

STN	Skvapalnené uhľovodíkové látky a neropné skvapalnené plynné palivá. Kalibrácia membránových nádrží a samostatných hranolovitých nádrží v lodiach. Manuálne metódy a vnútorné metódy s elektro-optickým prístrojom na meranie vzdialeností (ISO 8311: 2013).	STN EN ISO 8311 32 0705
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Refrigerated hydrocarbon and non-petroleum based liquefied gaseous fuels - Calibration of membrane tanks and independent prismatic tanks in ships - Manual and internal electro-optical distance-ranging methods (ISO 8311:2013)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Obsahuje: EN ISO 8311:2013, ISO 8311:2013

Oznámením tejto normy sa ruší
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English Version

Refrigerated hydrocarbon and non-petroleum based liquefied
gaseous fuels - Calibration of membrane tanks and independent
prismatic tanks in ships - Manual and internal electro-optical
distance-ranging methods (ISO 8311:2013)

Hydrocarbures réfrigérés et combustibles gazeux liquéfiés à
base non pétrolière - Étalonnage des réservoirs à
membrane et réservoirs pyramidaux - Méthodes manuelles
et par mesurage électro-optique interne de la distance (ISO
8311:2013)

Gekühlte Kohlenwasserstoffe und verflüssigte, nicht auf
Erdöl basierende gasförmige Brennstoffe - Kalibrierung von
Membrantanks und unabhängigen Prismentanks in Schiffen
- Manuelle Messung und Innenmessung nach dem
elektrooptischen Distanzmessverfahren (ISO 8311:2013)

This European Standard was approved by CEN on 9 November 2013.

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Foreword

This document (EN ISO 8311:2013) 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.

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The text of ISO 8311:2013 has been approved by CEN as EN ISO 8311:2013 without any modification.

Refrigerated hydrocarbon and non-petroleum based liquefied gaseous fuels — Calibration of membrane tanks and independent prismatic tanks in ships — Manual and internal electro-optical distance-ranging methods

Hydrocarbures réfrigérés et combustibles gazeux liquéfiés à base non pétrolière — Étalonnage des réservoirs à membrane et réservoirs pyramidaux — Méthodes manuelles et par mesurage électro-optique interne de la distance

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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

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The committee responsible for this document is ISO/TC 28, *Petroleum products and lubricants*, Subcommittee SC 5, *Measurement of refrigerated hydrocarbon and non-petroleum based liquefied gaseous fuels*.

This second edition cancels and replaces the first edition (ISO 8311:1989), which has been technically revised.

Introduction

Large quantities of light hydrocarbons consisting of compounds having one to four carbon atoms are stored and transported by sea as refrigerated liquids at pressures close to atmospheric. These liquids can be divided into two main groups, liquefied natural gas (LNG) and liquefied petroleum gas (LPG). Bulk transportation of these liquids requires special technology in ship design and construction to enable ship-borne transportation to be safe and economical.

Quantification of these cargoes in ships' tanks for custody transfer purposes has to be of a high order of accuracy. This International Standard (together with others in the group) specifies methods of internal measurement of ships' tanks, from which tank capacity tables can be derived.

This International Standard covers calibration techniques applicable to membrane type tanks, i.e. self-supporting independent tanks in which the containment system comprises a relatively thin membrane of either stainless steel or high-nickel steel alloy. This International Standard, with some modification, can also be applicable to the calibration of independent prismatic tanks.

Annex A gives uncertainty associated with the measurement of membrane tanks.

Annex B gives an example of a tank capacity table relating partial filling volume as a function of liquid level and Annexes C and D give examples of trim correction and list correction tables, respectively.

Refrigerated hydrocarbon and non-petroleum based liquefied gaseous fuels — Calibration of membrane tanks and independent prismatic tanks in ships — Manual and internal electro-optical distance-ranging methods

1 Scope

This International Standard specifies a method for the internal measurement of membrane tanks used in ships for the transport of refrigerated light hydrocarbon fluids. In addition to the actual process of measurement, it sets out the calculation procedures for compiling the tank capacity table and correction tables to be used for the computation of cargo quantities. This International Standard, with some modification, can also be applicable to the calibration of independent prismatic tanks.

For the manual measurement of membrane tanks, the procedures of this International Standard utilize the scaffolding used for the installation of the membranes to support the measuring equipment but, for the internal electro-optical distance-ranging (EODR) method, other safe means of access to the required measuring positions are intended to be used.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 7507-1:2003, *Petroleum and liquid petroleum products — Calibration of vertical cylindrical tanks — Part 1: Strapping method*

ISO 7507-4:2010, *Petroleum and liquid petroleum products — Calibration of vertical cylindrical tanks — Part 4: Internal electro-optical distance-ranging method*

IEC 60079-10-1, *Explosive atmospheres — Part 10-1: Classification of areas — Explosive gas atmospheres*

IEC 60079-10-2, *Explosive atmospheres — Part 10-2: Classification of areas — Combustible dust atmospheres*

IEC 60825-1, *Safety of laser products — Part 1: Equipment classification and requirements*

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