

British Standard Specification for

## Manufacture of sectional cold rooms (walk-in type)

Spécification de la construction des chambres froides préfabriquées

Spezifikation für den Bau von (begehbaren) zerlegbaren Kühlzellen

### Foreword

This British Standard was first published in 1954 under the title 'Manufacture and testing of sectional cold rooms (walk-in type)' and was prepared at the request of the Refrigeration Equipment sub-committee of the Joint Refrigeration Equipment Standardization Committee of the Ministry of Defence. Amendments PD 1991 October 1954 and PD 4268 August 1961 were issued.

The scope of the first edition was limited to sectional cold rooms within the range of 2.8 m<sup>3</sup> to 41.5 m<sup>3</sup> (100 ft<sup>3</sup> to 1500 ft<sup>3</sup>) gross volume capacity. Since 1954, sectional cold rooms having considerably larger capacities have been manufactured and no limitation on capacity has therefore been incorporated in this first revision.

The first edition dealt with the manufacture and testing of the cold room and the associated refrigerating plant. This first revision is a specification for the cold room itself and not for the associated refrigerating plant.

Attention is drawn to the need for complying with legal requirements applying to the use and construction, etc., of sectional cold rooms. These requirements, for example, include those issued as regulations etc. under the Food and Drugs Act 1955 (or the Food and Drugs (Scotland) Act 1956) such as the United Kingdom Food Hygiene (General) Regulations 1970, The Poultry Meat (Hygiene) Regulations 1976.

### 1. Scope

This British Standard specifies the minimum construction requirements for, and the method of computing volumes of, sectional cold rooms intended for commercial use. This standard applies to sectional cold rooms located

within a building in climates having dry bulb temperatures and relative humidities between 16 °C with 80 % r.h. and 40 °C with 40 % r.h. (see table 1). The limits of internal air temperature are - 30 °C and + 10 °C.

This standard is a specification for the cold room itself and not for the associated refrigerating plant.

### 2. References

The titles of the standards publications referred to in this standard are listed on page 3.

### 3. Definition

For the purposes of this British Standard the definitions in BS 5643 together with the following apply.

**3.1 test room climate class.** A test room climate classified according to dry bulb temperature and relative humidity as in table 1.

### 4. Test room climate class

Test room climate classes shall be as shown in table 1.

Table 1. Test room climate classes

Test room climate class	Dry bulb temperature	Relative humidity
	°C	%
1	16	80
2	22	65
3	25	60
4	30	55
5	40	40

NOTE. This table is included in ISO 1992/II-1973.

## 5. Marking

The following information shall be given on a plate attached to the cold room in a location where the information is readily accessible and easily visible.

- (a) The name and address of the manufacturer or sponsor of the completely assembled unit.
- (b) Type, model, catalogue and serial numbers.
- (c) Full particulars of the door heater, i.e. voltage, frequency, etc., if fitted.
- (d) The number of this British Standard, i.e. BS 2502.

NOTE. The addition of the mark BS 2502 on or in relation to the cold room is a claim by the manufacturer that it complies with the requirements of this standard.

## 6. Information

6.1 The manufacturer shall supply to the installer instructions on the method of assembly.

6.2 The following information shall be provided to the user by the person, firm or company responsible for the supply of the cold room.

- (a) Instructions on the use, cleaning and maintenance of the cold room.
- (b) The claimed gross internal volume (in m<sup>3</sup>) of the cold room (see clause 7).

## 7. Cold room volume

The gross internal volume of the cold room shall be the product of the inside depth, the inside width and the inside height less the volume of any internal items or obstructions not forming part of the refrigerating system. The gross internal volume shall be expressed in cubic metres and shall be not less than 99 % of the claimed gross internal volume (see 6.2 (b)).

NOTE. Where the cold room is divided into several compartments by fixed partitions, each compartment is regarded as a separate room for the purpose of determining volumes. Where necessary, the total volume can be divided into convenient units and volumes of geometric shape that can be easily measured. The sum of the volumes of all units is the total gross internal volume of the cold room.

## 8. Materials

8.1 The materials used for the construction of the cold room shall comply with the requirements of British Standards, where applicable, except where such requirements are modified by this British Standard.

8.2 Materials shall be free from defects that are liable to cause undue deterioration or failure.

8.3 Under normal conditions of use, materials shall not shrink, warp or expand to an undue degree.

8.4 Materials shall be resistant to attack by indigenous insects, pests and vermin.

8.5 Where liable to be exposed to moisture, food products or chemically-active substances, the materials shall be suitably resistant and shall not contaminate stored products.

8.6 Sealing materials used shall not lose any of their essential properties such as adhesion, plasticity, moisture resistance, etc.

## 9. Construction

### 9.1 General

9.1.1 The cold room parts shall be constructed to give adequate strength and rigidity to withstand normal

conditions of handling, transport and use.

9.1.2 The construction of the parts shall be such that when the cold room is erected it is self-supporting and structurally adequate for sustaining all normal loadings imposed by the internal fittings, i.e. hanging rails, shelves, etc., together with the weight of products for which the fittings are intended. No permanent deflection shall occur under normal loadings.

9.1.3 The floor, walls, ceiling and doors, etc., from which the cold room is formed shall be constructed in such a way that the outer surfaces of the assembled cold room will not sweat at the intended range of internal temperatures and the corresponding design climate classes (see table 1).

NOTE. A design value of heat flow through the walls etc., in the range 9 W/m<sup>2</sup> to 10 W/m<sup>2</sup> is often appropriate.

9.1.4 All personnel access doors shall be capable of being opened (preferably outwards) from both outside and inside the cold room. At least one such door shall be provided in each cold room and multi-compartment cold rooms shall have such a personnel access door fitted to each compartment.

9.1.5 Under normal conditions of use, all parts that constitute an accident hazard shall be effectively guarded.

9.1.6 All parts that require periodic servicing shall be readily accessible.

9.1.7 Crash barriers or dunnage battens of materials complying with the requirements of clause 8 shall be fitted to the walls and door entrances to prevent damage to the interior and exterior finishes.

9.2 Sections. The construction of the sections shall be capable of withstanding the forces imposed by any anticipated pressure difference between the inside and outside air.

### 9.3 Joints

9.3.1 To prevent the movement of air or water vapour through joints, they shall be vapour sealed. The seal shall be completely non-porous to withstand cleaning procedures.

9.3.2 All joints shall be so formed as to permit adequate vapour sealing to be effected during erection and yet allow removable sections to be dismantled and properly re-erected.

9.3.3 Where section is joined to section, the construction of the joint shall be such that the heat flow through it is not more than twice the value of the heat flow through the section itself. Such joints shall be capable of withstanding the forces imposed by any anticipated pressure difference between the inside and outside air.

9.3.4 All joints and seams within the cold room shall be sealed to prevent entry and accumulation of potentially contaminating substances.

### 9.4 Thermal insulation material

9.4.1 Means shall be taken to prevent moisture entering the thermal insulation material.

9.4.2 When the interior and exterior surfaces of the cold room are of high thermal conductivity materials, they shall be separated by insulated breaker strips or their equivalent.

9.5 Floors. The cold room manufacturer may or may not be asked to supply insulated sectional flooring, according to the type of cold room and the use intended.

In cases where sectional flooring is supplied as part of the cold room construction, the insulated sections and their