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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*

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ISO 13357-2:1998(E)**Foreword**

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International Standard ISO 13357-2 was prepared by Technical Committee ISO/TC 28, *Petroleum products and lubricants*.

ISO 13357 consists of the following parts, under the general title *Petroleum products — Determination of the filterability of lubricating oils*.

- *Part 1: Procedure for oils containing water*
- *Part 2: Procedure for dry oils*

Annex A of this part of ISO 13357 is for information only.

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Introduction

The fluid in a hydraulic system acts as a lubricant, and to minimize wear of the components, it is important to reduce the concentrations of circulating hard contaminant particles. This is particularly necessary when the performance of the system depends on the maintenance of small clearances and orifices. Removal of these contaminants is effected by the use of filters, and the ability of a hydraulic fluid to pass through fine filters, without plugging them, is called its filterability. This part of ISO 13357 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 part of ISO 13357 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 only a poor Stage II performance (see below), would be unlikely to give performance problems in use, unless extremely fine system filters are utilized.

The Stage II determination is based on the ratio between the initial flow rate of fluid through the test membrane and the rate at the end of the test. It is considered that 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 may be present in an oil when it is produced, or could be formed as an oil ages, especially when hot. An oil with good Stage II filterability would be unlikely to give filtration problems even in the most extreme conditions, and with fine (less than 5 μm) filtration present. It would thus be suitable for use in more critical hydraulic and lubrication systems.

The procedure has been evaluated with mineral oils up to ISO viscosity grade 100. There would appear to be no practical reason why it should not be used with oils of higher viscosity grades, but the data obtained could not be claimed to be completely in accordance with this method. Similarly, it should be possible to extend the test procedure to fluids other than mineral oils. However, some fluids, e.g. fire-resistant fluids, will not be compatible with the specified test membranes, and the test could only be used for comparison purposes even when suitable membranes, with similar pore size/pore density characteristics to those specified in this procedure, have been identified.