DIN EN 13747:2007-04 (E)

Precast concrete products - Floor plates for floor systems (includes Corrigendum AC:2006)

Contents

Page

The numbering of clauses is strictly related to EN 13369:2004 Common rules for precast concrete products, at least for the first three digits. When a clause of EN 13369:2004 is not relevant or included in a more general reference of this standard, its number is omitted and this may result in a gap on numbering. Foreword 5

Introduction 7

1 Scope 8

2 Normative references 8

3 Terms and definitions 9

4 Requirements 13
4.1 Material requirements 13
4.1.1 General 13
4.1.2 Constituent materials of concrete 13
4.1.3 Reinforcing steel 13
4.1.4 Prestressing steel 13
4.1.5 Inserts and connectors 13
4.2 Production requirements 14
4.2.1 Concrete production 14
4.2.2 Hardened concrete 14
4.2.3 Structural reinforcement 14
4.2.4 Positioning of reinforcement 16
4.3 Finished product requirements 22
4.3.1 Geometrical properties 22
4.3.2 Surface characteristics 23
4.3.3 Mechanical resistance 23
4.3.4 Resistance and reaction to fire 25
4.3.5 Acoustic properties 25
4.3.6 Thermal properties 26
4.3.7 Durability 26
4.3.8 Other requirements 26

5 Test methods 26
5.1 Tests on concrete 26
5.2 Measuring of dimensions and surface characteristics 26
5.2.1 Position of reinforcement 26
5.2.2 Floor plate dimensions 27
5.2.3 Straightness of edges 27
5.2.4 Flatness of the moulded surface 27
5.2.5 Surface characteristics 27
5.3 Weight of the products 28
5.4 Prestressing 28
5.4.1 Initial prestressing force 28
5.4.2 Slippage of tendons 28

6 Evaluation of conformity 28
6.1 General 28
6.2 Type testing 28

6.3 Factory production control 29

7 Marking 29

8 Technical documentation 29

Annex A (normative) Inspection schemes 30

A.1 Process inspection 30
A.2 Finished product inspection 31

Annex B (informative) Types of composite slabs 32

B.1 Scope 32
B.2 Different types of composite slabs 32
B.2.1 Solid composite slabs 32
B.2.2 Hollow composite slabs 32
B.3 Topping 33

Annex C (informative) Stiffening ribs and void formers 34

C.1 Stiffening ribs 34
C.1.1 Nominal width of ribs 34
C.1.2 Nominal height of ribs 34
C.1.3 Nominal space between ribs 34
C.1.4 Distance between the edge of the floor plate and the centre line of the nearest rib 35
C.1.5 Specific case of reinforced floor plate with a single rib 35
C.2 Void formers 36
C.3 Additional examples of stiffening ribs and ball void formers 37
C.3.1 General 37
C.3.2 Dimensions 38

Annex D (informative) Monolithism of composite slabs 40

D.1 General 40
D.2 Strength of connecting reinforcement 41
D.3 Anchorage of connecting reinforcement 41

Annex E (informative) Detailing of support joints and anchorage of reinforcement of composite slabs 44

E.1 Scope 44
E.2 General 44
E.2.1 Effective support length 44
E.2.2 Types of connections 45
E.3 Anchorage of lower reinforcements of the composite slab 47
E.3.1 Anchorage on the end support 47
E.3.2 Anchorage in special cases 49

Annex F (informative) Design of composite slab 53

F.1 General 53
F.2 Connections between adjacent floor plates 53
F.3 Bending ultimate limit state 55
F.4 Serviceability limit state 55
F.4.1 General 55
F.4.2 Serviceability limit state design of composite slab made of reinforced floor plate 56
F.4.3 Serviceability limit states design of composite slabs made of prestressed floor plates 59
F.5 Transverse bending design of composite slab 59

Annex G (informative) Concrete strength at time of prestressing 61

G.1 General 61
G.1.1 Procedure 61
G.1.2 Interpretation of results 61

Annex H (informative) Composite slabs with void formers 63

H.1 General 63
H.2 Material properties 63
H.2.1 Polystyrene/Air voids 63
H.2.2 Clay 63
H.3 Temperature profiles 64
H.4 Other items to be considered 64

Annex J (normative) Testing to determine erection spans (type testing) 65

J.1 General 65
J.2 Determination of erection span 65
J.2.1 Failure design (condition a) 66
J.2.2 Checking of the deflection (condition b) 67
J.3 Equipment 67
J.4 Preparation of test piece 67
J.5 Loading 69
J.6 Interpretation of results 69
J.7 Test report 70

Annex K (informative) Anchorage capacity of loops 71

Annex Y (Informative) Choice of CE marking method 73

Y.1 General 73
Y.2 Method 1 73
Y.3 Method 2 73
Y.4 Method 3 73

Annex ZA (informative) Clauses of this European standard addressing essential requirements or other provisions of the EU Directives 74

ZA.1 Scope and relevant characteristics 74

ZA.2 Procedure for attestation of conformity of floor plates for floor systems 76

ZA.2.1 System of attestation of conformity 76

ZA.2.2 EC Certificate and Declaration of conformity 77

ZA.3 CE marking and labelling 77

ZA.3.1 General 77

ZA.3.2 Declaration of geometrical data and material properties 79

ZA.3.3 Declaration of product properties 81

ZA.3.4 Declaration of compliance with a given design specification 83