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BSI Standards Publication

Road vehicles — Aerosol separator performance test for internal combustion engines

Part 3: Method to perform engine gravimetric test

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

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

Part 3: Method to perform engine gravimetric test

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

Partie 3: Méthode pour effectuer un essai gravimétrique du moteur

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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 22, *Road vehicles*, Subcommittee SC 5, *Engine tests*.

ISO 17536 consists of the following parts, under the general title *Road Vehicles — Aerosol separator performance test for internal combustion engines*:

— *Part 1: General*

— *Part 3: Method to perform engine gravimetric test* [Technical Specification]

The following parts are under preparation:

— *Part 2: Laboratory gravimetric test method*

— *Part 4: Laboratory fractional test method*

— *Part 5: Engine fractional efficiency test method*

Introduction

Engine crankcase blowby is composed of combustion exhaust gases which have escaped to the crankcase through 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 alternatively returns the cleaned product to the combustion process by feeding into the air inlet, prior to the turbo compressor. 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 part of ISO 17536 to define standardized and repeatable test procedures for the evaluation of blowby oil aerosol separators and filtering devices using this engine gravimetric test method. This part of ISO 17536 is only a general guideline for performing an engine test.

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

Part 3: Method to perform engine gravimetric test

1 Scope

This part of ISO 17536 defines standardized and repeatable test procedures by using internal combustion engines for the evaluation of blowby oil aerosol separators and specifies engine gravimetric separation efficiency and system pressure tests in both open and closed crankcase ventilation systems.

Filter life is not evaluated in this part of ISO 17536.

Conformance of a device to legislation is outside of the scope of this part of ISO 17536 and the appropriate regulations are to be consulted.

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

3 Terms, definitions, symbols, and units

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

4 Measurement accuracy

The measurement accuracy of this part of ISO 17536 shall be in accordance with ISO 17536-1:—, Clause 3.

5 Test materials and test conditions

5.1 Test oil and aerosol

The aerosol produced by the engine will be measured by volume flow rate. A graph of the droplet size distribution can be documented and displayed in particle size (µm) versus volume percent less than stated size. If a distribution exists, inclusion in the report is suggested.

Aerosol concentration will be measured by collecting the total flow of challenge aerosol with an absolute filter and wall flow trap.

The engine oil shall be documented for manufacturer, name, and make.

The oil and aerosol results shall be documented in the test report in Annex A.

1) To be published.