



ISO 13357-2

**Petroleum products —
Determination of the filterability of
lubricating oils —**

**Part 2:
Procedure for dry oils**

*Produits pétroliers — Détermination de la filtrabilité des huiles
lubrifiantes —*

Partie 2: Méthode pour les huiles non polluées par de l'eau

**Fourth edition
2025-04**

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Published in Switzerland

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This document was prepared by Technical Committee ISO/TC 28, *Petroleum and related products, fuels and lubricants from natural or synthetic sources*.

This fourth edition cancels and replaces the third edition (ISO 13357-2:2017), which has been technically revised.

The main changes are as follows:

- included the use of gravimetric measurement techniques;
- included alternative membranes when testing higher viscosity oils;
- updated [Clause 12](#) on precision.

A list of all parts in the ISO 13357 series can be found on the ISO website.

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To minimize wear on the components of an oil-lubricated system, it is important to reduce the concentrations of circulating hard contaminant particles. This is particularly important for hydraulic power systems, for systems whose performance and reliability rely on the maintenance of small clearances and orifices, or for systems that include rolling element bearings as components. These contaminants are removed by the use of filters. The ability of an oil to pass through fine filters, without plugging them, is called its filterability. This document describes a laboratory test procedure for assessing the filterability of mineral oils in a dry state. Filterability so determined is not a physical characteristic of the oil, but represents an estimation of its behaviour in service.

This document describes two measurements, referred to as “stages”. The stage I determination is based on a comparison of the mean flow rate of a fluid through a test membrane with its initial flow rate. Oils having good stage I filterability, but a poor stage II performance (see below), are unlikely to have performance problems in use, unless extremely fine system filters are utilized.

The stage II determination is based upon the ratio between the initial flow rate of the fluid through the test membrane and the rate at the end of the test. This part of the procedure is a more severe test and is more sensitive to the presence of gels and fine silts in the oil. Silts and gels can be present in an oil when it is produced, or can be formed as an oil ages, especially when hot. An oil with good stage II filterability is unlikely to have filtration problems even in extreme conditions and with fine (less than 5 µm) filtration present. It is thus suitable for use in more critical hydraulic and lubrication systems.

This procedure was developed primarily for hydraulic oils having ISO viscosity grades up to 100, and, apart from the filtration apparatus, was designed to be implemented using mainly standard laboratory apparatus. A modified procedure that includes gravimetric measurements rather than volumetric ones is provided in [Annex B](#). Further, the method has been adapted to test oils of higher viscosity grade than 100 using a coarser membrane filter.

The test procedure can be extended to fluids other than mineral oils. However, some fluids, for example, fire-resistant fluids, are not compatible with the specified test membranes; and the test can only be used for comparison purposes even when suitable membranes, with similar pore size or pore density characteristics to those specified in this procedure, have been identified.

This document defines a method for assessing the filterability of dry oils only. Some oils exhibit poorer filterability characteristics in the presence of contaminating water. ISO 13357-1 applies to the investigation of the effect of water and high temperature on filterability, if an oil is used in applications where the presence of water in the oil is likely.