Indian Standard

METHODS OF TEST FOR PETROLEUM AND ITS PRODUCTS

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DETERMINATION OF THE IGNITION QUALITY OF DIESEL FUELS — CETANE ENGINE METHOD

(First Revision)

WARNING – The use of this International Standard may involve hazardous materials, operations and equipment. This International Standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this International Standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

1 Scope

This International Standard establishes the rating of diesel fuel oil in terms of an arbitrary scale of cetane numbers using a standard single cylinder, four-stroke cycle, variable compression ratio, indirect injected diesel engine. The cetane number provides a measure of the ignition characteristics of diesel fuel oil in compression ignition engines. The cetane number is determined at constant speed in a pre-combustion chamber-type compression ignition test engine. However, the relationship of test engine performance to full scale, variable speed, variable load engines is not completely understood.

This International Standard is applicable for the entire scale range from zero cetane number (CN) to 100 CN but typical testing is in the range of 30 CN to 65 CN.

This test may be used for unconventional fuels such as synthetics, vegetable oils, etc. However, the relationship to the performance of such materials in full scale engines is not completely understood.

Samples with fluid properties that interfere with the gravity flow of fuel to the fuel pump or delivery through the injector nozzle are not suitable for rating by this method.

NOTE 1 This International Standard specifies operating conditions in SI units but engine measurements are specified in inch-pound units because these are the units used in the manufacture of the equipment, and thus some references in this International Standard include these units in parenthesis.

NOTE 2 For the purposes of this International Standard, the expression "% (V/V)" is used to represent the volume fraction of a material.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 3015:1992, Petroleum products – Determination of cloud point.

ISO 3170:1988, Petroleum liquids – Manual sampling.

ISO 3171:1988, Petroleum liquids – Automatic pipeline sampling.

ISO 3696:1987, Water for analytical laboratory use – Specification and test methods.

ISO 4787:1984, Laboratory glassware – Volumetric glassware – Methods for use and testing of capacity.