

Specification for

Design conditions and basis of calculations for air-conditioning and ventilation of accommodation spaces in ships

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Committees responsible for this British Standard

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- British Marine Equipment Council
- British Maritime Technology
- Chartered Institution of Building Services Engineers
- Department of Transport (Marine Directorate)
- General Council of British Shipping
- Hevac Association
- Institute of Marine Engineers
- Lloyd’s Register of Shipping
- Ministry of Defence

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Foreword

This British Standard has been prepared under the direction of the Shipbuilding and Marine Standards Committee.

BS MA 103 is technically similar in all respects to ISO 7547:1985 “*Air conditioning and ventilation of accommodation spaces on board ships — Design conditions and basis of calculations*” published by the International Organization for Standardization (ISO), except for the assumed output from the equipment in the radio cabin, in 5.5. The ISO standard assumes a heat gain of 2.5 kW for this, unless otherwise specified by the purchaser.

Calculations for radio rooms, based on existing ships, have shown this figure to be excessive, giving rise to abnormally high cooling loads and impracticable rates of air change per hour. This British Standard therefore does not include this figure for heat gain and states that the anticipated heat output from the equipment be specified by the purchaser.

Calculations in accordance with this British Standard will also be in accordance with ISO 7547.

For ease of production, the ISO text has been used as the basis of this British Standard.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 8, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope and field of application

This British Standard specifies design conditions and suitable methods of calculation for air-conditioning and ventilation of accommodation spaces and the radio cabin on board seagoing merchant ships for all conditions except those encountered in extremely cold or hot climates (i.e. with a lower or higher enthalpy than that stated in 4.2 and 4.3).

Annex A provides guidance and details of good practice in the design of ventilation and air-conditioning systems in ships.

Annex B gives the thermal conductivities of commonly used construction materials.

NOTE Users of this British Standard should note that, while observing the requirements of the Standard, they should at the same time ensure compliance with such statutory requirements, rules and regulations as may be applicable to the individual ship concerned.

2 References

The titles of the British Standards referred to in this standard are listed on the inside back cover.

3 Definitions

For the purposes of this British Standard, the definitions given below, together with those in BS 5643 and BS 5775-4 apply:

3.1

accommodation spaces

spaces used as public rooms, cabins, offices, hospitals, cinemas, games and hobby rooms, hair-dressing saloons and pantries containing no cooking appliances

3.2

air-conditioning

form of air treatment whereby temperature, humidity, ventilation and air cleanliness are all controlled within limits prescribed for the enclosure to be air-conditioned

3.3

ventilation

provision of air to an enclosed space, sufficient for the needs of the occupants or the process

3.4

relative humidity

in humid air, the ratio, expressed as a percentage, of the water vapour actual pressure to the saturated vapour pressure at the same dry bulb temperature

3.5

dry bulb temperature

the temperature indicated by a dry temperature-sensing element (such as the bulb of a mercury-in-glass thermometer) shielded from the effects of radiation

4 Design conditions

4.1 General

The system shall be designed for the indoor air conditions specified in 4.2 and 4.3 in all accommodation spaces defined in 3.1 at the stated outdoor air conditions and the outdoor supply airflow, ventilation, and air balance given in 6.2.1, 6.2.2 and 6.5 respectively.

NOTE All temperatures stated are dry bulb temperatures.

4.2 Summer temperatures and humidities

Outdoor air: + 35 °C and 70 % relative humidity

Indoor air: + 27 °C and 50 % relative humidity

NOTE In practice, the indoor air conditions obtained, especially humidity, can be different from those stated.

4.3 Winter temperatures

Outdoor air: – 20 °C

Indoor air: + 22 °C

NOTE This British Standard does not specify requirements for humidification in winter.

4.4 Outdoor air

The minimum quantity of outdoor air shall be not less than 50 % of the total air supplied to the spaces concerned.

4.5 Occupancy

The number of persons to be allowed for in the various accommodation spaces shall be as follows, unless otherwise stated by the purchaser:

Cabins: the maximum number of persons for which the cabin was designed.

Saloons, mess- or dining-rooms and recreation rooms: the number of persons who can be seated or, when this is not specified by the purchaser:

- 1 person/2 m² floor area for saloons;
- 1 person/1,5 m² floor area for mess- or dining-rooms;
- 1 person/5 m² floor area for recreation rooms.

Captain's and chief engineer's day

room: 4 persons.

Chief officer's, first engineer's, chief steward's and other private day rooms: 3 persons.

Hospital: the number of beds plus 2.

Gymnasium, games room: 4 persons.

First aid room: 2 persons.

Offices: 2 persons.