
**Petroleum and related products —
Determination of the shear stability of
polymer-containing oils using a diesel
injector nozzle**

*Pétrole et produits connexes — Détermination de la stabilité au
cisaillement de fluides contenant des polymères au moyen d'un
injecteur pour moteur diesel*



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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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 28, *Petroleum products and related products of synthetic or biological origin*.

ISO Technical Committee ISO/TC 28 acknowledges permission granted by Co-ordinating European Council to reproduce selected parts of CEC Test Method L-14-93.

This second edition cancels and replaces the first edition (ISO 20844:2004), which has been technically revised with the following changes:

- correction of deficiencies of the former standard and alignment with CEC L-14-93 have been introduced;
- the requirements concerning reagents ([Clause 5](#)) has been updated as the former reference fluid is no longer available;
- a requirement on minimum test volume availability ([7.2](#)) has been introduced based on field experience;
- the preparation of the test rig ([Clause 8](#) and [Annex A](#)) and subsequently the referencing ([Clause 9](#)) have been improved and technically revised.

Petroleum and related products — Determination of the shear stability of polymer-containing oils using a diesel injector nozzle

WARNING — The use of this International Standard may involve hazardous materials, operations and equipment. This International Standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this International Standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

1 Scope

This International Standard specifies a method to assess the resistance to shear stresses applied to mineral oils, synthetic oils, and other fluids containing polymers, when passed through a specified diesel injector nozzle. The shear stability is measured by the change in viscosity of the fluid under test, brought about by the polymer degradation during stress. Under normal circumstances, this International Standard is applied to hydraulic fluids of categories HR and HV as defined in ISO 6743-4^[1] and specified in ISO 11158^[2], but it may also be applied to fire-resistant hydraulic fluids within categories HFA, HFB, HFC, and HFD, with modified conditions as specified in ISO 12922^[3].

No formal correlation has been established between the viscosity loss, or the absence of viscosity loss, obtained using the procedures described in this International Standard and that of oils and fluids in actual service. However, it provides standardized conditions for the evaluation of polymer stability under minimized thermal and oxidative stresses. It is normally used by manufacturers of fluids and additives, and users, as a means of ranking existing and potential formulations.

NOTE Changes to properties other than viscosity are specified in some specifications, but these are not covered by the procedures specified in this International Standard.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3104, *Petroleum products — Transparent and opaque liquids — Determination of kinematic viscosity and calculation of dynamic viscosity*

ISO 3170, *Petroleum liquids — Manual sampling*

ISO 4113, *Road vehicles — Calibration fluids for diesel injection equipment*

3 Terms and definitions

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

3.1

shear stability

mechanically-induced viscosity shear loss at 40 °C of a fluid, expressed as percentage

Note 1 to entry: Viscosity measurements at other temperatures may be specified by some users.