

Suspended ceilings —

Part 1: Code of practice for design

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Elements and Components (of Diverse Materials) for Buildings Standards Policy Committee (ECB/-) to Technical Committee ECB/11, upon which the following bodies were represented:

- Association of Structural Fire Protection Contractors and Manufacturers
- Cold Rolled Sections Association
- Construction Fixings Association
- Department of Health
- Department of the Environment (Property Services Agency)
- Fibre Cement Manufacturers' Association Ltd.
- Gypsum Products Development Association
- Local Authority Organizations
- Loss Prevention Council
- Royal Institute of British Architects
- Suspended Ceilings Association

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Foreword

This Part of BS 8290, prepared under the direction of the Elements and Components (of Diverse Materials) for Buildings Standards Policy Committee, deals with the design of suspended ceilings of dry construction with suspension systems of lightweight corrosion-resistant steel or aluminium alloy sections.

BS 8290 supersedes CP 290:1973 which is withdrawn. BS 8290 is published in separate Parts, the other Parts being as follows:

- *Part 2: Specification for performance of components and assemblies;*
- *Part 3: Code of practice for installation and maintenance.*

A suspended ceiling is a membrane suspended below a structural floor or roof to provide a finished soffit. Suspended ceilings have a variety of functions in forming the internal environment of buildings. They can provide concealment of services, protection of structure against fire, decorative finishes, thermal insulation and illumination. They can also provide heating and ventilation, and contribute to acoustic absorption, sound insulation and the reduction of condensation.

Suspended ceilings are constructed from pre-fabricated components which together form an integrated system. For this reason they are usually installed by specialist ceiling contractors.

BS 8290-1 is intended for the designer and gives recommendations for design as far as possible in terms of performance. Detailed recommendations for construction have been omitted so that innovation is not inhibited.

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 14, 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

This Part of BS 8290 gives recommendations for the design of suspended ceilings of dry construction, with suspension systems of lightweight steel or aluminium alloy sections.

NOTE The titles of the publications referred to in this Part of BS 8290 are listed on the inside back cover.

2 Definitions

For the purposes of this Part of BS 8290 the definitions given in BS 6100 apply, together with the following. Terms from BS 6100 that are particularly relevant are reproduced below.

2.1

suspended ceiling

ceiling hung at a distance from the floor or roof above

2.2

open ceiling

suspended ceiling formed of louvres, open cells or similar ceiling components

2.3

luminous ceiling

ceiling of translucent material or open ceiling with lamps in the ceiling void to light the space below

2.4

ceiling suspension system

assembly of ceiling components for a suspended ceiling

2.5

exposed system

ceiling suspension system with inverted T (tee) sections in which the infill units, open cells or similar components usually rest on the visible table of the system

2.6

concealed system

ceiling suspension system with sections onto which infill units are slotted or mechanically fixed

2.7

main runner

ceiling component suspended from the ceiling hangers in an exposed system or mechanically fixed

2.8

primary channel

ceiling component suspended from the ceiling hangers in a concealed system or open ceiling

2.9

ceiling hanger

ceiling component that is used to connect a main runner or primary channel to the supporting structure above

2.10

tile section

ceiling component that is fixed to the primary channel to support ceiling tiles

2.11

cross member

ceiling component that spans between the main runners

2.12

noggin

ceiling component that spans between tile sections

2.13

spline

strip inserted into preformed grooves of adjacent ceiling infill units to form a concealed mechanical joint for the purpose of restricting air movement through the tile joints

2.14

perimeter trim

section fixed at the perimeter of a ceiling to support the outer components of the ceiling surface

2.15

ceiling linear strip

ceiling component that consists of a profiled section and provides part of a ceiling surface

2.16

metal tray

metal ceiling component with formed edges that provides part of a ceiling surface

2.17

spring tee

ceiling component that is fixed to the primary channels to support metal trays

2.18

open cell

ceiling component that is formed as a grille and that provides part of a ceiling surface

2.19

tile

infill unit with maximum dimensions of 600 mm × 600 mm

2.20

panel

infill unit with dimensions in excess of 600 mm × 600 mm

2.21**plank**

infill unit with length in excess of 600 mm and a length at least three times the width

2.22**board**

dry lining unit mechanically fixed to a concealed grid

2.23**kerf**

preformed groove in the edge of a ceiling infill unit to accommodate the tile section in a concealed grid system

2.24**top fixing**

means or device by which ceiling hangers are secured to the building structure

2.25**fire protection**

design features, systems, equipment, buildings, or other structures to reduce danger to persons and property by detecting, extinguishing or containing fires

2.26**fire resistance**

measure of the ability of a construction or component to fulfil for a stated test time one or more of the following: the required stability, fire integrity, thermal insulation, other expected duty

3 General design checklist

When designing or selecting a suspended ceiling system the points listed in items a) to g) should be considered.

a) Functional aspects

Functional aspects to be considered include the following:

- 1) concealment of structure;
- 2) concealment of services;
- 3) decorative appearance;
- 4) thermal insulation;
- 5) sound absorption;
- 6) sound insulation;
- 7) fire protection;
- 8) control of condensation;
- 9) hygiene control;
- 10) ventilation;
- 11) heating;
- 12) air conditioning;

13) illumination;

14) electrical earthing and bonding.

b) Location constraints

Location constraints to be considered include the following:

- 1) dimensional discipline of the building;
- 2) position of ceiling with reference to the building structure;
- 3) method of attachment to supporting structure;
- 4) provision of fixing points;
- 5) constraints of adjoining components and services.

c) Structural aspects

Structural aspects to be considered include the following:

- 1) items requiring support from the ceiling;
- 2) vertical and lateral loads from the partition;
- 3) the environmental conditions (see clause 8);
- 4) support of associated fittings;
- 5) wind loading (positive and negative).

d) Access

Access criteria to be considered include the following:

- 1) whether all panels, or only certain panels are demountable;
- 2) trap door access.

e) Appearance and design

Appearance and design criteria to be considered include the following:

- 1) compatibility of components of the ceiling assembly with one another;
- 2) suspension system, e.g. concealed, semi-concealed or exposed grid;
- 3) decorative finish, e.g. material, texture, colour;
- 4) type and shape of ceiling infill units;
- 5) continuous membrane, e.g. jointless system;
- 6) non-continuous membrane, e.g. linear strip or open cell.

f) Durability and maintenance

Durability and maintenance criteria to be considered include the following:

- 1) the expected life of the ceiling;
- 2) replacement of the ceiling during the life of the building;
- 3) repair and redecoration of the ceiling;
- 4) any special cleaning requirements;