



# SLOVENSKI STANDARD SIST EN ISO 23306:2020

01-december-2020

---

## Specifikacija utekočinjenega zemeljskega plina kot goriva za uporabo v pomorstvu (ISO 23306:2020)

Specification of liquefied natural gas as a fuel for marine applications (ISO 23306:2020)

Festlegungen für Flüssigerdgas als Kraftstoff für marine Anwendungen (ISO 23306:2020)

Spécification du gaz naturel liquéfié comme carburant pour les applications maritimes  
(ISO 23306:2020)

**iTeh STANDARD PREVIEW**  
(standards.itteh.ai)

Ta slovenski standard je istoveten z: **EN ISO 23306:2020**

[SIST EN ISO 23306:2020](http://standards.itteh.ai/catalog/standards/sist-en-iso-23306-2020)

<http://standards.itteh.ai/catalog/standards/sist-en-iso-23306-2020>

---

### ICS:

75.160.30      Plinska goriva      Gaseous fuels

**SIST EN ISO 23306:2020**

**en,fr,de**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN ISO 23306:2020

<https://standards.iteh.ai/catalog/standards/sist/9007ef21-eebc-4ea5-ba60-b26c0f07e1ae/sist-en-iso-23306-2020>

EUROPEAN STANDARD

EN ISO 23306

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2020

ICS 75.160.30

English Version

## Specification of liquefied natural gas as a fuel for marine applications (ISO 23306:2020)

Spécification du gaz naturel liquéfié comme carburant  
pour les applications maritimes (ISO 23306:2020)

Festlegungen für Flüssigerdgas als Kraftstoff für  
marine Anwendungen (ISO 23306:2020)

This European Standard was approved by CEN on 22 September 2020.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

<https://standards.iteh.ai/catalog/standards/sist/9007ef21-eebc-4ea5-ba60-b26c0f07e1ae/sist-en-iso-23306-2020>



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents	Page
European foreword.....	3

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN ISO 23306:2020  
<https://standards.iteh.ai/catalog/standards/sist/9007ef21-eebc-4ea5-ba60-b26c0f07e1ae/sist-en-iso-23306-2020>

## European foreword

This document (EN ISO 23306:2020) has been prepared by Technical Committee ISO/TC 28 "Petroleum and related products, fuels and lubricants from natural or synthetic sources" in collaboration with Technical Committee CEN/TC 408 "Natural gas and biomethane for use in transport and biomethane for injection in the natural gas grid" the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2021, and conflicting national standards shall be withdrawn at the latest by May 2021.

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

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## iTeh STANDARD PREVIEW Endorsement notice (standards.iteh.ai)

The text of ISO 23306:2020 has been approved by CEN as EN ISO 23306:2020 without any modification.

[SIST EN ISO 23306:2020](#)

<https://standards.iteh.ai/catalog/standards/sist/9007ef21-eebc-4ea5-ba60-b26c0f07e1ae/sist-en-iso-23306-2020>

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN ISO 23306:2020

<https://standards.iteh.ai/catalog/standards/sist/9007ef21-eebc-4ea5-ba60-b26c0f07e1ae/sist-en-iso-23306-2020>

INTERNATIONAL  
STANDARD

ISO  
23306

First edition  
2020-10

---

---

**Specification of liquefied natural gas  
as a fuel for marine applications**

*Spécification du gaz naturel liquéfié comme carburant pour les  
applications maritimes*

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN ISO 23306:2020](https://standards.iteh.ai/catalog/standards/sist/9007ef21-eebc-4ea5-ba60-b26c0f07e1ae/sist-en-iso-23306-2020)

[https://standards.iteh.ai/catalog/standards/sist/9007ef21-eebc-4ea5-ba60-  
b26c0f07e1ae/sist-en-iso-23306-2020](https://standards.iteh.ai/catalog/standards/sist/9007ef21-eebc-4ea5-ba60-b26c0f07e1ae/sist-en-iso-23306-2020)



Reference number  
ISO 23306:2020(E)

© ISO 2020

## iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN ISO 23306:2020

<https://standards.iteh.ai/catalog/standards/sist/9007ef21-eebc-4ea5-ba60-b26c0f07e1ae/sist-en-iso-23306-2020>



### **COPYRIGHT PROTECTED DOCUMENT**

© ISO 2020

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](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

Published in Switzerland



<b>Contents</b>	Page
<b>Foreword</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>v</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 General requirements</b> .....	<b>2</b>
<b>5 Sampling</b> .....	<b>3</b>
<b>6 Requirements, limit values and related test methods</b> .....	<b>3</b>
<b>7 Main compounds removed by liquefaction process</b> .....	<b>4</b>
<b>Annex A (normative) Propane knock index: Methane number calculation method</b> .....	<b>6</b>
<b>Annex B (informative) Examples of LNG composition</b> .....	<b>12</b>
<b>Annex C (informative) Methane number (knock resistance) and Wobbe index (thermal input through a restriction)</b> .....	<b>15</b>
<b>Annex D (informative) LNG ageing along the bunkering chain</b> .....	<b>17</b>
<b>Annex E (informative) Particles</b> .....	<b>18</b>
<b>Annex F (informative) Melting and boiling points of pure components and impurities that can be present in different LNG</b> .....	<b>19</b>
<b>Bibliography</b> .....	<b>21</b>

[SIST EN ISO 23306:2020](https://standards.iteh.ai/catalog/standards/sist/9007ef21-eebc-4ea5-ba60-b26c0f07e1ae/sist-en-iso-23306-2020)

<https://standards.iteh.ai/catalog/standards/sist/9007ef21-eebc-4ea5-ba60-b26c0f07e1ae/sist-en-iso-23306-2020>

## ISO 23306:2020(E)

## 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 (see [www.iso.org/directives](http://www.iso.org/directives)).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

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](http://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*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 408, *Natural gas and biomethane for use in transport and biomethane for injection in the natural gas grid*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

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](http://www.iso.org/members.html).

## Introduction

Due to numerous economic and environmental factors, the use of liquefied natural gas (LNG) as fuel for marine applications has increased. The 0,10 % sulfur limit, in the sulfur emission controlled areas in Europe and the US, which entered into force on 1 January 2015 has been one of the major driving forces for using LNG as fuel for marine applications. The decision for the 0,50 % global sulfur limit from 1 January 2020 by the International Maritime Organization (IMO) might further increase the interest in LNG. The International Code of Safety for Ships using Gases or other Low-flashpoint Fuels (IGF Code) was a response to the need of guidance in this emerging market. Since LNG-fueled vessels are likely to bunker LNG in different parts of the world, a common specification is needed for ship owners, ship operators and LNG suppliers. It would help engine manufacturers and ship designers and it is beneficial for the development of this new alternative marine fuel market.

In 2018, IMO adopted an initial strategy on reduction of greenhouse gas (GHG) emissions from ships. The strategy includes the objective to peak GHG emissions from international shipping as soon as possible, whilst pursuing efforts towards decarbonizing the sector as soon as possible in this century. It also includes the objectives to reduce the CO<sub>2</sub> emissions per transport work and total annual GHG emissions from international shipping by 2050, with an interim target in 2030. Thus, LNG produced from renewable sources as biomethane that can reduce CO<sub>2</sub> emissions when used as marine fuel is also addressed in this document.

LNG is produced in different locations in the world in liquefaction plants. Large scale production facilities are often dedicated to specific markets such as natural gas grids and large power plants that use their own standards. This document takes into consideration this major constraint for any adaptation to marine applications specificities/requirements.

**(standards.iteh.ai)**

SIST EN ISO 23306:2020

<https://standards.iteh.ai/catalog/standards/sist/9007ef21-eebc-4ea5-ba60-b26c0f07e1ae/sist-en-iso-23306-2020>

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN ISO 23306:2020

<https://standards.iteh.ai/catalog/standards/sist/9007ef21-eebc-4ea5-ba60-b26c0f07e1ae/sist-en-iso-23306-2020>