ICS 75.160.20 SLOVENSKÁ TECHNICKÁ NORMA Apríl 2025

STN	**Výrobky z ropy, syntetických a obnoviteľných zdrojov Palivá (trieda F) Špecifikácie lodných palív**	**STN ISO 8217** 65 6502

Products from petroleum, synthetic and renewable sources
Fuels (class F)
Specifications of marine fuels

Produits d'origine pétrolière, synthétique ou renouvelable
Combustibles (classe F)
Spécifications des combustibles pour la marine

Táto slovenská technická norma obsahuje anglickú verziu medzinárodnej normy ISO 8217: 2024 a má postavenie oficiálnej verzie.

This Slovak standard includes the English version of International standard ISO 8217: 2024 and has the status of the official version.

Nahradenie predchádzajúcich dokumentov

Táto slovenská technická norma nahrádza STN ISO 8217 z apríla 2020 v celom rozsahu.

140260

Anotácia

Tento dokument ako celok definuje všeobecné požiadavky a špecifikácie palív používaných v lodných vznetových motoroch a kotloch pred manipuláciou s palivom na palube (skladovanie, usadzovanie, odstreďovanie, filtrácia, ohrev) pred ich používaním.

Národný predhovor

UPOZORNENIE: Používanie tejto medzinárodnej normy môže byť spojené s používaním nebezpečných látok, pracovných postupov alebo zariadení. Táto medzinárodná norma nerieši všetky bezpečnostné problémy spojené s jej používaním. Používateľ tejto medzinárodnej normy je zodpovedný za prijatie primerane bezpečného a zdravotne vyhovujúceho postupu prác, ako aj za určenie legislatívnych obmedzení, ktoré sa majú aplikovať ešte pred jej použitím.

Normatívne referenčné dokumenty

Na nasledujúce dokumenty sa odkazuje v texte takým spôsobom, že časť ich obsahu alebo celý obsah predstavuje požiadavky tohto dokumentu. Pri datovaných odkazoch sa používa len citované vydanie. Pri nedatovaných odkazoch sa používa najnovšie vydanie citovaného dokumentu (vrátane akýchkoľvek zmien).

POZNÁMKA 1. – Ak bola medzinárodná publikácia zmenená spoločnými modifikáciami, čo je indikované označením (mod), použije sa príslušná EN/HD.

POZNÁMKA 2. – Aktuálne informácie o platných a zrušených STN a TNI možno získať na webovom sídle www.unms.sk.

ISO 2719 prijatá ako STN EN ISO 2719 Stanovenie bodu vzplanutia. Metóda v uzavretom tégliku podľa Penského-Martensa (ISO 2719) (65 6064)

ISO 3015 prijatá ako STN EN ISO 3015 Ropné výrobky a príbuzné výrobky z prírodných alebo syntetických zdrojov. Stanovenie bodu zákalu (ISO 3015) (65 6131)

ISO 3016 prijatá ako STN EN ISO 3016 Ropné výrobky a príbuzné výrobky z prírodných alebo syntetických zdrojov. Stanovenie bodu tekutosti (ISO 3016) (65 6078)

ISO 3104 prijatá ako STN EN ISO 3104 Ropné výrobky. Priehľadné a nepriehľadné kvapaliny. Stanovenie kinematickej viskozity a výpočet dynamickej viskozity (ISO 3104) (65 6216)

ISO 3675 prijatá ako STN EN ISO 3675 Ropa a kvapalné ropné výrobky. Laboratórne stanovenie hustoty. Metóda stanovenia hustomerom (ISO 3675) (65 6009)

ISO 3733 dosiaľ neprijatá

ISO 4259-2 prijatá ako STN EN ISO 4259-2 Ropné výrobky a príbuzné výrobky. Zhodnosť metód merania a výsledkov merania. Časť 2: Interpretácia a používanie údajov zhodnosti vo vzťahu k skúšobným metódam (ISO 4259-2) (65 6004)

ISO 4264 prijatá ako STN EN ISO 4264 Ropné výrobky. Výpočet cetánového indexu stredných palivových destilátov rovnicou so štyrmi premennými (ISO 4264) (65 6187)

ISO 5165 prijatá ako STN EN ISO 5165 Ropné výrobky. Stanovenie vznietivosti motorových náft. Stanovenie cetánového čísla motorovou metódou (ISO 5165) (65 6196)

ISO 6245 prijatá ako STN EN ISO 6245 Ropné výrobky. Stanovenie popola (ISO 6245) (65 6019)

ISO 8754 prijatá ako STN EN ISO 8754 Ropné výrobky. Stanovenie obsahu síry. Energo-disperzná röntgenová fluorescenčná spektrometria (ISO 8754) (65 6114)

ISO 10307-1 dosiaľ neprijatá

ISO 10307-2 dosiaľ neprijatá

ISO 10370 prijatá ako STN EN ISO 10370 Ropné výrobky. Stanovenie uhlíkového zvyšku. Mikrometóda (ISO 10370) (65 6015)

ISO 10478 dosiaľ neprijatá

ISO 12156-1 prijatá ako STN EN ISO 12156-1 Motorová nafta. Stanovenie mazivosti s využitím vysokofrekvenčného trecieho mechanizmu (HFRR). Časť 1: Skúšobná metóda (ISO 12156-1) (65 6132)

ISO 12185 prijatá ako STN EN ISO 12185 Ropa, ropné výrobky a príbuzné výrobky. Stanovenie hustoty. Laboratórny hustomer s oscilačným U-trubicovým snímačom (ISO 12185) (65 6012)

ISO 12205 prijatá ako STN EN ISO 12205 Ropné výrobky. Stanovenie oxidačnej stálosti stredných destilátových palív (ISO 12205) (65 6189)

ISO 12937 prijatá ako STN EN ISO 12937 Ropné výrobky. Určovanie vody. Karl Fischerova coulometrická titračná metóda (ISO 12937) (65 6033)

ISO 14596 prijatá ako STN EN ISO 14596 Ropné výrobky. Stanovenie obsahu síry. Vlnovodĺžková disperzná röntgenová fluorescenčná spektrometria (ISO 14596) (65 6115)

ISO 14597 prijatá ako STN EN ISO 14597 Ropné výrobky. Stanovenie vanádu a niklu. Vlnová disperzná röntgenová spektrometria (ISO 14597) (65 6116)

EN 116 prijatá ako STN EN 116 Motorové nafty a vykurovacie oleje pre domácnosť. Stanovenie medznej teploty filtrovateľnosti. Metóda s postupným ochladzovaním nádoby (65 6165)

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EN 14078 prijatá ako STN EN 14078 Kvapalné ropné výrobky. Stanovenie obsahu metylesterov mastných kyselín (FAME) v stredných destilátoch. Metóda infračervenej spektrometrie (65 6532)

EN 14214 prijatá ako STN EN 14212 + A2 Kvapalné ropné výrobky. Metylestery mastných kyselín (FAME) pre vznetové motory a na vykurovanie. Požiadavky a skúšobné metódy (65 6531)

EN 15195 prijatá ako STN EN 15195 Kvapalné ropné výrobky. Stanovenie oneskorenia vznietenia a odvodeného cetánového čísla (DCN) stredných palivových destilátov spaľovaním v komore s konštantným objemom (65 6163)

EN 15751 prijatá ako STN EN 15751 Automobilové palivá. Palivo metylestery vyšších mastných kyselín (FAME) a jeho zmesi s motorovou naftou. Stanovenie oxidačnej stálosti zrýchlenou oxidačnou metódou (65 6191)

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EN 16329 prijatá ako STN EN 16329 Motorové nafty a vykurovacie oleje pre domácnosť. Stanovenie medznej teploty filtrovateľnosti. Metóda s lineárnym ochladzovaním nádoby (65 6166)

EN 16715 prijatá ako STN EN 16715 Kvapalné ropné výrobky. Stanovenie oneskorenia vznietenia a odvodeného cetánového čísla (DCN) stredných palivových destilátov. Stanovenie oneskorenia vznietenia a spálenia použitím metódy spaľovania v komore s konštantným objemom s priamym vstrekovaním paliva (65 6170)

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ASTM D664 dosiaľ neprijatá

ASTM D2622 dosiaľ neprijatá

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IP 501 dosiaľ neprijatá

IP 570 dosiaľ neprijatá

IP 631 dosiaľ neprijatá

Súvisiace právne predpisy

smernica Európskeho parlamentu a Rady (EÚ) 2016/802 z 11. mája 2016 o znížení obsahu síry v niektorých kvapalných palivách (kodifikované znenie)

zákon č. 146/2023 o ochrane ovzdušia a o zmene a doplnení niektorých zákonov

Vypracovanie

Spracovateľ: Úrad pre normalizáciu, metrológiu a skúšobníctvo SR, Bratislava

Technická komisia: TK 50 Ropa, plynné a kvapalné palivá, ostatné výrobky z ropy a palivá z obnoviteľných zdrojov

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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 document 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).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 28, *Petroleum and related products, fuels and lubricants from natural or synthetic sources*, Subcommittee SC 4, *Classifications and specifications*.

This seventh edition cancels and replaces the sixth edition (ISO 8217:2017), which has been technically revised.

The main changes are as follows:

— terms and definitions (Clause 3) have been updated;

— the Scope and the general requirements in Clause 5 have been amended;

— Tables 2 and 3 have been added;

— former Table 2 has been modified and has become Table 4;

— changes to the distillate fuels, including the following:

  — the requirement to report the fatty acid methyl ester(s) content (FAME) of DF grades has been changed, allowing up to 100 %;

  — the distinction between winter and summer quality for cloud point and cold filter plugging point has been removed;

  — the requirement to report the net heat of combustion for DF grades has been added;

  — a minimum cetane number requirement for DF grades has been added;

  — the requirement for oxidation stability for DF grades has been added;

— Clauses 9 and 10 have been added;

— new Annexes F, H and K have been added (the former Annex F has become Annex G, the former Annex G has become Annex I, and the former Annex H has become Annex J);

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EN 16715, *Liquid petroleum products — Determination of ignition delay and derived cetane number (DCN) of middle distillate fuels — Ignition delay and combustion delay determination using a constant volume combustion chamber with direct fuel injection*

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IP 570, *Determination of hydrogen sulfide in fuel oils — Rapid liquid phase extraction method*

IP 631, *Determination of the contamination level of fatty acid methyl esters in middle distillate and residual fuels using Flow Analysis by Fourier Transform Infrared Spectroscopy — Rapid Screening Method*

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Introduction

This document was prepared in cooperation with ship owners, ship operators, shipping associations, paint standards bodies, classification societies, fuel testing services, engine designers, fuel treatment equipment manufacturers, marine fuel suppliers, fuel additive suppliers and the petroleum industry to meet the requirements for marine fuels supplied on a world-wide basis for consumption on board ships.

The increased focus on environmental concerns and legislation to address them is leading to a transition in the nature of marine fuels. There is a shift away from marine fuels supplied from traditional oil products derived from the processing of petroleum crude, and a shift towards oil products derived from synthetic and renewable, recycled or alternative sources. This document takes into consideration the diverse nature of these fuels and incorporates a number of categories of distillate and residual fuels, even though it is possible that not all categories are available in every supply location. This document facilitates the transition, however sustainability aspects and accounting are not within the scope.

The categories of fuel in this document have been classified according to ISO 8216-1 and include the distillate fuel categories DMX, DMA, DMB, DMZ, DFA, DFB, DFZ and the residual fuel categories RMA, RME, RMG, RMK and RF.

In the instances where a fuel, which does not conform exactly to any of these distillate or residual fuel categories, is offered to a purchaser, the fuel characteristics or limits can be agreed between the buyer and the seller and defined by both a category of fuel given by this document together with any different or additional fuel characteristics or limits, as necessary to adequately define that fuel.

This document specifies the permitted maximum flash point limits following the provisions given in the SOLAS Convention[3].

MARPOL Annex VI[4], which controls air pollution from ships, includes a requirement that either the fuel does not exceed a specified maximum sulfur content, or an approved equivalent alternative means is used. During the lifetime of this document, regional and/or national authorities can introduce their own local emission requirements, which can impact the allowable sulfur content. It is the buyer's and the user's responsibility to establish which statutory requirements are necessary to meet and specify on that basis the corresponding maximum fuel sulfur content to the seller.

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ASTM D240, *Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter*

ASTM D664, *Standard Test Method for Acid Number of Petroleum Products by Potentiometric Titration*

WARNING — The handling and use of products specified in this document can be hazardous if precautions as mentioned in the Safety Data Sheet (SDS) are not taken into consideration when product is handled. This document does not purport to address all the safety and health considerations that can be associated with its use. It is the responsibility of the users of this document to establish appropriate safety and health practices and to determine the applicability of regulatory limitations prior to use.

ASTM D2622, *Standard Test Method for Sulfur in Petroleum Products by Wavelength Dispersive X-ray Fluorescence Spectrometry*

ASTM D4294, *Standard Test Method for Sulfur in Petroleum and Petroleum Products by Energy-Dispersive X-ray Fluorescence Spectrometry*

ASTM D6751, *Standard Specification for Biodiesel Fuel Blend Stock (B100) for Middle Distillate Fuels*

1 Scope

ASTM D6890, *Determination of Ignition Delay and Derived Cetane Number (DCN) of Diesel Fuel Oils by Combustion in a Constant Volume Chamber*

This document in its entirety defines the general requirements and specifications for fuels used in marine diesel engines and boilers, prior to onboard fuel handling (storage, settling, centrifuging, filtration, heating) before use.

ASTM D7371, *Standard Test Method for Determination of Biodiesel (Fatty Acid Methyl Esters) Content in Diesel Fuel Oil Using Mid Infrared Spectroscopy (FTIR-ATR-PLS Method)*

For the purposes of this document, the term "fuels" comprises of the following:

ASTM D7668, *Standard Test Method for Determination of Derived Cetane Number (DCN) of Diesel Fuel Oils—Ignition Delay and Combustion Delay Using a Constant Volume Combustion Chamber Method*

— hydrocarbons from petroleum crude oil, oil sands and shale oil;

ASTM D7963, *Standard Test Method for Determination of Contamination Level of Fatty Acid Methyl Esters in Middle Distillate and Residual Fuels Using Flow Analysis by Fourier-Transform Infrared Spectroscopy-Rapid Screening Method*

— synthetic hydrocarbons, renewable hydrocarbons or hydrocarbons from recycled sources, with molecular structures that are indistinguishable from petroleum hydrocarbons;

ASTM D8183, *Standard Test Method for Determination of Indicated Cetane Number (ICN) of Diesel Fuel Oils using a Constant Volume Combustion Chamber—Reference Fuels Calibration Method*

— fatty acid methyl ester (FAME), where permitted as specified in this document;

— blends of any of the above, where permitted as specified in this document.

The general requirements and specifications for fuels in this document can also be applied to fuels used in stationary diesel engines of the same or similar type as those used for marine purposes.

IP 470, *Determination of aluminium, silicon, vanadium, nickel, iron, calcium, zinc and sodium in residual fuel oil by ashing, fusion and atomic absorption spectrometry*

This document specifies seven categories of distillate fuels, one of which is for diesel engines used for emergency purposes. It also specifies four categories of residual fuels for sulfur content at or below 0,50 % by mass, five categories of residual fuels containing FAME and five categories of residual fuels for sulfur content exceeding 0,50 % by mass.

IP 500, *Determination of the phosphorus content of residual fuels by ultra-violet spectrometry*

IP 501, *Determination of aluminium, silicon, vanadium, nickel, iron, sodium, calcium, zinc and phosphorus in residual fuel oil by ashing, fusion and inductively coupled plasma emission spectrometry*

IP 570, *Determination of hydrogen sulfide in fuel oils — Rapid liquid phase extraction method*

2 Normative references

IP 631, *Determination of the contamination level of fatty acid methyl esters in middle distillate and residual fuels using Flow Analysis by Fourier Transform Infrared Spectroscopy — Rapid Screening Method*

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 2719, *Determination of flash point — Pensky-Martens closed cup method*

ISO 3015, *Petroleum and related products from natural or synthetic sources — Determination of cloud point*

ISO 3016, *Petroleum and related products from natural or synthetic sources — Determination of pour point*

ISO 3104, *Petroleum products — Transparent and opaque liquids — Determination of kinematic viscosity and calculation of dynamic viscosity*

ISO 3675, *Crude petroleum and liquid petroleum products — Laboratory determination of density — Hydrometer method*

ISO 3733, *Petroleum products and bituminous materials — Determination of water — Distillation method*

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ISO 14596, *Petroleum products — Determination of sulfur content — Wavelength-dispersive X-ray fluorescence spectrometry*

ISO 14597, *Petroleum products — Determination of vanadium and nickel content — Wavelength-dispersive X-ray fluorescence spectrometry*

EN 116, *Diesel and domestic heating fuels — Determination of cold filter plugging point — Stepwise cooling bath method*

EN 1407, *Petroleum products — Determination of organic halogen content — Oxidative microcoulometric method*

EN 14078, *Liquid petroleum products — Determination of fatty methyl ester (FAME) content in middle distillates — Infrared spectrometry method*

EN 14214, *Liquid petroleum products — Fatty acid methyl esters (FAME) for use in diesel engines and heating applications — Requirements and test methods*

EN 15195, *Liquid petroleum products — Determination of ignition delay and derived cetane number (DCN) of middle distillate fuels by combustion in a constant volume chamber*

EN 15751, *Automotive fuels — Fatty acid methyl ester (FAME) fuel and blends with diesel fuel — Determination of oxidation stability by accelerated oxidation method*

EN 15940, *Automotive fuels — Paraffinic diesel fuel from synthesis or hydrotreatment — Requirements and test methods*

EN 16329, *Diesel and domestic heating fuels — Determination of cold filter plugging point — Linear cooling bath method*

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EN 16715, *Liquid petroleum products — Determination of ignition delay and derived cetane number (DCN) of middle distillate fuels — Ignition delay and combustion delay determination using a constant volume combustion chamber with direct fuel injection*

EN 17155, *Liquid petroleum products — Determination of indicated cetane number (ICN) of middle distillate fuels — Primary reference fuels calibration method using a constant volume combustion chamber*

ASTM D240, *Standard Test Method for Heat of combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter*

ASTM D664, *Standard Test Method for Acid Number of Petroleum Products by Potentiometric Titration*

ASTM D2622, *Standard Test Method for Sulfur in Petroleum Products by Wavelength Dispersive X-ray Fluorescence Spectrometry*

ASTM D4294, *Standard Test Method for Sulfur in Petroleum and Petroleum Products by Energy Dispersive X-ray Fluorescence Spectrometry*

ASTM D6751, *Standard Specification for Biodiesel Fuel Blend Stock (B100) for Middle Distillate Fuels*

ASTM D6890, *Determination of Ignition Delay and Derived Cetane Number (DCN) of Diesel Fuel Oils by Combustion in a Constant Volume Chamber*

ASTM D7371, *Standard Test Method for Determination of Biodiesel (Fatty Acid Methyl Esters) Content in Diesel Fuel Oil Using Mid Infrared Spectroscopy (FTIR-ATR-PLS Method)*

ASTM D7668, *Standard Test Method for Determination of Derived Cetane Number (DCN) of Diesel Fuel Oils—Ignition Delay and Combustion Delay Using a Constant Volume Combustion Chamber Method*

ASTM D7963, *Standard Test Method for Determination of Contamination Level of Fatty Acid Methyl Esters in Middle Distillate and Residual Fuels Using Flow Analysis by Fourier-Transform Infrared Spectroscopy-Rapid Screening Method*

ASTM D8183, *Standard Test Method for Determination of Indicated Cetane Number (ICN) of Diesel Fuel Oils using a Constant Volume Combustion Chamber—Reference Fuels Calibration Method*

IP 470, *Determination of aluminium, silicon, vanadium, nickel, iron, calcium, zinc and sodium in residual fuel oil by ashing, fusion and atomic absorption spectrometry*

IP 500, *Determination of the phosphorus content of residual fuels by ultra-violet spectrometry*

IP 501, *Determination of aluminium, silicon, vanadium, nickel, iron, sodium, calcium, zinc and phosphorus in residual fuel oil by ashing, fusion and inductively coupled plasma emission spectrometry*

IP 570, *Determination of hydrogen sulfide in fuel oils — Rapid liquid phase extraction method*

IP 631, *Determination of the contamination level of fatty acid methyl esters in middle distillate and residual fuels using Flow Analysis by Fourier Transform Infrared Spectroscopy — Rapid Screening Method*