored outside. Always store grease upright to prevent oil separation.

- When necessary, bring grease to satisfactory dispensing temperature just before it is used.
- Rotate the inventory. Check the container fill date and use the oldest container first.
- Keep containers tightly covered or closed to avoid contamination.
- Wipe off the tops and edges of containers before opening them to avoid contamination.
- Use clean tools and equipment when pumping or handling lubricants and grease.

**Products exceeding the estimated shelf life**

A product in an unopened container, which is beyond the estimated shelf life, may still be suitable for service.

The product should be tested and evaluated against the original product specifications. Thoroughly mix the container to ensure a uniform, representative sample is taken for testing. If the product’s test results fall within the original specifications, it should be suitable for use. Following testing, if the product is not consumed within a year, the product should be marked for reclamation or disposal.

As a final note, the user should validate the product’s performance claims against the equipment manufacturer’s recent specifications. Equipment designs and specifications can change over time, making an old product obsolete for use with new equipment. Call your local Chevron supplier if there are questions concerning specification obsolescence. ■

**Estimated shelf life of base oils, lubricating oils, and greases**

| Product                                 | Years |
|---|-------|
| Base Oils                               | 5+    |
| Lubricating Oils (mineral or synthetic) | 5     |
| Greases (mineral or synthetic)          | 3     |
| Coolants (general)                      | 5     |
| <b>Known Exceptions:</b>                |       |
| Rust Preventatives                      | 2     |
| Open Gear Lubricants                    | 2     |