

This is a preview of "ISO 8178-5:2015". [Click here to purchase the full version from the ANSI store.](#)

Third edition
2015-11-15

Reciprocating internal combustion engines — Exhaust emission measurement —

Part 5: Test fuels

*Moteurs alternatifs à combustion interne — Mesurage des émissions
de gaz d'échappement —*

Partie 5: Carburants d'essai



Reference number
ISO 8178-5:2015(E)

© ISO 2015

This is a preview of "ISO 8178-5:2015". Click [here](#) to purchase the full version from the ANSI store.



COPYRIGHT PROTECTED DOCUMENT

© ISO 2015, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

This is a preview of "ISO 8178-5:2015". [Click here to purchase the full version from the ANSI store.](#)

Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Symbols and abbreviated terms	3
5 Choice of fuel	3
5.1 General.....	3
5.2 Influence of fuel properties on emissions from compression ignition engines.....	4
5.2.1 Fuel sulfur.....	4
5.2.2 Specific considerations for marine fuels.....	7
5.2.3 Other fuel properties.....	7
5.3 Influence of fuel properties on emissions from spark ignition engines.....	8
6 Overview of fuels	9
6.1 Natural Gas.....	9
6.1.1 Reference natural gas.....	9
6.1.2 Non-referenced natural gas.....	9
6.2 Liquefied petroleum gas.....	9
6.2.1 Referenced liquefied petroleum gas.....	9
6.2.2 Non-referenced liquefied petroleum gas.....	9
6.3 Engine gasolines.....	9
6.3.1 Referenced engine gasolines.....	9
6.3.2 Non-referenced engine gasolines.....	10
6.4 Diesel fuels.....	10
6.4.1 Diesel reference fuels.....	10
6.4.2 Non-referenced diesel fuels.....	10
6.5 Distillate fuel oils.....	10
6.6 Residual fuel oils.....	10
6.7 Crude oil.....	11
6.8 Alternative fuels.....	11
6.9 Requirements and additional information.....	11
Annex A (informative) Calculation of the fuel specific factors	27
Annex B (informative) Equivalent non-ISO test methods	33
Bibliography	35

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 70, *Internal combustion engines*, Subcommittee SC 8, *Exhaust gas emission measurement*.

This third edition cancels and replaces the second edition (ISO 8178-5:2008), of which it constitutes a minor revision.

ISO 8178 consists of the following parts, under the general title *Reciprocating internal combustion engines — Exhaust emission measurement*:

- *Part 1: Test-bed measurement of gaseous and particulate exhaust emissions*
- *Part 2: Measurement of gaseous and particulate exhaust emissions under field conditions*
- *Part 3: Definitions and methods of measurement of exhaust gas smoke under steady-state conditions*
- *Part 4: Steady-state test cycles for different engine applications¹⁾*
- *Part 5: Test fuels*
- *Part 6: Report of measuring results and test*
- *Part 7: Engine family determination*
- *Part 8: Engine group determination*
- *Part 9: Test cycles and test procedures for test bed measurement of exhaust gas smoke emissions from compression ignition engines operating under transient conditions*
- *Part 10: Test cycles and test procedures for field measurement of exhaust gas smoke emissions from compression ignition engines operating under transient conditions*

1) ISO 8178-4 is currently under revision and foreseen to be published with above new title in 2016.

This is a preview of "ISO 8178-5:2015". [Click here to purchase the full version from the ANSI store.](#)

Introduction

In comparison with engines for on-road applications, engines for off-road use are made in a much wider range of power output and configurations and are used in a great number of different applications.

Since fuel properties vary widely from country to country a broad range of different fuels is listed in this part of ISO 8178 — both reference fuels and commercial fuels.

Reference fuels are usually representative of specific commercial fuels but with considerably tighter specifications. Their use is primarily recommended for test bed measurements described in ISO 8178-1.

For measurements typically at site where emissions with commercial fuels, whether listed or not in this part of ISO 8178, are to be determined, uniform analytical data sheets (see [Clause 5](#)) are recommended for the determination of the fuel properties to be declared with the exhaust emission results.