INTERNATIONAL STANDARD 5165

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Diesel fuels — Determination of ignition quality — Cetane method

Carburants pour moteur diesel — Détermination de la qualité d'inflammabilité — Méthode cétane

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 5165 was developed by Technical Committee ISO/TC 28, *Petroleum products*, and was circulated to the member bodies in June 1976.

It has been approved by the member bodies of the following countries :

Australia	Iran	Portugal
Austria	Ireland	Romania
Belgium	Israel	South Africa, Rep. of
Brazil	Italy	Spain
Canada	Japan	Sweden
Czechoslovakia	Korea, Rep. of	Turkey
Egypt, Arab Rep. of	Mexico	United Kingdom
France	Netherlands	U.S.A.
Hungary	Philippines	
India	Poland	

The member bodies of the following countries expressed disapproval of the document on technical grounds :

Germany
U.S.S.R.

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0 INTRODUCTION

The purpose of this International Standard is to accord official ISO status to a test procedure which is already used in a standardized form all over the world. The procedure in question is published by the American Society for Testing and Materials (ASTM) as method ASTM D 613, *Standard method of test for ignition quality of diesel fuels by the cetane method*.

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 requires reference to the seven annexes to the ASTM Annual Book of Standards, Part 47, *Test methods for rating motor, diesel and aviation fuels*. These comprise over 100 pages of text and include many half-tone block illustrations which are essential to the installation, operation and maintenance of the ASTM-CFR engine.

From the accumulated experience in many countries of testing the ignition quality characteristics of diesel fuels using the ASTM-CFR engine, the conclusion has been drawn that initiation of work with a view to using a different engine for ISO purposes would represent unnecessary duplication of effort. Furthermore, the petroleum industry has world-wide demands for diesel fuels meeting ignition quality characteristic specification requirements based on the ASTM-CFR engine test and it is under the necessity, therefore, of having this test equipment standardized.

It is further recognized that this method for rating diesel fuels constitutes an exceptional case in that "metrication" of operating conditions other than those already recognized would be extremely difficult. In a metricated engine, the dimensions and tolerances would be strict numerical conversions and would not reflect metric engineering practice. The engine and directly associated equipment are currently manufactured only to non-metric dimensions and tolerances and inspection equipment to maintain these tolerances is also only available to non-metric dimensions. The essentials of the procedures for using the test engine and equipment must be strictly adhered to if comparable results are to be obtained in different laboratories.

For all these reasons, it has been considered desirable by Technical Committee ISO/TC 28, *Petroleum products*, under whose technical authority this International Standard is published, to adopt without change the method as published in the ASTM Annual Book of Standards, Part 47, rather than to attempt the conversion of the basic method and annexes into an International Standard.

1 SCOPE AND FIELD OF APPLICATION

1.1 This International Standard covers the determination of the ignition quality of diesel fuels in terms of cetane number.

It specifies the use of the apparatus and procedure described in the ASTM Annual Book of Standards, Part 47.

1.2 The cetane number of a diesel fuel is determined by comparing its ignition quality with those for blends of reference fuels of known cetane number under standard operating conditions. This is done by varying the compression ratio for the sample and each reference fuel to obtain a fixed delay period, that is, the time interval between the start of injection and ignition. When the compression ratio for the sample is bracketed between those for two reference fuel blends, the rating of the sample in terms of cetane number is calculated by interpolation.