

ICS 91.100.30

English Version

Precast concrete products - Concrete finishes - Identification

Produits préfabriqués en béton - Surface et parements de
béton - Éléments d'identification

Betonfertigteile - Betonoberflächen -
Beschreibungsmerkmale

This Technical Report was approved by CEN on 23 March 2008. It has been drawn up by the Technical Committee CEN/TC 229.

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Contents

Page

Foreword.....	3
Introduction	4
1 Scope	6
2 Terms and definitions.....	6
2.1 Faces	6
2.2 Finishes.....	6
2.3 Surface characteristics	9
3 Principle of characterization and identification.....	10
3.1 General.....	10
3.2 Flatness.....	10
3.3 Texture	10
3.4 Colour.....	10
3.5 Identification of the reference.....	10
3.6 Definition of level of quality	11
4 Test methods.....	12
4.1 Flatness (deflection)	12
4.2 Check of appearance	14
5 Description of units	16
Annex A (informative) Surface characteristics.....	17
Annex B (informative) Example of specifications of requirements applicable to architectural units	18
Annex C (informative) Concrete sample surface finish example of acceptance report.....	19
Annex D (informative) Reference images to identify the severity of blowholes in concrete surfaces	20
Annex E (informative) CIB grey scale.....	22
Annex F (informative) Examples of pictures deal with some methods of concrete finishes	23
Bibliography	25

Foreword

This document (CEN/TR 15739:2008) has been prepared by Technical Committee CEN/TC 229 “Precast concrete products”, the secretariat of which is held by AFNOR.

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Introduction

The visual perception of concrete finishes is determined by characteristics which can vary to different extents, i.e. variations which are intentional (more or less). Intended variations imply that one is acquainted with the material and is able to vary the characteristic within limits set by oneself, without the variations being regarded as defects.

Finishes depend on manufacturing techniques such as:

Before casting

The finish is determined by the surface of the mould:

- smooth ex-mould finish,
- profiled from the mould,
- profiled/patterned from a lining in the mould,
- cast-on elements,
- use of retarders.

Mould-hardened off-the-form finish

As cast finish obtained through contact with the mould in the case of concrete hardened in the mould. The face may be smooth or textured.

Dry-cast off-the-form finish

As cast fair-faced finish obtained through contact with the mould in the case of immediate demoulding.

The characteristics of concrete finishes are:

- Texture, from the most elaborated to evenness and, if it is more coarse, unevenness, possibility developing to a maximum unevenness, which is difficult to stipulate;
- Colour which can be expressed in colour scale;
- Grey tone which can be expressed in grey scales, sometimes with some colour incorporated;
- Pattern, a characteristic, in another type and scale than three above, and which can be formed by variations in these characteristics.

In contrast to the consciously selected characteristics there can be additional surface aspects of sorts which are not desired which consequently should be named deviations (i.e. deviations from intentional characteristics or from the quality level for these characteristics). To these belongs blowholes, lumps, groove etc.

As a consequence one should separate between characteristics on one side and deviations on the other side and consider them as different matters, due to the great difference in their nature.

In contrast one should observe that blowholes in certain cases can be intentional, if they are uniformly distributed over a concrete surface, to lend it a visual “softness”.

For some products, such as architectural components, the required surface appearance could be chosen on the basis of samples for coordinating the surface character. Before building and delivery, start reference surfaces are chosen from the sample surface. At the time an order is placed, agreement on the appearance of the face(s) is formalized by an acceptance report for the reference sample(s) proposed by the manufacturer. This report also identifies the conventional mean colour chosen from a reference colour chart to be used to subsequently assess consistency of colour (see Annex C and Annex E).

NOTE 1 Colour scales are not included in this CEN technical report because the paper publication is in black and white. Each country could establish special colour scales.

NOTE 2 The consistency of concrete appearance is governed by the uniformity of the raw materials from which it is made or of the pigments used. The fact that the raw materials are of natural mineral origin implies tolerances on the appearance of the concrete products supplied.

NOTE 3 Because of the time it takes for concrete to cure, the appearance of the reference sample can be assessed only after a certain minimum time, generally one week after treatment, or longer, depending on the cements used (e.g. CEM II A and CEM II B) and in all cases at delivery.

NOTE 4 When the colour consistency of several products is inspected at the same time, account should be taken of any age differences.

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1 Scope

This document provides guidelines for the surface appearance of precast concrete products and the methods for inspecting and assessing the conformity of appearance for use in conjunction with specific product standards. This document may also be used to describe the appearance of products for which there is no standard.

If there is a specific standard for a precast concrete product, it takes priority over this document.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1 Faces

2.1.1

seen face

surface intended to be seen when in use

2.1.2

facing layer

layer of concrete on the seen face of a product of different material and/or properties to the main body or backing layer of a product. Facing layer may be not completely mixed colour concrete (marbling)

NOTE To be distinguished from wipe, i.e. a fine cement mortar or slurry applied to the surface of the product.

2.1.3

arris

part of a product where two faces meet. It can be bevelled, rounded, chamfered, radiused or splayed

2.1.4

draw

intended angle of the side face from the vertical plane of a product

2.1.5

chamfer

bevelled arris

2.2 Finishes

2.2.1 General

2.2.1.1

unformed surface

surface not in contact with the mould during moulding. This surface may be given complementary treatment while the concrete is still green to give a more uniform finish. The different treatments possible are defined below

NOTE In certain special cases the shape of the precast unit may require application of a moulding surface to the upper face of the unit; this may result in a large number of blowholes which may be attenuated by one of the surface treatments defined below.

2.2.1.2

screeded

finish obtained by drawing a straightedge, for example, across the surface of the concrete