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Design, manufacture and installation of architectural precast concrete — Code of practice

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Foreword

Publishing information

This British Standard is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 31 October 2017. It was prepared by Technical Committee B/524, *Precast concrete products*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

This British Standard supersedes BS 8297:2000, which is withdrawn.

Information about this document

This is a full revision of the standard, and introduces the following principal changes:

- clarification of scope;
- updated terms and definitions;
- dimensions for certain components;
- describes the provisions necessary for the cladding to perform its function satisfactorily; and
- gives the minium standards required of materials and methods to be employed.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its recommendations are expressed in sentences in which the principal auxiliary verb is "should".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

The word "should" is used to express recommendations of this standard. The word "may" is used in the text to express permissibility, e.g. as an alternative to the primary recommendation of the clause. The word "can" is used to express possibility, e.g. a consequence of an action or an event.

Notes and commentaries are provided throughout the text of this standard. Notes give references and additional information that are important but do not form part of the recommendations. Commentaries give background information.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

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Introduction

This British Standard has been developed to give recommendations and good practice for specifiers and manufacturers during the design, manufacture, transport and installation of architectural precast concrete units.

Framed structures are often enclosed by precast concrete panels.These in turn frequently serve an architectural role in providing the external appearance of the building. In such instances, the panels are generically referred to as cladding. As well as providing the external envelope of a building, similar precast concrete units might also be used for other purposes, such as decorative columns, either loadbearing or not, balconies, and other substantial elements. Where units provide the weathertight external envelope of a building, water and airtightness is ensured by appropriate design and treatment of the joints between the units.

Units are required to carry their own weight and also any directly or indirectly imposed loadings. Units are also required to resist wind loading, provide weather protection, acoustic and thermal performance. They might also need to provide fire resistance and be resistant to accidental damage, e.g. vehicle impact and internal or external explosion. Their construction needs to allow for the dimensional tolerances of construction and movement of the building structure during its designed lifetime. Where units are loadbearing, they need to be able to transmit loads as part of the structure. Strength, durability and versatility are the inherent characteristics of precast concrete. This type of precast concrete is almost inevitably bespoke, by virtue of its shape and size, colour and texture, finishes or facings, to achieve the specified aesthetic requirements of individual building projects. The manufacturing process is non-repetitive and might not lend itself to automation. The weight and size of units can also be critical. Involving the manufacturer at the design stage can therefore often lead to more efficient production and optimization of the fixing system.

1 Scope

This British Standard gives recommendations and guidance for the design, manufacture, transport and installation of architectural precast concrete units in the form of:

a) units supported by and fixed to a structural frame or wall to perform a cladding role;

NOTE These might be part of the external envelope or separate elements, such as columns and balconies.

b) units which may neither be associated with, or form part of, a building;

c) units used as permanent formwork in part or in whole, but limited to architectural elements; and

d) the architectural function of a sandwich panel (see 3.7.3).

It includes recommendations on the measures which are to be taken to provide for permanent and temporary movements and tolerances of the structure, to enable the cladding to perform its function satisfactorily. It gives the minimum standards needed and the materials and methods of fixings most frequently used. It applies to new buildings but many provisions might be applicable to alterations or refurbishment of existing buildings.

Guidance is given on the quality of the finished product and verification of performance. The design recommendations given in this British Standard are based on limit state design principles.

This British Standard is intended to be used in conjunction with BS EN 13369:2013 and BS EN 13670, but provides comprehensive guidance specifically in relation to architectural precast concrete cladding and therefore takes precedence in the items addressed.

This British Standard does not provide recommendations relevant to units incorporating glass fibre reinforced concrete (GFRC/GRC), semi-dry or small wet-cast masonry units instead of larger architectural wall cladding panels (see BS 1217), nor the design of the supporting structure to which the units might be attached.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes provisions of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

Standards publications

BS 1881-208, *Testing concrete — Recommendations for the determination of the initial surface absorption of concrete*

BS 4449, *Steel for the reinforcement of concrete — Weldable reinforcing steel — Bar, coil and decoiled product — Specification*

BS 4482, *Steel wire for the reinforcement of concrete products — Specification*

BS 4483, *Steel fabric for the reinforcement of concrete — Specification*

BS 5606, *Guide to accuracy in building*

BS 6093, *Design of joints and jointing in building construction — Guide*

BS 6100-9, *Building and civil engineering — Vocabulary — Work with concrete and plaster*

BS 6180, *Barriers in and about buildings – Code of practice*