
**Mala plovila - Električne naprave - Varovanje pred vžigom gorljivih plinov v okolici
(ISO 8846:1990)**

Small craft - Electrical devices - Protection against ignition of surrounding flammable gases (ISO 8846:1990)

Kleine Wasserfahrzeuge - Elektrische Geräte - Zündschutz gegenüber entflammbaren Gasen (ISO 8846:1990)

Navires de plaisance - Equipements électriques - Protection contre l'inflammation des gaz inflammables environnants (ISO 8846:1990)

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47.020.60	Električna oprema ladij in konstrukcij na morju	Electrical equipment of ships and of marine structures
47.080	Čolni	Small craft

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English version

**Small craft - Electrical devices - Protection against
ignition of surrounding flammable gases
(ISO 8846:1990)**

Navires de plaisance - Equipements électriques
- Protection contre l'inflammation des gaz
inflammables environnants (ISO 8846:1990)

Kleine Wasserfahrzeuge - Elektrische Geräte -
Zündschutz gegenüber entflammaren Gasen
(ISO 8846:1990)

This European Standard was approved by CEN on 1993-08-19. 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 Central Secretariat or to any CEN member.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Page 2
EN 28846:1993

Foreword

This European Standard is the endorsement of ISO 8846. Endorsement of ISO 8846 was recommended by CEN/BT/WG 69 "Small craft". A formal vote was done and the document was approved as a European Standard.

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of an identical text or by endorsement, at the latest by February 1994, and conflicting national standards shall be withdrawn at the latest by February 1994.

The Standard was approved and in accordance with the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom.

Endorsement notice

The text of the International Standard ISO 8846:1990 was approved by CEN as a European Standard without any modification.

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INTERNATIONAL STANDARD

ISO
8846

First edition
1990-12-01

Small craft — Electrical devices — Protection against ignition of surrounding flammable gases

iTeh STANDARD PREVIEW

*Navires de plaisance — Équipements électriques — Protection contre
l'inflammation des gaz inflammables environnants*

[SIST EN 28846:2000](#)

<https://standards.iteh.ai/catalog/standards/sist/927201b7-d2d5-453c-add7-444b05aa0f75/sist-en-28846-2000>



Reference number
ISO 8846:1990(E)

ISO 8846:1990(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.

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.

International Standard ISO 8846 was prepared by Technical Committee ISO/TC 188, *Small craft*.

Annex A of this International Standard is for information only.

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Small craft — Electrical devices — Protection against ignition of surrounding flammable gases

1 Scope

This International Standard describes test methods and requirements for the design of electrical devices to be used on small craft so that they may be operated in an explosive atmosphere without igniting surrounding flammable gases. It does not require explosion-proof or explosion-protected electrical apparatus as defined in IEC 79-0. [1]

This International Standard does not cover ignition protection procedures for products or components that may operate in hydrogen and air mixtures. Nor does it cover mechanisms of ignition from external sources, such as static electricity, lightning or other factors not related to the apparatus under test.

2 Definitions

For the purposes of this International Standard, the following definitions apply.

2.1 flammable hydrocarbon mixture: Mixture of propane and air (per cent by volume) between the Lower Explosive Limit (LEL) and Upper Explosive Limit (UEL) that will explode if ignited by any means. Tests using propane and air are considered to cover marine fuel and air mixtures between the LEL and UEL.

2.2 ignition-protected device: Device that complies with the requirements of one of the test programmes given in clause 3.

2.3 ignition source

(1) Any electrical contacts, commutator or brush assembly, or collector ring and brushes that may produce electrical arcs of ignition-capable energy.

(2) Resistor or other component or surface that may operate at a temperature sufficient to ignite a flammable mixture.

2.4 normal operating conditions: Any operating conditions of the device, including the maximum achievable overload up to 400 % of the rated current (circuit breakers, switches and the like) and a stalled rotor condition for any motor with the circuit protected by an overcurrent protective device specified by the product manufacturer.

3 Test programme

3.1 The external surface temperature test shall be carried out according to clause 4.

3.2 Electrical devices which can generate sparks or arcs under operation (switches, relays, generators, fuses, distributors, cranking motors, etc.) shall be tested according to clause 5 if they can be considered sealed and according to clause 6 if they are non-sealed.

3.3 Electrical devices showing an increase of the external surface temperature of more than 100 °C above ambient under operation shall be tested according to clause 4. Electrical devices not rated for continuous operation and wired with momentarily operated switches, such as engine-cranking motors, propulsion unit trim motors and other intermittently operated devices, are exempt from this test.

4 External surface temperature test

4.1 The electrical device shall be placed in a closed, thermally insulated air-circulating oven having an initial temperature of 60 °C ± 2 °C. Suitable heating shall be provided in addition to that generated by the component in order to keep the temperature in the oven constant at 60 °C ± 2 °C.

4.2 The test voltage supply shall be adjusted within the range of 80 % to 120 % of the nominal system voltage giving the greatest temperature increase.

ISO 8846:1990(E)

4.3 The electrical device shall be operated continuously for a minimum of 7 h in the mode in which it draws its maximum current.

4.4 The maximum allowable surface temperature is 200 °C, measured at any point on the electrical device exterior.

5 Test method — Sealed devices

Electrical devices which under operation can produce sparks or arcs shall be tested according to 5.1 and 5.2 if they are considered so tight that no surrounding gases can penetrate into them.

5.1 Equipment

A water chamber, as shown in figure 1, is needed.

5.2 Test procedure

5.2.1 Submerge the electrical device to be tested in a water chamber at ambient temperature, changing its attitude if necessary so that all possible sources of leaks are at the top and are 340 mm to 370 mm below the water surface. Submerged time is 15 min for each attitude change.

5.2.2 Observe the electrical device under test carefully throughout the test duration for a leak as evidenced by the generation of a bubble or stream of bubbles.

5.2.3 If bubbles are observed coming out of the electrical portion of the device, the electrical device shall not be considered sealed and shall be tested under clause 6.

5.2.4 If no bubbles are observed, remove the electrical device from the water chamber and dry its exterior.

5.2.5 Dismantle the electrical device for internal inspection.

5.2.6 If no water is found inside the electrical device, it shall be accepted as a sealed ignition-protected device. If water is found, it shall be tested according to clause 6.

6 Test method — Non-sealed devices

Testing according to 6.1 to 6.4 shall be carried out on electrical devices which under operation can produce sparks or arcs and are considered to be open so that surrounding gases can penetrate into them. Electrical devices which after testing according to clause 5, have been found to be non-sealed shall also be tested as in 6.1 to 6.4.

6.1 Equipment

A test assembly as shown in figure 2 for large non-sealed electrical devices or figure 3 for small non-sealed electrical devices is needed. The test chamber shall be equipped with a pressure-relief lid.

6.2 Electrical device preparation

6.2.1 Provide means of allowing a combustible mixture of propane and air into the electrical device via a 150 mm minimum length of rigid or flexible tubing having an inside diameter of 1,5 mm to 6,5 mm, the selection to be based on the minimum inside diameter that can maintain a test rate which allows a minimum of two electrical device ignitions per minute. The tubing supplying the mixture sample from the device to the analyser (see figure 2) shall have a 1,5 mm inside diameter, and a minimum length of 150 mm.

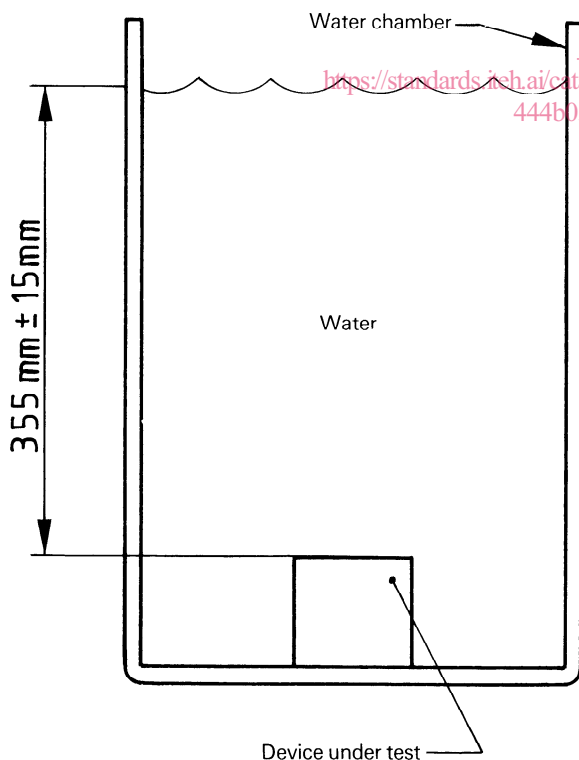
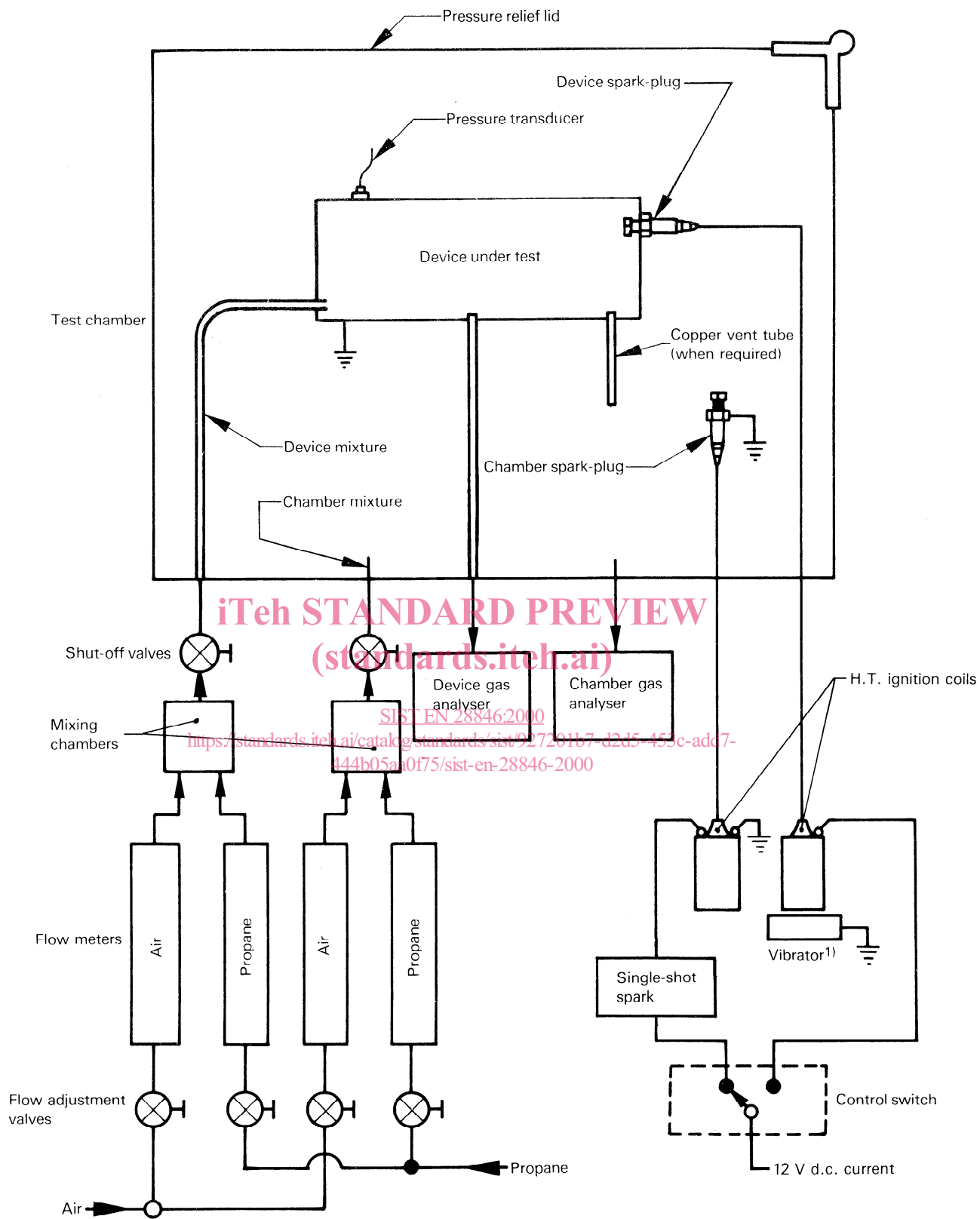


Figure 1 — Water chamber for sealed devices



1) Multiple or single-shot spark option.

Figure 2 — Test assembly for large non-sealed electrical devices