International Standard

ISO 16675

Petroleum and related products — Determination of anti-aging for phosphate ester turbine control fluids

Produits pétroliers et connexes — Détermination de la résistance au vieillissement des fluides de régulation de turbines à base d'esters phosphates

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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.

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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*.

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

Anti-aging performance of phosphate ester hydraulic fluid is essential for the safe, stable and economical operation of turbine speed control systems. This document establishes a standardized method to evaluate anti-aging performance of phosphate ester hydraulic fluid, aiming to mitigate global hazards resulting from improper usage of the fluid.

The test method described in this document involves an aging process, in which a sample, water, oxygen and copper catalyst are put into a closed stainless-steel vessel, injecting oxygen at a certain pressure and then aged at a constant temperature for some time. Compared to EN 14832 and EN 14833, which evaluate oxidation and hydrolytic stability with an open testing system, this method uses a closed pressurized vessel for aging and has a shorter duration. The anti-aging performance of the sample is expressed by the increase of acid number over the ageing process. The acid number is determined with one of the test methods specified in ISO 6618 or ISO 6619.

Acid numbers determined according to ISO 6619 cannot be directly comparable to results from ISO 6618. Therefore, it is only possible to compare results obtained using the same method.

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Petroleum and related products — Determination of anti-aging for phosphate ester turbine control fluids

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1 Scope

This document specifies an aging method for phosphate ester turbine control fluids. These products fall into category HFDR as specified in ISO 6743-4 and into categories TSD, TGD and TCD as specified in ISO 6743-5. The amount of acid developed during the test is used to assess the level of anti-aging performance.

This document is applicable to the anti-aging performance determination for phosphate ester turbine control fluids that are both new and in-service.

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 1190-1, *Copper and copper alloys — Code of designation — Part 1: Designation of materials*

ISO 3170, *Hydrocarbon Liquids — Manual sampling*

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

ISO 6618, *Petroleum products and lubricants — Determination of acid or base number — Colour-indicator titration method*

ISO 6619, *Petroleum products and lubricants — Neutralization number — Potentiometric titration method*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

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

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

3.1
anti-aging performance
changes in the acid number of a phosphate ester turbine control fluid when subjected to the accelerated aging process, which are conducted with oxygen, water and the catalyst of copper coil in a closed pressurized vessel for a certain duration

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