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Petroleum products and lubricants — Determination of water washout characteristics of lubricating greases

Produits pétroliers et lubrifiants — Détermination de la résistance au délavage à l'eau des graisses lubrifiantes

Reference number
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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee 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 11009:2000), which has been technically revised.

The main changes compared to the previous edition are as follows:

— addition of a rating of the appearance of the grease and of the water after test;

— addition of a note concerning the application of the test results to determine the symbol 3 “water contamination and rust protection“ of ISO 12924 grease specifications.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

ISO 6743-9[1] classifies greases according to their conditions of use. The complete designation of a grease comprises of the ISO sign, the letter L (lubricant, industrial oils and related products), the letter X for the grease family, four symbols related to the conditions of use, and the NLGI consistency number. The third symbol is related to the ability of the grease to ensure satisfactory lubrication in presence of water and provide an adequate corrosion protection level.

The symbol 3 is a combination of the rust protection level evaluated using ISO 11007[2] and the level of resistance to water contamination using this document.

Greases are specified in ISO 12924[3].

A rolling bearing grease may be not suitable to lubricate plain bearings or gears.

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Petroleum products and lubricants — Determination of water washout characteristics of lubricating greases

WARNING — The use of this document can involve hazardous materials, operations and equipment. This document does not purport to address all of the safety problems associated with its use. It is the responsibility of users of this document to take appropriate measures to ensure the safety and health of personnel prior to the application of the document, and to determine the applicability of any other restrictions for this purpose.

1 Scope

This document specifies a method for evaluating the resistance of a lubricating grease to washout by water from a bearing, when tested at 38 °C or 79 °C under specified laboratory test conditions.

This test method estimates the resistance of greases to washout from ball bearings under specified conditions. No formal correlation with field service has been established so far.

This document is used for development and specification purposes.

NOTE For the purposes of this document, the term "% (*m*/*m*)" is used to represent the mass fraction.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 15, *Rolling bearings — Radial bearings — Boundary dimensions, general plan*

ISO 1998-1, *Petroleum industry — Terminology — Part 1: Raw materials and products*

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

ISO 23572, *Petroleum products — Lubricating greases — Sampling of greases*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1998-1 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4 Principle

A test portion of grease is packed in a ball bearing inserted in a housing with specified clearances. The bearing is rotated at 63 rad/s ± 3 rad/s (600 min^{-1} ± 30 min^{-1}). Water, controlled at a specified test temperature, impinges on the bearing housing from a nozzle with a diameter of 1 mm, at a rate of 5 ml/s ± 0,5 ml/s. The distance between the end of the nozzle and the shield of the housing is 57 mm. The water jet is set to strike the bearing 6 mm ± 2 mm above the upper edge of the shield. The amount of grease washed out in 60 min ± 5 min is a measure of the resistance of the grease to water washout.

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