

Petroleum, petrochemical and natural gas industries -
Calculation of heater-tube thickness in petroleum
refineries (ISO 13704:2022)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 13704:2022 sisaldab Euroopa standardi EN ISO 13704:2022 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 13704:2022 consists of the English text of the European standard EN ISO 13704:2022.
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ICS 75.180.20

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EUROPEAN STANDARD

EN ISO 13704

NORME EUROPÉENNE

EUROPÄISCHE NORM

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Supersedes EN ISO 13704:2007, EN ISO
13704:2007/AC:2009

English Version

**Petroleum, petrochemical and natural gas industries -
Calculation of heater-tube thickness in petroleum
refineries (ISO 13704:2022)**

Industries du pétrole, de la pétrochimie et du gaz
naturel - Calcul de l'épaisseur des tubes de fours de
raffineries de pétrole (ISO 13704:2022)

Erdöl- und Erdgasindustrie - Berechnung der
Wanddicke von Heizrohren in Erdölraffinerien (ISO
13704:2022)

This European Standard was approved by CEN on 25 July 2022.

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

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

European foreword

This document (EN ISO 13704:2022) has been prepared by Technical Committee ISO/TC 67 "Oil and gas industries including lower carbon energy" 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of an identical text or by endorsement, at the latest by May 2023, and conflicting national standards shall be withdrawn at the latest by May 2023.

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.

This document supersedes EN ISO 13704:2007.

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.

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Endorsement notice

The text of ISO 13704:2022 has been approved by CEN as EN ISO 13704:2022 without any modification.

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Foreword

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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).

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This document was prepared by Technical Committee ISO/TC 67, *Oil and gas industries including lower carbon energy*, Subcommittee SC 6, *Processing equipment and systems*, 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)

This third edition cancels and replaces the second edition (ISO 13704:2007), which has been technically revised. It also incorporates the Technical Corrigendum ISO 13704:2007/Cor 1:2008.

This document supplements API Std 530, 7th edition (2015) including addendum 1 and addendum 2.

The technical requirements of ISO 13704 and API Std 530 used to be identical. In the meantime API Std 530 has been technically revised as API 530, 7th edition (2015) with addendums 1 and 2. The purpose of this edition of ISO 13704 is to bring it up to date, by referencing the current edition of API Std 530 and including supplementary content.

The main changes are as follows:

- the allowable stress values of some of the materials which have been amended in accordance with the latest WRC bulletin 541, 3rd edition, August 2020.

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Petroleum, petrochemical and natural gas industries — Calculation of heater-tube thickness in petroleum refineries

1 Scope

This document specifies the requirements for the procedures and design criteria used for calculating the required wall thickness of new tubes and associated component fittings for petroleum, petrochemical and natural gas industries. These procedures are appropriate for designing tubes for service in both corrosive and non-corrosive applications. These procedures have been developed specifically for the design of refinery and related process-fired heater tubes (direct-fired, heat-absorbing tubes within enclosures). These procedures are not intended to be used for the design of external piping.

This document does not give recommendations for tube retirement thickness. A technique for estimating the life remaining for a heater tube is described

This document is a supplement to API 530, 7th edition (2015) including addendum 1 and addendum 2, the requirements of which are applicable with the exceptions specified in this document.

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.

EN 13445 (all parts), *Unfired pressure vessels*

API Std 530, 7th edition (2015), *Calculation of Heater-tube Thickness in Petroleum Refineries*

API Std 530, *Addendum 1, Addendum to Calculation of Heater-tube Thickness in Petroleum Refineries, Seventh Edition* (2019)

API Std 530, *Addendum 2, Addendum to Calculation of Heater-tube Thickness in Petroleum Refineries, Seventh Edition* (2021)