

Stairs, ladders and walkways –

Part 2: Code of practice for the design of helical and spiral stairs

ICS 91.060.30

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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 Committee (ECB/-) to Technical Committee ECB/2 upon which the following bodies were represented:

- Aluminium Federation
- British Woodworking Federation
- Concrete Society
- Department of Health and Social Security
- Department of the Environment, Building Research Establishment, Princes Risborough Laboratory
- Department of the Environment, Housing and Construction
- Energy Industries Council
- Engineering Equipment and Materials Users' Association
- Greater London Council
- Health and Safety Executive
- Incorporated Association of Architects and Surveyors
- Institution of Mechanical Engineers
- Institution of Structural Engineers
- Joinery Managers' Association Ltd.
- London Transport Executive
- Royal Institute of British Architects
- Scottish Development Department
- Spiral Stair Manufacturers' Association

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

- Institution of Building Control Officers
- Co-opted members

This British Standard, having been prepared under the direction of the Elements and components (of Diverse materials) for Buildings Standards Committee, was published under the authority of the Board of BSI and comes into effect on 31 January 1984

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The following BSI references relate to the work on this standard:
Committee reference ECB/2
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Amendments issued since publication

Amd. No.	Date of issue	Comments
6076	July 1989	Indicated by a sideline in the margin
	July 2008	Corrigendum to replace poor quality figures
C2	March 2009	Table 2: "Minimum outer going" corrected to "Maximum outer going" This corrigendum corrects an error that appears in some versions of this standard only.
C3	June 2009	Corrigendum to replace incorrect figures including keys and to correct equation 1.5.2

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Foreword

This standard has been prepared under the direction of the Elements and Components (of Diverse Materials) for Building Standards Committee. As a consequence of the publication of this Part of this standard, the number of the existing BS 5395:1977 has been changed to BS 5395-1. BS 5395-3 covers industrial type stairs, ladders and walkways.

This standard is based on accepted good practice by designers and manufacturers of helical and spiral stairs. It should be borne in mind that helical and spiral stairs are not normally permitted for use as means of escape where large numbers of persons are involved.

In drafting this standard the committee acknowledged the need for research into the structural behaviour of stairs.

Appendix A describes a recommended procedure for load tests on stairs. Further investigations are required to determine the appropriate loads for each stair category.

The proper functioning and durability of a prefabricated stair designed in accordance with this standard depends on care in handling during transportation and on site, as well as careful site storage, correct installation and temporary protection, and subsequent proper maintenance. Some general advice is given in BS 5395-1, but the manufacturer should inform the purchaser in writing of the precautions necessary.

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 12, 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 this standard gives recommendations for the design of helical and spiral stairs, to be used internally or externally in all types of building constructions. It covers only stairs which are circular on plan and does not deal with ramps.

NOTE 1 Appendix B gives guidance on the geometry of helical and spiral stairs.

NOTE 2 The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this standard the following definitions apply.

2.1

spiral stair

a stair describing a helix around a central column [see Figure 1(a)]

2.2

helical stair

a stair describing a helix around a central void [see Figure 1(b)]

2.3

going

the chord length on plan between two points on consecutive tread nosings at the same radius from the geometric centre of the stair, measured as described in 5.4

2.4

rise

the vertical distance between two consecutive steps

2.5

clear headroom

the distance measured vertically from the pitch line of a stair or from a floor or landing to any obstruction overhead

2.6

clear width

the unobstructed walking area throughout the stair's rise, measured as described in 5.6

2.7

outside diameter

the diameter of the outer edge of the handrail, strings or treads, whichever is the greater

2.8

pitch line

a line drawn from the floor or landing below a stair to connect points on consecutive tread nosings at the same radius from the geometric centre of the stair

2.9

nosings

the front edge of a tread

2.10

riser

the part closing the front face of the step

2.11

tread

the horizontal part or upper surface of the step

3 Alternative materials, components and methods of design and construction

Where materials, components and methods of design and construction are not covered by this standard or by any other British Standard, this is not necessarily to be regarded as discouraging their use. The designer should satisfy himself by reference to appropriate manufacturers' literature and test evidence issued by competent, independent authorities that the materials and methods to be employed are such as to ensure a level of performance at least equal to that obtained by following the recommendations of this standard.

4 Materials

Structural materials should be selected from those listed in Table 1 and should be in accordance with the appropriate British Standard.

Where stairs are constructed from two or more different materials, the materials should be compatible. For example, they should not give rise to electromagnetic or electrogalvanic action e.g. between different metals, chemical corrosion e.g. of metal fixings in timber, or differential movement e.g. between concrete and brickwork.

For guidance on surface-finishing materials see clause 8 of BS 5395-1:1977.

