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Road Vehicles — Aerosol separator performance test for internal combustion engines — Part 4: Laboratory fractional efficiency test method (ISO 17536-4:2019)

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Part 4: Laboratory fractional efficiency test method

Véhicules Routiers — Essai de performance du séparateur d'aérosols pour les moteurs à combustion interne —

Partie 4: Méthode d'essai de l'efficacité fractionnelle en laboratoire

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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 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 22, *Road vehicles*, Subcommittee SC 34, *Propulsion, powertrain and powertrain fluids*.

A list of all parts in the ISO 17536 series can be found on the ISO website.

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.

Introduction

Engine crankcase blowby is composed of combustion exhaust gases, which have escaped to the crankcase via piston ring seals, and lube oil aerosols generated by thermal and mechanical action within the engine. These gases are vented from the crankcase to prevent a build-up of high pressure. The constituents of vented engine blowby gases are recognized as an undesirable contaminant and technology for their containment is therefore evolving.

The device used to separate oil aerosols from the blowby typically releases cleaned gases to atmosphere or into the air inlet prior to the engine or turbo compressor (if present). The latter has led to the requirement for a pressure control device to isolate the engine from turbo inlet suction.

It is the purpose of this document to define standardized and repeatable test procedures for the evaluation of blowby oil aerosol separators and filtering devices using this laboratory fractional efficiency test method.

INTERNATIONAL STANDARD **ISO 17536-4:2019(E)**

Road Vehicles — Aerosol separator performance test for internal combustion engines —

Part 4: Laboratory fractional efficiency test method

1 Scope

This document defines standardized and repeatable test procedures for the evaluation of blowby oil aerosol separators and filtering devices and specifies laboratory fractional separation efficiency in both open and closed crankcase ventilation systems.

Filter life is not evaluated in this document.

The conditioned portion of this test only applies to filters that can meet the Dp stability requirements referenced in ISO/TS 17536-2.

Conformance of a device to legislation is outside of the scope of this document.

Due to limited precision using current equipment, this document is not suitable for filters above an efficiency of 99 %.

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 17536-1:2015, *Road vehicles — Aerosol separator performance test for internal combustion engines — Part 1: General*

ISO/TS 17536-2, *Road vehicles — Aerosol separator performance test for internal combustion engines — Part 2: Laboratory test method*

3 Terms, definitions, and abbreviated terms

For the purposes of this document, the terms and definitions given in ISO 17536-1 and the following 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/

3.1 Terms and definitions

3.1.1
fractional separation efficiency
ability of the separator to remove particles of a specified size expressed as a percentage