

BRITISH STANDARD CODE OF PRACTICE
CP 3—Chapter IX (1950)

Code of
Functional Requirements of Buildings
Chapter IX

DURABILITY

THE COUNCIL FOR
CODES OF PRACTICE FOR BUILDINGS



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**THE COUNCIL FOR
CODES OF PRACTICE FOR BUILDINGS
CONSTRUCTION AND ENGINEERING SERVICES**



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THE COUNCIL FOR CODES OF PRACTICE FOR BUILDINGS

Construction and Engineering Services

The Council for Codes of Practice for Buildings was formed under the ægis of the Ministry of Works in September, 1942, as the result of negotiations initiated by the Minister of Works in consultation with the Ministry of Health and other Government Departments.

The Council is composed of nominees of the following professional and scientific Institutions :—

Institution of Civil Engineers
Royal Institute of British Architects
Institution of Mechanical Engineers
Institution of Electrical Engineers
Institution of Municipal Engineers
Institution of Structural Engineers
Incorporated Association of Architects and Surveyors
Royal Institute of Chartered Surveyors
Royal Incorporation of Architects in Scotland
Institution of Gas Engineers
Institution of Heating and Ventilating Engineers
Illuminating Engineering Society
Institute of Welding
Institution of Water Engineers
Institution of Sanitary Engineers

and of the British Standards Institution and the Building Industries National Council, with assessor members nominated by the Government Departments concerned, and a Chairman appointed by the Minister of Works.

Its terms of reference are—To direct the preparation of Codes of Practice for buildings—construction and engineering services.

BRITISH STANDARD CODES OF PRACTICE FOR BUILDINGS

Codes of Practice are divided into a Code of Functional Requirements of Buildings and a General Series of Building Codes.

The Code of Functional Requirements of Buildings comprises ten Chapters :—

- I. Daylight, sunlight and ventilation
- II. Weather protection
- III. Sound insulation
- IV. Precautions against fire
- V. Loading
- VI. Acoustics
- VII. Engineering and utility services
- VIII. Heating and thermal insulation
- IX. Durability
- X. Precautions against vermin and dirt

The main divisions of the General Series of Building Codes are :—

Series 100 (to 199) Carcase

- 100/109 Foundations and substructure
- 110/119 Loadbearing superstructure
- 120/129 Walls and partitions
- 130/139 Flues and chimneys
- 140/149 Roof coverings
- 150/159 Doors, gates and windows, including frames, glazing, hardware, surrounds and finishes

Series 200 (to 299) Building finishes

- 200/209 Finishes to floors and stairs
- 210/219 Applied wall and ceiling finishes (internal)
- 220/229 Applied wall finishes (external)
- 230/239 Painting and decoration

Series 300 (to 399) Installation of services

- 300/309 Building drainage, sanitary services and refuse disposal
- 310/319 Water supply
- 320/329 Electricity
- 330/339 Gas
- 340/349 Central heating and hot water supply
- 350/359 Ventilation, air heating and air conditioning

Series 400 (to 499) Miscellaneous independent installations and equipment

(No specified grouping)

This Chapter has been prepared for the Council for Codes of Practice for Buildings by the Council's Technical Consultative Group. A draft of the Chapter was published for general comment and was also submitted for specific comment to all professional and trade organizations which are intimately concerned with its subject matter. All comments and views expressed have been taken into consideration in the preparation of the Chapter as now published.

The Chapter will be revised, if necessary, within a period of five years after publication.

January, 1951.

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This Code of Practice represents a standard of good practice and therefore takes the form of recommendations. Compliance with it does not confer immunity from relevant legal requirements, including byelaws.

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CHAPTER IX. DURABILITY

1. General. The durability of buildings and their associated installations should be adequate for the purposes for which they are designed.

In order to achieve this it is necessary to take into account the locality in which the building is situated, the conditions to which it will be exposed, the quality of workmanship and the maintenance treatment to be given. Consideration should also be given to the possible causes of deterioration of the component parts of the building or its installations, to the susceptibility to deterioration of the materials to be used and to the effect of design upon durability. Some general notes on these questions are given in Appendices I, II and III.

2. Definitions. For the purposes of this chapter the following definitions apply :—

Abrasion. The wear or removal of the surface of a solid material as a result of relative movement of other solid bodies in contact with it.

Corrosion. The gradual conversion of a metal into oxides or other compounds through the chemical action of gases, liquids or solids in contact with it, generally leading to progressive deterioration.

Decay. The deterioration of a material through chemical or physical change.

Designed life of a building or its component parts or installations. The period for which it is intended that it shall last.

Disintegration. The loss of cohesion of a material as a result of chemical or physical changes.

Durability. The quality of maintaining a satisfactory appearance and satisfactory performance of required functions.

Erosion. The progressive removal of the surface of a solid material, normally as a result of atmospheric or climatic effects, or through the action of running water.

Oxidation (of metals). The formation of oxides or other compounds.

Satisfactory life of a building or its component parts or installations. The period during which no excessive expenditure on maintenance or repair is required.

Weatherings. The geometrical forms given to parts of a structure to enable it to shed rain water.

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3. Foundations and structural walls, floors and roofs. The foundations and the structural walls, floors and roof of a building should normally be designed to have a satisfactory life at least equivalent to the designed life of the building.

Buildings as a whole may generally be regarded as belonging, in respect of durability, to one of the following classes :—

- (a) Designed to have a life of at least 100 years.
- (b) Designed to have a life of at least 40 years.
- (c) Designed to have a life of at least 10 years.
- (d) Designed to have a life of less than 10 years.

4. Non-structural component parts, finishes and decorations. The minimum satisfactory life of the component parts of the building other than the structural elements mentioned in clause 3 need not necessarily be the same as the designed life of the building as a whole. In Table 1 a classification is given of the various non-structural component parts, finishes and decorations, in terms of the probable minimum satisfactory life. The various grades, A, B, and C,* are related to the known range of durability attainable with the component part, finish or decoration in question, and not to the four classes of building given in clause 3. Since the figures are based upon the known performance of the various materials and types of construction or finish which are used in the particular component part of the building, the figures in any one Grade bear no direct relation to one another. Any grade of component part, finish or decoration may be used irrespective of the designed life of the building, but maintenance or replacements must be expected if components or finishes of low durability are used in buildings of longer designed life.

Table 1. Minimum satisfactory life of component parts of a building

Component part of building	Minimum satisfactory life (years)		
	Grade A	Grade B	Grade C
Internal (non-structural) walls and partitions	100	10	—
Roof coverings	100	20	5
Interior wall and ceiling finishes	50	20	5
Floor finishes†	—	—	—
Exterior finishes	100	20	5
Interior decoration	10	5	2
Exterior decoration	4	2	—

NOTE. The above figures do not take into consideration any special legal requirements such as those set out in the Factory Acts.

* It is hoped that it may in due course prove possible to grade various materials and methods of construction in these grades in the General Series Codes.

† The minimum life required of a floor finish is so dependent upon the wear conditions and occupancy that a general classification cannot be given.

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5. Installations. The satisfactory life required of an installation may vary widely. It should be considered in relation to the designed life of the building, to the probable occupancy and to the probability of obsolescence.

6. Maintenance. The life of the building, of the component parts or of the installations is to a great extent dependent upon the degree of maintenance given. The normal maintenance, in addition to cleaning, includes periodic painting, decoration, application of other protective coatings, renewal of putties, mastics and joint treatments, minor replacements of worn units or parts, and repairs or replacements resulting from normal wear and tear. The maintenance requirements during the designed life, and the provision of facilities for maintenance, should, therefore, be given due regard in design and in the selection of materials.

Provision should be made in design for adequate access and clearance for painting and for repair and renewal of components liable to have a shorter satisfactory life than the surrounding or adjoining structural elements or components.

Under some conditions, it is possible that, for buildings in classes (b) and (c), a choice of construction having relatively high maintenance requirements may be sufficiently advantageous in other respects to warrant its selection; for buildings of class (a), such a choice is not likely to be justifiable, and generally a low maintenance requirement is advisable.

7. Assessment of probable satisfactory life. There is at present insufficient experience available to assess the life under all possible conditions for all materials now in use, but the probable satisfactory life is known for many of the more traditional materials and methods of construction and can be assessed for some of the newer materials and methods.

Some indication of the causes of, and the susceptibility to, deterioration of particular materials is given in Appendices I and II.