# SLOVENSKI STANDARD
# oSIST prEN ISO 25457:2007

**01-junij-2007**

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**Petrokemiļ na industrija ter industrija za predelavo nafte in zemeljskega plina - Podrobnosti o svetilih v rafinerijah in petrokemiļ ni industriji (ISO/DIS 25457:2007)**

Petroleum, petrochemical and natural gas industries - Flare details for general refinery and petrochemical service (ISO/DIS 25457:2007)



Industries du pétrole, de la pétrochimie et du gaz naturel - Détails sur les torches d'usage général en raffineries et dans les usines pétrochimiques (ISO/DIS 25457:2007)



**Ta slovenski standard je istoveten z:** **prEN ISO 25457**

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**ICS:**

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|---|---|---|
| 75.180.20 | Predelovalna oprema | Processing equipment |

**oSIST prEN ISO 25457:2007** **en;fr**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# DRAFT
# prEN ISO 25457

February 2007

ICS 75.180.20

English Version

## Petroleum, petrochemical and natural gas industries - Flare details for general refinery and petrochemical service (ISO/DIS 25457:2007)

Industries du pétrole, de la pétrochimie et du gaz naturel - Détails sur les torches d'usage général en raffineries et dans les usines pétrochimiques (ISO/DIS 25457:2007)

This draft European Standard is submitted to CEN members for parallel enquiry. It has been drawn up by the Technical Committee CEN/TC 12.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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 Management Centre has the same status as the official versions.

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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.

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

**Management Centre: rue de Stassart, 36 B-1050 Brussels**

## Foreword

This document (prEN ISO 25457:2007) has been prepared by Technical Committee ISO/TC 67 "Materials, equipment and offshore structures for petroleum 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 AFNOR.

This document is currently submitted to the parallel Enquiry.

**Endorsement notice**

The text of ISO/DIS 25457:2007 has been approved by CEN as prEN ISO 25457:2007 without any modifications.

**DRAFT INTERNATIONAL STANDARD** ISO/DIS 25457

ISO/TC **67**/SC **6** Secretariat: **AFNOR**

Voting begins on: **2007-02-01** Voting terminates on: **2007-07-01**

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

# Petroleum, petrochemical and natural gas industries — Flare details for general refinery and petrochemical service

*Industries du pétrole, de la pétrochimie et du gaz naturel — Détails sur les torches d'usage général en raffineries et dans les usines pétrochimiques*

ICS 75.180.20



**ISO/CEN PARALLEL ENQUIRY**

The CEN Secretary-General has advised the ISO Secretary-General that this ISO/DIS covers a subject of interest to European standardization. **In accordance with the ISO-lead mode of collaboration as defined in the Vienna Agreement, consultation on this ISO/DIS has the same effect for CEN members as would a CEN enquiry on a draft European Standard.** Should this draft be accepted, a final draft, established on the basis of comments received, will be submitted to a parallel two-month FDIS vote in ISO and formal vote in CEN.

**In accordance with the provisions of Council Resolution 15/1993 this document is circulated in the English language only.**

**Conformément aux dispositions de la Résolution du Conseil 15/1993, ce document est distribué en version anglaise seulement.**

**To expedite distribution, this document is circulated as received from the committee secretariat. ISO Central Secretariat work of editing and text composition will be undertaken at publication stage.**

**Pour accélérer la distribution, le présent document est distribué tel qu'il est parvenu du secrétariat du comité. Le travail de rédaction et de composition de texte sera effectué au Secrétariat central de l'ISO au stade de publication.**

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## 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 25457 was prepared by Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, Subcommittee SC 6, *Processing equipment and systems*.

## Introduction

Users of this International Standard should be aware that further or differing requirements may be needed for individual applications. This International Standard is not intended to inhibit a vendor from offering, or the purchaser from accepting, alternative equipment or engineering solutions for the individual application. This may be particularly applicable where there is innovative or developing technology. Where an alternative is offered, the vendor should identify any variations from this International Standard and provide details.

In International Standards, the SI system of units is used. Where practical in this International Standard, US Customary units are included in brackets for information.

A bullet (●) at the beginning of a clause or subclause indicates that either a decision is required or further information is to be provided by the purchaser. This information should be indicated on data sheets (see examples in Annex E) or stated in the enquiry or purchase order.

# Petroleum, petrochemical and natural gas industries — Flare details for general refinery and petrochemical service

## 1 Scope

This International Standard specifies requirements and provides guidance for selection, design, specification, operation and maintenance of flares and related combustion and mechanical components used in pressure relieving and vapour-depressuring systems for petroleum, petrochemical and natural gas industries.

Although this International Standard is primarily intended for new flares and related equipment, it may also be used in the evaluation of existing flare facilities.

Annexes A, B and C provide further guidance and best practices for the selection, specification and mechanical details for flares and on the design, operation and maintenance of flare combustion and related equipment.

Annex D explains how to use the data sheets provided in Annex E; these data sheets should be used to communicate and record design information.



## 2 Normative references



The following referenced documents are indispensable for the application 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.

ISO 1461, *Hot dip galvanized coatings on fabricated iron and steel articles — Specifications and test methods*

ISO 8501-1, *Preparation of steel substrates before application of paints and related products — Visual assessment of surface cleanliness — Part 1: Rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings*

ISO 10684, *Fasteners — Hot dip galvanized coatings*

ISO 13705, *Fired heaters for general refinery service*

ISO 15156 (all parts), *Petroleum and natural gas industries — Materials for use in $H_2S$-containing environments in oil and gas production*

ISO 15649, *Petroleum and natural gas industries — Piping*

ISO 23251, *Pressure-relieving and depressuring systems*

API RP 2A[1)], *Recommended Practice for Planning, Designing and Constructing Fixed Offshore Platforms*

ASME STS-1[2)], *Steel Stacks*

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1) American Petroleum Institute, 1220 L Street, N.W., Washington, D.C. 20005

ASTM A 475 Class A[3], *Standard Specification for Zinc-Coated Steel Wire Strand*

ASTM A 586 Class A, *Standard Specification for Zinc-Coated Parallel and Helical Steel Wire Structural Strand and Zinc-Coated Wire for Spun-In-Place Structural Strand*

ICAO[4], Annex 14 - *Aerodromes, Volume I – Aerodrome Design and Operations*

NACE MR0103 [5], *Materials Resistant to Sulfide Stress Cracking in Corrosive Petroleum Refining Environments*

## 3 Terms and definitions

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

**3.1**
**air seal**
**purge reduction device**
device used to minimize or eliminate the intrusion of air back into the riser from the exit

**3.2**
**assist gas**
fuel gas that is added to relief gas prior to the flare burner or at the point of combustion in order to raise the heating value

**3.3**
**back blowing**
procedure by which the dry air seal drain line is blown back from the base of the drain into the buoyancy seal to ensure the line is clear

**3.4**
**blowoff**
loss of a stable flame where the flame is lifted above the burner, occurring if the fuel velocity exceeds the flame velocity

**3.5**
**buoyancy seal**
dry vapour seal that minimizes the required purge gas needed to protect from air infiltration

Note The buoyancy seal functions by trapping a volume of light gas in an internal inverted compartment that prevents air from displacing buoyant light gas in the flare.

**3.6**
**burnback**
internal burning within the burner

Note Burnback can result from air backing down the flare burner at purge or low flaring rates.



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2) American Society of Mechanical Engineers, 3 Park Avenue, New York, NY 10017, USA.

3) American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, USA.

4) International Civil Aviation Organization, 999 University St.,Montreal, Quebec, H3C 5H7 Canada. www.icao.int.

5) American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, USA.

**3.7**
**burn-pit flare**
open excavation, normally equipped with a horizontal flare burner that can handle liquid as well as vapour hydrocarbons

**3.8**
**burning velocity**
**flame velocity**
speed at which a flame front travels into an unburned combustible mixture

**3.9**
**coanda flare**
flare burner that is designed to employ the aerodynamic effect where moving fluids follow a curved or inclined surface over which they flow

Note Flares of this type generally use steam or pressure to achieve smokeless performance.

**3.10**
**combustion air**
air required to combust the flare gases

**3.11**
**combustion efficiency**
percentage of the combustible fluid totally oxidized in the burner

Note In the case of hydrocarbons, combustion efficiency is the mass percent of carbon in the original fluid that oxidizes completely to CO2.

**3.12**
**condensable gas**
vapour that can condense at the temperature and pressure expected in a flare header during or after a flaring event

**3.13**
**cryogenic service**
systems which may be called upon to handle waste gas below –40 °C (–40 °F)

**3.14**
**derrick support**
support system for the elevated flare riser normally used for very tall flares or when plot space is limited

Note Various derrick supported arrangements are available: a fixed system has its riser permanently supported to the derrick; a demountable derrick has multiple riser sections that are designed to be lowered and removed to permit lowering of the flare burner to grade; a demountable derrick with one fixed riser provides for a single piece design to be lowered to grade as a single component.

**3.15**
**design flare capacity**
maximum design flow to the flare normally expressed in kilograms per hour (pounds per hour) of a specific composition, temperature, and pressure

**3.16**
**destruction efficiency**
mass percent of the combustible vapour that is at least partially oxidized

Note In the case of a hydrocarbon, destruction efficiency is the mass percentage of carbon in the fluid vapour that oxidizes to CO or $CO_2$.