

DIN EN 206:2021-06 (E)

Concrete - Specification, performance, production and conformity (includes Amendment :2021)

Contents	Page
European foreword.....	6
Introduction	8
1 Scope	9
2 Normative references.....	10
3 Terms, definitions, symbols and abbreviations.....	12
3.1 Terms and definitions	12
3.1.1 General.....	12
3.1.2 Constituents	15
3.1.3 Fresh concrete.....	17
3.1.4 Hardened concrete	19
3.1.5 Conformity and production control	20
3.2 Symbols and abbreviations	21
4 Classification.....	23
4.1 Exposure classes related to environmental actions.....	23
4.2 Classes for properties of fresh concrete	26
4.2.1 Consistence classes.....	26
4.2.2 Classes for additional properties of SCC	28
4.3 Classes for properties of hardened concrete	29
4.3.1 Compressive strength classes.....	29
4.3.2 Density classes for lightweight concrete	31
5 Requirements for concrete and methods of verification.....	32
5.1 Basic requirements for constituents.....	32
5.1.1 General.....	32
5.1.2 Cement	32
5.1.3 Aggregates	32
5.1.4 Mixing water	33
5.1.5 Admixtures	33
5.1.6 Additions (including mineral fillers and pigments).....	33
5.1.7 Fibres.....	33
5.2 Basic requirements for composition of concrete	33
5.2.1 General.....	33
5.2.2 Selection of cement.....	34
5.2.3 Selection of aggregates.....	34
5.2.4 Use of mixing water	35
5.2.5 Use of additions.....	35
5.2.6 Use of admixtures	37
5.2.7 Use of fibres.....	38
5.2.8 Chloride content.....	38
5.2.9 Concrete temperature	39
5.3 Requirements related to exposure classes.....	39
5.3.1 General.....	39
5.3.2 Limiting values for concrete composition.....	39
5.3.3 Performance-related methods.....	40
5.4 Requirements for fresh concrete	40
5.4.1 Consistence, viscosity, passing ability and resistance to segregation	40

5.4.2	Cement content and water/cement ratio.....	41
5.4.3	Air content.....	41
5.4.4	Fibre content	41
5.5	Requirements for hardened concrete	42
5.5.1	Strength.....	42
5.5.2	Density.....	42
5.5.3	Resistance to water penetration	43
5.5.4	Reaction to fire	43
6	Specification of concrete	43
6.1	General	43
6.2	Specification for designed concrete.....	44
6.2.1	General	44
6.2.2	Basic requirements.....	44
6.2.3	Additional requirements	45
6.3	Specification for prescribed concrete	45
6.3.1	General	45
6.3.2	Basic requirements.....	45
6.3.3	Additional requirements	46
6.4	Specification of standardized prescribed concrete.....	46
7	Delivery of fresh concrete	46
7.1	Information from the user of the concrete to the producer.....	46
7.2	Information from the producer of the concrete to the user.....	47
7.3	Delivery ticket for ready-mixed concrete.....	48
7.4	Delivery information for site-mixed concrete	49
7.5	Mix adjustments after the main mixing process and prior to discharge.....	49
8	Conformity control and conformity criteria	49
8.1	General	49
8.2	Conformity control for designed concrete	50
8.2.1	Conformity control for compressive strength.....	50
8.2.2	Conformity control for tensile splitting strength.....	55
8.2.3	Conformity control for properties other than strength.....	56
8.3	Conformity control of prescribed concrete including standardized prescribed concrete.....	60
8.4	Actions in the case of non-conformity of the product	60
9	Production control	61
9.1	General	61
9.2	Production control systems.....	61
9.3	Recorded data and other documents	62
9.4	Testing	64
9.5	Concrete composition and initial testing.....	64
9.6	Personnel, equipment and installation	64
9.6.1	Personnel.....	64
9.6.2	Equipment and installation	64
9.7	Batching of constituents.....	65
9.8	Mixing of concrete	66
9.9	Production control procedures	66
10	Evaluation of conformity	70
10.1	General	70
10.2	Assessment, surveillance and certification of production control.....	71
11	Designation for designed concrete.....	71

Annex A (normative) Initial test	72
A.1 General	72
A.2 Party responsible for initial tests	72
A.3 Frequency of initial tests	72
A.4 Test conditions	72
A.5 Criteria for adoption of initial tests	73
Annex B (normative) Identity testing	74
B.1 General	74
B.2 Sampling and testing plan	74
B.3 Identity criteria for compressive strength	74
B.3.1 Concrete under production control certification	74
B.3.2 Concrete not under production control certification	75
B.4 Identity criteria for consistence and air content	75
B.5 Identity criteria for fibre content and homogeneity of fresh concrete	75
Annex C $\overline{A_2}$ (informative) $\overline{A_2}$ Provisions for assessment, surveillance and certification of production control	76
C.1 General	76
C.2 Tasks for the inspection body	76
C.2.1 Initial assessment of the production control	76
C.2.2 Continuous surveillance of the production control	77
C.3 Tasks for the certification body	78
C.3.1 Certification of production control	78
C.3.2 Measures in case of non-conformity	78
Annex D (normative) Additional requirements for specification and conformity of concrete for special geotechnical works	80
D.1 General	80
D.2 Constituents	80
D.2.1 Cement	80
D.2.2 Aggregates	81
D.3 Concrete	81
D.3.1 General requirements for specification and acceptance of the mix design	81
D.3.2 Minimum fines content and minimum cement content	82
D.3.3 Water/cement ratio	82
D.3.4 Fresh concrete	83
Annex E (informative) Recommendation for the use of aggregates	84
E.1 General	84
E.2 Natural normal-weight and heavy-weight aggregates and air-cooled blast furnace slag	84
E.3 Recommendation for the use of coarse recycled aggregates	85
E.4 Recommendation for the use of lightweight aggregates	86
Annex F (informative) Recommendation for limiting values of concrete composition	88
Annex G (informative) Guidelines for self-compacting concrete requirements in the fresh state	90
G.1 General	90
G.2 Recommendations on classification of self-compacting concrete	91
G.2.1 Consistence	91
G.2.2 Viscosity	91
G.2.3 Passing ability	91
G.2.4 Segregation resistance	91
Annex H (informative) Rules of application for 8.2.1.3, Method C	92

H.1	Introduction.....	92
H.2	Control based on the cusum system.....	92
H.3	Control based on Shewhart charts with modified limits by variables	93
Annex J	(informative) Deviation to accommodate a notified Spanish Regulation	94
Annex K	(informative) Concrete families.....	95
K.1	General	95
K.2	Selection of the concrete family	95
K.3	Flow chart for the assessment of membership and conformity of a concrete family	96
Annex L	(informative) Further information regarding specific paragraphs	97
Annex M	(informative) Guidance on provisions valid in the place of use	99
Bibliography	101