BS ISO 13357-1:2017

BSI Standards Publication

Petroleum products — Determination of the filterability of lubricating oils

Part 1: Procedure for oils in the presence of water

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National foreword

This British Standard is the UK implementation of ISO 13357-1:2017. It supersedes BS ISO 13357-1:2002, which is withdrawn.

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A list of organizations represented on this committee can be obtained on request to its secretary.

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Part 1: Procedure for oils in the presence of water

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Partie 1: Méthode pour les huiles en présence d'eau

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Foreword

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The committee responsible for this document is ISO/TC 28, *Petroleum and related products: fuels and lubricants from natural or synthetic sources.*

This second edition cancels and replaces the first edition (ISO 13357-1:2002), of which it constitutes a minor revision including alternative membranes in order to enable the continued use of this document.

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

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Introduction

As the fluid in a hydraulic system acts as a lubricant 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. The ability of a hydraulic fluid 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 which have been heat-soaked in the presence of water. 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 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 upon 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 reason why it should not be used with oils of higher viscosity grade (ISO viscosity grade 220 is a practical maximum), 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.

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