

SECTION 2

PREVENTION OF FIRE

1 Probability of ignition

1.1 Machinery spaces

1.1.1 Machinery spaces boundaries

The machinery spaces of category A and the engine spaces, as well as their funnels, are to be separated from accommodation spaces and store rooms containing combustible materials and liquids. Their enclosure should not be permeable to oil fuel and oil fuel vapors.

1.1.2 Ventilation

Machinery spaces of category A and engine spaces are to be ventilated to prevent the build-up of explosive gases.

1.2 Galley Equipment

1.2.1 Open flame gas appliances

According to ISO 9094 - 1/- 2 [4.3.2.2], for cooking units using fuel which is liquid at atmospheric pressure (see ISO 14895), open-flame burners are to be fitted with a readily accessible drip-pan.

1.2.2 Combustible materials near open-flame cooking appliances

Materials and finishes used in the vicinity of open-flame cooking devices within the ranges defined in Fig 1 are to comply with the following requirements, taking into account the movement of the burner up to an angle of 20° for monohull sailboats and 10° for multihulls and monohull motorboats, where gimballled stoves are fitted.

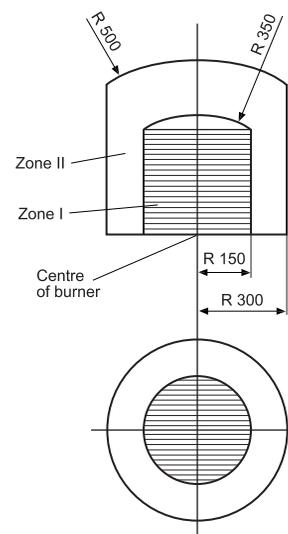
- Free-hanging curtains or other fabrics are not to be fitted in Zone I and Zone II
- Exposed materials installed in Zone I are to be glass, ceramics, aluminium, ferrous metals, or other materials with similar fireproof characteristics
- Exposed materials installed in Zone II are to be glass, ceramics, metal or other material with similar fireproof characteristics. They are to be thermally insulated from the supporting substrate to prevent combustion of the substrate, if the surface temperature exceeds 80 °C.

Note 1: The thermal insulation may be achieved by an air gap or the use of a suitable material.

1.2.3 Combustible materials near other cooking appliances

The location of any electric cooking plate or any oven is to be such that curtains or other similar materials cannot be scorched or set on fire by heat from the element.

Figure 1 : Areas of special material requirements



Dimensions in mm

Measurement from the center of the burner.

1.3 Other ignition sources

1.3.1 Radiators

Electric radiators, if used, are to be fixed in position and so constructed as to reduce fire risks to a minimum. No such radiators are to be fitted with an element so exposed that clothing, curtains, or other similar materials can be scorched or set on fire by heat from the element.

1.3.2 Open flame gas appliances outside galleys

Open flame gas appliances used as heating or lighting appliances are not permitted.

1.3.3 Saunas

Construction and arrangement of saunas is subject to particular requirements as defined below:

- Boundaries of the sauna area (comprising dedicated bathrooms and changing rooms, considered as part of the sauna areas) are to be of the same fire integrity as the machinery spaces of category A boundaries
- Wooden linings, ceilings and benches are permitted inside the sauna area
- The ceiling above the oven is to be lined with a non-combustible plate with an air gap of at least 30 mm. The distance from the hot surface to combustible materials is to be at least 500 mm or the combustible materials are to be protected by similar dispositions as for the ceiling

- The sauna door is to open outwards by pushing
- Electrically heated ovens are to be provided with a timer
- All spaces within the sauna area are to be protected by a fire detection and alarm system and an automatic sprinkler system.

1.3.4 Hammam rooms (Steam rooms)

Construction and arrangement of hammam rooms is subject to particular requirements as defined below:

- Boundaries of the hammam area (comprising dedicated bathrooms and changing rooms, considered as part of the hammam areas) are to be constructed to an A-0 class standard, if the steam generator is contained within the hammam area. If the steam generator is not contained within the hammam area, the boundaries are to be constructed of B-0 class divisions, and the steam generator is to be protected by A-0 class divisions

Note 1: For yachts having the navigation notation **sheltered area** or **coastal area** or **unrestricted navigation limited to 60 nautical miles** as defined in Pt A, Ch 1, Sec 2, the A-0 class standard may be replaced by B-0 class standard.

- If a sauna is comprised within the hammam area, the requirements of the previous paragraph for saunas is applicable
- All spaces within the hammam area are to be protected by a fire detection and alarm system.

2 Fire growth potential: requirements for Materials

2.1 Material of hull, superstructures, structural bulkheads, decks and deckhouses for yachts of 24 m in length and over

2.1.1 The hull, superstructure, structural bulkheads and decks other than fire divisions, deckhouses and pillars are to be constructed of approved non-combustible materials having adequate structural properties. Alternatively, the use of combustible materials may be permitted if precautions are taken to preserve the hull integrity in case of fire in machinery spaces of category A. This can be achieved by fitting appropriate fire insulation also on lateral exterior boundaries from 300 mm below the water line up to the deck forming the upper boundary of the machinery space of category A.

2.2 Fire divisions

2.2.1 Fire divisions, where required, are to be constructed in accordance with the following requirements.

2.2.2 Fire divisions are to be constructed of steel or any equivalent material, if it can be demonstrated by means of a type test that the material by itself, or due to non-combustible insulation provided, has fire resistance properties equivalent to the properties of the A-class or B-class fire division required by these rules.

2.2.3 Fire divisions other than steel

Insulation is to be such that the temperature of the structural core does not rise above the point at which the structure

would begin to lose its strength at any time during the exposure to the standard fire test.

a) Aluminium alloy structures:

The insulation is to be such that the temperature of the structural core does not rise more than 200°C above the ambient temperature at any time during the applicable fire exposure

b) Composite structures:

The insulation is to be such that the temperature of the laminate does not rise more than the minimum temperature of deflection under load of the resin at any time during the applicable fire exposure. The temperature of deflection under load is to be determined in accordance with a recognized international standard (as for example ISO 75-2004).

c) Wood structures:

Wood structures are to be given special consideration from the Society.

A vertical fire division between two spaces is generally to be insulated on both sides. However, if one of the two spaces have little or no fire risk such as voids, sanitary spaces, carbon dioxide rooms and similar spaces, insulation need only be applied on the side that is exposed to the greatest fire risk.

Special attention is to be given to the fixing of fire door frames in such bulkheads. Measures are to be taken to ensure that the temperature of the fixings when exposed to fire does not exceed the temperature at which the bulkhead itself loses strength.

2.2.4 Equivalent A-30 fire divisions without testing

A fire-resisting bulkhead may be considered to be equivalent to A-30 class without testing, if its composition is one of the following:

- a steel plate minimum 4.0 mm thick insulated with minimum 50 mm of non-combustible rock wool (minimal density: 96 kg/m³)
- an aluminium alloy plate minimum 5.5 mm thick insulated with 80 mm of non-combustible rock wool (minimal density: 96 kg/m³)
- a composite structural core insulated with 100 mm of non-combustible rock wool (minimal density: 96 kg/m³).

2.3 Insulation materials

2.3.1 Yachts of less than 24m in length

Materials used for the insulation of the engine space are either to:

- a) be self-extinguishing. This property may be determined by means of the oxygen index (OI) method (criteria: OI > 21 at 60 °C) in accordance with ISO 4589-3 or by means of another recognized standard
- b) be covered by an intumescent cover material to the satisfaction of the Society.

2.3.2 Yachts of 24 m in length and over

- a) Insulating materials used in machinery spaces of category A are to be of non-combustible materials. The sur-

face of insulation fitted on the internal boundaries of machinery spaces of category A is to be impervious to oil or oil vapors

- b) Acoustic or thermic insulating materials used in accommodation spaces, service spaces, control stations and auxiliary machinery spaces except in refrigerated compartments are to be at least self-extinguishing. This property may be determined by means of the oxygen index (OI) method (criteria: OI > 21 at 60 °C) in accordance with ISO 4589-3 or by means of another recognized standard.

2.4 Surface materials

2.4.1 Surface materials and adhesives used in conjunction with insulation on yachts of 24 m in length and over

Exposed surfaces of surface materials and adhesives used in conjunction with insulation are to have low-flame spread characteristics.

3 Control of smoke spread

3.1 Machinery spaces boundaries

3.1.1 Composite structures

When the yacht is constructed in composite structures, the machinery spaces of category A or engine space boundaries are to be so constructed that the smoke is not able to spread outside the machinery spaces of category A or engine space.