



**SLOVENSKI STANDARD**  
**SIST EN ISO 5164:2014**

**01-september-2014**

**Nadomešča:**  
**SIST EN ISO 5164:2006**

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**Naftni proizvodi - Določevanje oktanskega števila motornih goriv - Raziskovalna metoda (ISO 5164:2014)**

Petroleum products - Determination of knock characteristics of motor fuels - Research method (ISO 5164:2014)

Mineralölerzeugnisse - Bestimmung der Klopfestigkeit von Ottokraftstoffen - Research-Verfahren (ISO 5164:2014)

Produits pétroliers - Détermination des caractéristiques antidétonantes des carburants pour moteurs - Méthode de recherche (ISO 5164:2014)

**Ta slovenski standard je istoveten z: EN ISO 5164:2014**

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**ICS:**

75.160.20      Tekoča goriva      Liquid fuels

**SIST EN ISO 5164:2014**      **en**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN ISO 5164**

June 2014

ICS 75.160.20

Supersedes EN ISO 5164:2005

English Version

## Petroleum products - Determination of knock characteristics of motor fuels - Research method (ISO 5164:2014)

Produits pétroliers - Détermination des caractéristiques antidétonantes des carburants pour moteurs - Méthode de recherche (ISO 5164:2014)

Mineralölerzeugnisse - Bestimmung der Klopfestigkeit von Ottokraftstoffen - Research-Verfahren (ISO 5164:2014)

This European Standard was approved by CEN on 14 April 2014.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

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## Foreword

This document (EN ISO 5164:2014) has been prepared by Technical Committee ISO/TC 28 "Petroleum products and lubricants" in collaboration with Technical Committee CEN/TC 19 "Gaseous and liquid fuels, lubricants and related products of petroleum, synthetic and biological origin" the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2014, and conflicting national standards shall be withdrawn at the latest by December 2014.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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ISO  
5164

Fourth edition  
2014-06-01

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**Petroleum products — Determination  
of knock characteristics of motor fuels  
— Research method**

*Produits pétroliers — Détermination des caractéristiques  
antidétonantes des carburants pour moteurs — Méthode de recherche*

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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. [www.iso.org/directives](http://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. [www.iso.org/patents](http://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 lubricants*.

This fourth edition cancels and replaces the third edition (ISO 5164:2005). Besides improving the understanding of some of the procedures, the main revision lays in the introduction of the so-called digital detonation meter. The revision includes allowances both measurement systems:

- a) the knock measurement system based on analogue technology, and
- b) the XCP digital technology used in the digital detonation meter.

## ISO 5164:2014(E)

### Introduction

The purpose of this International Standard is to accord ISO status to a test procedure that is already used in a standardized form all over the world. The procedure in question is published by ASTM International as Standard Test Method D 2699-12.

By publishing this International Standard, ISO recognizes that this method is used in its original text in many member countries and that the standard equipment and many of the accessories and materials required for the method are obtainable only from specific manufacturers or suppliers. To carry out the procedure in every detail requires reference to annexes and appendices of ASTM D 2699-12. The annexes detail the specific equipment and instrumentation required, the critical component settings and adjustments, and include the working tables of referenced settings. The appendices provide background and additional insight about auxiliary equipment, operational techniques and the concepts relative to proper maintenance of the engine and instrumentation items.

The accumulated motor fuel data relating to knock characteristics determined in many countries has, for many years, been based on the use of the CFR engine and the ASTM octane test methods. Accepted worldwide, petroleum industry octane number requirements for motor fuels are defined by the research method and associated CFR F-1 Octane Rating Unit<sup>1)</sup>, which emphasizes the need for this method and test equipment to be standardized. The initiation of studies to use a different engine for ISO purposes has therefore been considered an unnecessary duplication of effort.

For these reasons, it has been considered desirable by ISO Technical Committee 28, *Petroleum products and lubricants*, to adopt the ASTM D 2699 standard procedures. However, this International Standard refers to annexes and appendices of ASTM D 2699 without change because of their extensive detail. These annexes and appendices are not included in this International Standard because they are available from ASTM International.

Due to identified component obsolescence issues, the original, analogue control panel has been replaced by the manufacturer by new digital panel as of 2011. Service parts availability for the analogue system will be phased out in the future. Research work was executed by ASTM International<sup>[5]</sup> to check whether there was statistically observable systemic bias between the 501C and the new digital knock measurement system.

With respect to precision ISO and ASTM technical committees concluded that there was numerically comparable precision for repeatability between the 501C and new panel knock measurement systems, and no statistically observable difference for reproducibility between the 501C and new panel knock measurement systems. This means that the new CFR octane panel could be included in the test method.

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1) The sole manufacturer of the Model CFR F-1 Octane Rating Unit is Waukesha Engine, Dresser Waukesha, Inc., 1000 West St. Paul Avenue, Waukesha, WI 53188, USA.