STANDARD **8846**

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

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

Reference number
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.