

SVENSK STANDARD

SS-EN ISO 16852:2016



Fastställt/Approved: 2016-11-29
Publicerad/Published: 2016-12-06
Utgåva/Edition: 2
Språk/Language: engelska/English
ICS: 13.220.10; 13.220.99; 13.230

Explosiv atmosfär – Flamspärrar – Driftskrav, provningsmetoder och gränser för bruk (ISO 16852:2016)

Flame arresters – Performance requirements, test methods and limits for use (ISO 16852:2016)

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Denna standard ersätter SS-EN ISO 16852:2010, utgåva 1.

The European Standard EN ISO 16852:2016 has the status of a Swedish Standard. This document contains the official English version of EN ISO 16852:2016.

This standard supersedes the Swedish Standard SS-EN ISO 16852:2010, edition 1.

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EUROPEAN STANDARD

EN ISO 16852

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2016

ICS 13.220.10

Supersedes EN ISO 16852:2010

English Version

Flame arresters - Performance requirements, test methods and limits for use (ISO 16852:2016)

Arrête-flammes - Exigences de performance, méthodes
d'essai et limites d'utilisation (ISO 16852:2016)

Flammendurchschlagsicherungen -
Leistungsanforderungen, Prüfverfahren und
Einsatzgrenzen (ISO 16852:2016)

This European Standard was approved by CEN on 19 September 2016.

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European foreword

This document (EN ISO 16852:2016) has been prepared by Technical Committee ISO/TC 21 “Equipment for fire protection and fire fighting” in collaboration with Technical Committee CEN/TC 305 “Potentially explosive atmospheres — Explosion prevention and protection” the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by May 2017, and conflicting national standards shall be withdrawn at the latest by May 2017.

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This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

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Endorsement notice

The text of ISO 16852:2016 has been approved by CEN as EN ISO 16852:2016 without any modification.

Introduction

Flame arresters are safety devices fitted to openings of enclosures or to pipe work and are intended to allow flow but prevent flame transmission. They have widely been used for decades in the chemical and oil industry, and a variety of national standards is available. This International Standard was prepared by an international group of experts, whose aim was to establish an international basis by harmonizing and incorporating recent national developments and standards as far as reasonable.

This International Standard addresses manufacturers (performance requirements) and test institutes (test methods), as well as customers (limits for use).

Only relatively general performance requirements are specified and these are kept to a strict minimum. Experience has shown that excessively specific requirements in this field often create unjustified restrictions and prevent innovative solutions.

The hazard identification of common applications found in industry leads to the specification of the test methods. These test methods reflect standard practical situations and, as such, form the heart of this International Standard because they also allow classification of the various types of flame arresters and then determination of the limits of use.

A considerable number of test methods and test conditions had to be taken into account for two main reasons.

- a) Different types of flame arresters are covered with respect to the operating principle (static, hydraulic, liquid, dynamic) and each type clearly needs its specific test set-up and test procedure.
- b) It is necessary to adapt flame arresters to the special conditions of application (gas, installation) because of the conflicting demands of high flame quenching capability and low pressure loss; this situation is completely different from the otherwise similar principle of protection by flameproof enclosure (of electrical equipment), where the importance of process gas flow through gaps is negligible; importance being placed on the flame quenching effect of the gap.

Consequently, in this International Standard, the testing and classification related to the gas groups and the installation conditions have been subdivided more than is usually the case. In particular,

- explosion group IIA is subdivided into sub-groups IIA1 and IIA,
- explosion group IIB is subdivided into sub-groups IIB1, IIB2, IIB3 and IIB, and
- the type “detonation arrester” is divided into four sub-types, which take into account specific installation situations.

The test conditions lead to the limits for use which are most important for the customer. This International Standard specifies this safety relevant information and its dissemination through the manufacturer’s written instructions for use and the marking of the flame arresters.

The limits for use are also a link to more general (operational) safety considerations and regulations, which remain the responsibility of national or corporate authorities. [Annex B](#) and [Annex C](#) offer some guidance in this field.

Flame arresters — Performance requirements, test methods and limits for use

1 Scope

This International Standard specifies the requirements for flame arresters that prevent flame transmission when explosive gas-air or vapour-air mixtures are present. It establishes uniform principles for the classification, basic construction and information for use, including the marking of flame arresters, and specifies test methods to verify the safety requirements and determine safe limits of use.

This International Standard is valid for pressures ranging from 80 kPa to 160 kPa and temperatures ranging from $-20\text{ }^{\circ}\text{C}$ to $+150\text{ }^{\circ}\text{C}$.

NOTE 1 For flame arresters with operational conditions inside the scope, but outside atmospheric conditions, see [7.4](#).

NOTE 2 In designing and testing flame arresters for operation under conditions other than those specified above, this International Standard can be used as a guide. However, additional testing related specifically to the intended conditions of use is advisable. This is particularly important when high temperatures and pressures are applied. The test mixtures might need to be modified in these cases.

NOTE 3 An additional standard IMO MSC/Circ. 677 for maritime application from IMO (International Maritime Organization) exists.

This International Standard is not applicable to the following:

- external safety-related measurement and control equipment that might be required to keep the operational conditions within the established safe limits;

NOTE 4 Integrated measurement and control equipment, such as integrated temperature and flame sensors as well as parts which, for example, intentionally melt (retaining pin), burn away (weather hoods) or bend (bimetallic strips), is within the scope of this International Standard.

- flame arresters used for explosive mixtures of vapours and gases, which tend to self-decompose (e.g. acetylene) or which are chemically unstable;
- flame arresters used for carbon disulphide, due to its special properties;
- flame arresters whose intended use is for mixtures other than gas-air or vapour-air mixtures (e.g. higher oxygen-nitrogen ratio, chlorine as oxidant, etc.);
- flame arrester test procedures for internal-combustion compression ignition engines;
- fast acting valves, extinguishing systems and other explosion isolating systems.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60079-1, *Explosive atmospheres — Part 1: Equipment protection by flameproof enclosures “d”*

3 Terms and definitions

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