

BS ISO 16384:2012



BSI Standards Publication

Refrigerated hydrocarbon and non-petroleum based liquefied gaseous fuels — Dimethylether (DME) — Measurement and calculation on board ships

bsi.

...making excellence a habit.
AVA Documents™
Document Sharing Hub

National foreword

This British Standard is the UK implementation of ISO 16384:2012.

The UK participation in its preparation was entrusted to Technical Committee PTI/12, Petroleum Measurement and Sampling.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2012.
Published by BSI Standards Limited 2012

ISBN 978 0 580 76707 4

ICS 75.180.30

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 November 2012.

Amendments issued since publication

Date	Text affected
------	---------------

INTERNATIONAL STANDARD

ISO
16384

First edition
2012-11-01

Refrigerated hydrocarbon and non- petroleum based liquefied gaseous fuels — Dimethylether (DME) — Measurement and calculation on board ships

*Hydrocarbures réfrigérés et combustibles gazeux liquéfiés à base
non pétrolière — Diméthyléther (DME) — Mesurage et calculs à
bord des navires*



Reference number
ISO 16384:2012(E)
Documents
Document Sharing Hub
© ISO 2012



COPYRIGHT PROTECTED DOCUMENT

© ISO 2012

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Terms and definitions	1
3 Characteristics and properties of DME	2
3.1 General	2
3.2 General characteristics	2
3.3 Chemical and physical properties	2
4 General precautions	3
4.1 General	3
4.2 Equipment precautions	3
5 Tank capacity table	4
5.1 General	4
5.2 Contents of tank capacity table	4
6 Level gauges	4
6.1 Type of level gauges	4
6.2 Accuracy of level gauge	4
6.3 Use of designated level gauge	5
7 Temperature measuring equipment	5
7.1 Type of temperature sensor	5
7.2 Accuracy of temperature measuring equipment	5
7.3 Number and position of temperature sensors	5
8 Pressure gauge	5
8.1 Type and number of pressure gauges	5
8.2 Accuracy of pressure gauge	5
9 Preparation for custody transfer	6
9.1 Facilities for cargo operation	6
9.2 Pipelines	6
9.3 Ship/shore meeting	6
10 Custody transfer measurement	7
10.1 General	7
10.2 Measurement of liquid level	7
10.3 Measurement of temperature	7
10.4 Measurement of vapour pressure	7
11 Quantitative calculation	8
11.1 General	8
11.2 Concept of quantitative calculation	8
12 Preparation for sailing	9
12.1 Pipelines and other facilities	9
12.2 Ship/shore meeting	9
12.3 Information to cargo receiver	9
Annex A (informative) Estimation of density of DME	10
Bibliography	11

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 16384 was prepared by Technical Committee ISO/TC 28, *Petroleum products and lubricants*, Subcommittee SC 5, *Measurement of refrigerated hydrocarbon and non-petroleum based liquefied gaseous fuels*.

Introduction

Measures for environmental protection are required on a global scale. In this connection, various methods of achieving these aims have been independently studied or undertaken in many countries. One such project, the development of the use of dimethylether (DME) as a new form of energy has been undertaken in several countries. Use of DME generates neither sulfur-oxide nor any other particulate matter known to cause environmental pollution at the time of combustion.

Another benefit of the use of DME as a petroleum alternative is that it can be produced easily from natural gases, coals and biomasses with only slight additional development of the existing techniques of production, transportation, storage and consumption.

In international trade, liquefied gases in bulk are carried by specialized ships which are equipped with fully refrigerated or semi-refrigerated type tanks, or pressurized type tanks. For assessing the quantity, measurement on board these ships is preferable because shore tanks at loading/discharging ports usually engage in transferring to/from tank cars by pipelines, etc. simultaneously with the delivery/receipt of the cargo to/from the ships.

To prevent dispute over the delivered quantity of DME, uniform practice of volumetric measurement and consequent calculation methods is called for.

Since detailed requirements on installation, calibration and verification of level gauges and thermometers are standardized in their own respective International Standards, this International Standard focuses on the practice of custody transfer and subsequent calculation of DME.