



FINAL DRAFT International Standard

ISO/FDIS 11982

Refrigerated hydrocarbon and non-petroleum based liquefied gaseous fuels — Liquefied Natural Gas (LNG) as marine fuel — Measurement on board LNG bunkering ship

Hydrocarbures réfrigérés et combustibles gazeux liquéfiés à base non pétrolière — Utilisation du Gaz Naturel Liquéfié (GNL) comme combustible marin — Mesurage à bord des navires avitailleurs de GNL

ISO/FDIS 11982

<https://standards.iteh.ai/catalog/standards/iso/dc75ef2f-0b63-4a2a-93eb-974a53c2b91f/iso-fdis-11982>

ISO/TC 28/SC 5

Secretariat: JISC

Voting begins on:
2025-07-16

Voting terminates on:
2025-09-10

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

ISO/FDIS 11982

<https://standards.iteh.ai/catalog/standards/iso/dc75ef2f-0b63-4a2a-93eb-974a53c2b91f/iso-fdis-11982>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2025

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 On-board measurement	4
4.1 Outline	4
4.2 Static measurement	5
4.2.1 General	5
4.2.2 Tank capacity table	5
4.2.3 Custody transfer measurement system (CTMS)	6
4.3 Dynamic measurement	7
4.3.1 General	7
4.3.2 Dynamic measurement equipment performance	7
4.3.3 Calibration	7
4.3.4 Measurement	7
5 On-board sampling	8
6 Analysis	8
6.1 General	8
6.2 Online analysis	8
7 Calculation method	8
7.1 General	8
7.2 Static measurement	9
7.2.1 General	9
7.2.2 Liquid level	10
7.2.3 Liquid and vapour temperature	10
7.2.4 Vapour pressure	10
7.2.5 Trim and list	10
7.3 Dynamic measurement	10
7.4 Energy calculation	10
7.4.1 Liquid energy	10
7.4.2 Vapour energy	12
7.4.3 Wobbe index	14
7.5 Methane number calculation	14
Annex A (informative) Processing of CTMS data	15
Annex B (informative) Calculation example	19
Annex C (informative) Treatment of unsupported components	29
Annex D (informative) Example of parameters in a bunker delivery note	30
Annex E (informative) Estimation of the composition of comingled LNG	31
Bibliography	36

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).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 5, *Measurement of refrigerated hydrocarbon and non-petroleum based liquefied gaseous fuels*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

ISO/FDIS 11982

<https://standards.iteh.ai/catalog/standards/iso/dc75ef2f-0b63-4a2a-93eb-974a53c2b91f/iso-fdis-11982>

Introduction

Efforts such as the restriction of sulfur content in marine fuel oil introduced by IMO MARPOL ANNEX IV^[23] and growing trends towards decarbonisation have promoted cleaner marine fuel.

Liquefied natural gas (LNG) is one of the most practical marine fuel choices. It is considered cleaner than conventional fuel oils. The conventional trade volume of LNG transported by one shipment is large, with a total capacity of 170 000 m³ at the time of publication of this document. The trade quantity is calculated according to the method defined by the sales and purchase agreement between the cargo supplier and receiver.

On the other hand, the trade quantity of LNG as a marine fuel by one shipment can be smaller than the conventional trade volume of 170 000 m³. Furthermore, the LNG containment system of the LNG bunkering ship is unlike the systems of conventional LNG carriers, especially the pressure in the tanks, which is relatively higher than that of the conventional carrier type. Tank types, including IMO type C, membrane, and SPB type, are available.

In addition to the difference in trade quantity and the cargo containment system between LNG bunkering shipments and conventional shipments, the energy transferred during the operations also differs. Determining the amount of energy transfer involves calculating not only the quantity but also the quality of transferred liquid and vapour, as well as the gas used during the transfer operation. This document provides the data treatment, calculation methods and calculation examples.

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

ISO/FDIS 11982

<https://standards.iteh.ai/catalog/standards/iso/dc75ef2f-0b63-4a2a-93eb-974a53c2b91f/iso-fdis-11982>

