



Tech topic

Understanding oil bleed and grease separation

Key insight

The lower the viscosity of the base oil used in the grease, the more separation you are likely to see.

Introduction

Oil bleed is a term used to explain the separation of oil or seepage of oil during normal grease operating conditions. Oil bleed is easily identified by the presence of oily sections of greased components and/or the formation of small pools of oil around componentry.

What causes grease to separate?

Grease is oil that has been mixed into a soap in order to hold the lubricating oil in place. Oil release, static and dynamic, is one of the most important properties of a grease. Oil release is controlled by the thickener type and amount, polymers and processing. ExxonMobil uses a broad range of technologies to optimize and control grease oil release properties.

Is it normal?



Small traces of oil separation are expected. Oil can be mixed back into grease.

Some degree of oil separation from the soap is necessary for the oil to provide lubrication to the intended application. Oil separation varies with storage, time and temperature. There is no industry-defined acceptable limit for oil bleed in service. As long as the oil is not leaking from any seals in the airplane, the grease will perform its intended task.

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What does normal oil bleed look like?

- Small traces of oil on the surface
- Oil that collects around the dome or in the crevices at the top of a pail of grease

If you experience normal oil bleed, you should be able to mix the oil appearing on the surface back into the grease. We recommend referring to our **Grease FAQs** (located in our website's "Knowledge library"), which address the process for remixing the oil and soap in a container in which you see separation. Essentially, the recommendation is to remix the oil into the top 1-2 inches (2.5-5.0 cm) of grease prior to use.

In addition, horizontally stored grease cartridges may bleed minor amounts of oil. While this may make the container cosmetically unpleasing, the grease remains suitable for use. To minimize oil bleed in cartridges of grease:

- ExxonMobil grease packaging now includes directional arrows to help operators ensure cartons are stored in the proper direction
- All cartons are equipped with recommendations on storage and handling

Excessive oil bleed will cause the grease to harden and render it unsuitable for use. If you suspect excessive oil bleed, or find the surface of the pail is completely covered with a layer of separated oil, contact your ExxonMobil aviation sales representative.



Example of Mobilgrease™ 28 carton with directional arrows affixed to the left and right sides of cartons.

How does climate/temperature impact oil bleed and separation?

Typically, changes in climate-related temperature do not affect greases. As a result, you should not see increased oil separation in warmer climates. Any increase in oil bleed/separation is generally the result of temperature cycling, not the higher temperature. Grease shelf life recommendation, provided by ExxonMobil, applies to products stored in the original sealed containers in a sheltered environment under good housekeeping conditions and at typical ambient temperatures. We recommend contacting your local ExxonMobil representative for more product-specific recommendations regarding storage.

Myths

If a grease bleeds oil, it is poor quality

The less a grease bleeds, the better it will perform

Greases shouldn't bleed, especially in the drum, keg or pail

Grease separation seen in a transparent distribution line means poor quality

The higher the oil viscosity, the better

Truths

Greases must bleed oil to lubricate; the thickener is not a lubricant

It is critical that an oil bleed is tailored to the application

- For example, high-speed applications generally require higher rate of oil release than low speed

High oil viscosity is generally required for high loads/low speeds

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Do some greases experience more oil separation than others?

Yes, the lower the viscosity of the base oil used in the grease, the more separation you are likely to see. For example, the base oil viscosity of Mobilgrease™ 33 grease is lower than the base oil viscosity of Mobilgrease™ 28 grease, and therefore the rate of oil separation is correspondingly higher.

A few steps can be taken to minimize oil separation:

- Store greases in a climate control environment
- Release pressure on the pumping devices used to apply the grease when not in use



For more information

Please contact your ExxonMobil aviation sales representative, or download the Material Safety Data Sheet (MSDS).