Petroleum, petrochemical and natural gas industries - Bulk material for offshore projects - Pipe support (ISO 24200:2022)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 24200:2022 sisaldab Euroopa standardi EN ISO 24200:2022 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 24200:2022 consists of the English text of the European standard EN ISO 24200:2022.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 25.05.2022.	Date of Availability of the European standard is 25.05.2022.
Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 75.180.10

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 24200

May 2022

ICS 75.180.10

English Version

Petroleum, petrochemical and natural gas industries - Bulk material for offshore projects - Pipe support (ISO 24200:2022)

Industries pétrolière, pétrochimique et du gaz naturel - Matériels de base pour les projets en mer - Supports de tuyauterie (ISO 24200:2022)

Erdöl-, petrochemische und Erdgasindustrie - Schüttgut für Offshore-Projekte (ISO 24200:2022)

This European Standard was approved by CEN on 1 May 2022.

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.

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

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

Ref. No. EN ISO 24200:2022 E

European foreword

This document (EN ISO 24200:2022) has been prepared by Technical Committee ISO/TC 67 "Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries" in collaboration with Technical Committee CEN/TC 12 “Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries” the secretariat of which is held by NEN.

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 November 2022, and conflicting national standards shall be withdrawn at the latest by November 2022.

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.

Any feedback and questions on this document should be directed to the users’ national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

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.

Endorsement notice

The text of ISO 24200:2022 has been approved by CEN as EN ISO 24200:2022 without any modification.

Contents

Page

Foreword ..... **iv**
Introduction ..... **v**
1 Scope **1**
2 Normative references **1**
3 Terms, definitions and abbreviated terms **1**
3.1 Terms and definitions 1
3.2 Abbreviated terms 3
4 General **4**
5 Support selection guideline **4**
6 Design and material requirements **5**
6.1 Clamped shoe 5
6.1.1 Key parameters 5
6.1.2 Size/Dimension 5
6.1.3 Material 7
6.1.4 Application 7
6.2 Welded shoe 8
6.2.1 Key parameters 8
6.2.2 Size/Dimension 8
6.2.3 Material 12
6.2.4 Application 12
6.3 U-bolt 13
6.3.1 Key parameters 13
6.3.2 Size/Dimension 13
6.3.3 Application 15
6.4 U-strap 15
6.4.1 Key parameters 15
6.4.2 Size/Dimension 16
6.4.3 Application 18
6.5 Bracing for branch connection 18
6.5.1 Key parameters 18
6.5.2 Size/Dimension 18
6.5.3 Application 21
6.6 Trunnion and stanchion 21
6.6.1 Trunnion 21
6.6.2 Stanchion 25
6.7 Guide, hold-down, guide and hold-down and line-stop support 29
6.7.1 Guide 29
6.7.2 Guide and hold-down 31
6.7.3 Line-stop 33
6.8 Guide, guide and hold-down and line-stop support – With hole 35
6.8.1 Guide 35
6.8.2 Hold-down 38
6.8.3 Guide and hold-down 41
6.8.4 Line-stop 45
Bibliography **49**

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).

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).

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 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 12 *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries,* 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.

Introduction

This document aims to provide a set of unified specifications for pipe supports for offshore projects, responding to the current lack of recognized specifications for such pipe supports in terms of shape, dimensions, material and application area.

Company specific standards from owners, engineering companies and shipbuilders have therefore been prevailing for specifications related to pipe support types, shapes, sizes and dimensions. There are big variations in specifications from project to project, because of lack of internationally recognized specifications within this area.

Thus, individual pipe support items have often failed to be compatible across different projects. A suggested solution is to apply one unified approach for design, material selection, shape and application, etc. This will also significantly reduce engineering hours and lead times and improve the fabrication efficiency. Other expected benefits are improved practice for design and application of pipe support types related to design life, maintainability and integrity. The ultimate goal is to reduce the overall cost in general offshore projects and lead time while increase the efficiency, interoperability and safety.

In the lack of common industrial specifications for pipe supports, an assessment has been conducted to compare the pipe supports designs and application areas used in past offshore projects. Based on the supports design examples of those projects, a set of unified specifications have been established, which are described in this document.

The main factors considered to arrive at an optimal design of pipe supports are pipe load endurance, weight and material cost. Those three factors have been considered when reviewing pipe supports from past projects and ultimately defining the requirements described in this document.

The requirements including design and dimensions specified in this document are based on the use of H-beam or plate that are commonly used as sections. When an unlisted material or section is used, the designer is responsible for demonstrating the validity of the allowable stress and other limits used in design.

This document can be used as a baseline for suppliers and engineering companies that do not already have a more comprehensive and usable standard for both greenfield and brownfield projects.

Petroleum, petrochemical and natural gas industries — Bulk material for offshore projects — Pipe support

1 Scope

This document specifies the requirements for design including shape and dimensions, material as well as strength for pipe support. Applicable pipe size range varies depending on support types. This document covers topside systems for fixed or floating offshore oil and gas projects. This document is applicable to design temperature of support within the range between –46 °C up to 200 °C.

This document is limited to metallic pipes, covering the following pipe supports:

— clamped shoe;

— welded shoe;

— U-bolt;

— U-strap;

— bracing for branch connection;

— trunnion and stanchion;

— guide support (guide, hold-down, guide and hold-down, line stop).

2 Normative references

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.

ASTM A193, *Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications*

ASTM A194, *Standard Specification for Carbon Steel, Alloy Steel, and Stainless Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/