Product Performance Testing Methodology

Edition: 01 March 2020

Requirements and Test Methods for Concrete

The constituent materials of concrete and the properties of fresh and hardened concrete are selected and determined in accordance with BS EN 206-1:2000. This applies to concrete for structures cast in situ, precast structures, and structural precast products for buildings and civil engineering structures. The concrete may be mixed on site, ready-mixed concrete or produced in a plant for precast concrete products.

A. Properties of Fresh Concrete

Consistence Classes

Slump Classes

Class	Slump in mm
S1	10 to 40
S2	50 to 90
S3	100 to 150
S4	160 to 210
S5[1)]	≥ 220

Flow Classes

Class	Flow diameter in mm
F1[1)]	≤ 340
F2	350 to 410
F3	420 to 480
F4	490 to 550
F5	560 to 620
F6[1)]	≥ 630

B. Properties of Hardened Concrete

Compressive Strength Classes

The characteristic compressive strength at 28 days of 150 mm diameter by 300 mm cylinders (fck, cyl) or the characteristic compressive strength at 28 days of 150 mm cubes (fck, cube) may be used for classification.

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Compressive strength classes for normal-weight and heavy-weight concrete

Compressive strength class	Minimum characteristic cylinder strength $f_{ck,cyl}$ N/mm^2	Minimum characteristic cube strength $f_{ck,cube}$ N/mm^2
C8/10	8	10
C12/15	12	15
C16/20	16	20
C20/25	20	25
C25/30	25	30
C30/37	30	37
C35/45	35	45
C40/50	40	50
C45/55	45	55
C50/60	50	60
C55/67	55	67
C60/75	60	75
C70/85	70	85
C80/95	80	95
C90/105	90	105
C100/115	100	115

Compressive strength classes for light-weight concrete

Compressive strength class	Minimum characteristic cylinder strength $f_{ck,cyl}$ N/mm^2	Minimum characteristic cube strength[a] $f_{ck,cube}$ N/mm^2
LC8/9	8	9
LC12/13	12	13
LC16/18	16	18
LC20/22	20	22
LC25/28	25	28
LC30/33	30	33
LC35/38	35	38
LC40/44	40	44
LC45/50	45	50
LC50/55	50	55
LC55/60	55	60
LC60/66	60	66
LC70/77	70	77
LC80/88	80	88

[a] Other values may be used if the relationship between these and the reference cylinder strength is established with sufficient accuracy and is documented.

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C. Basic Requirements for Constituent Materials

- **Cement**

  General suitability is established for cement conforming to BS EN 197-1.

- **Aggregates**

  General suitability is established for:
  Normal and heavy-weight aggregates conforming to BS EN 12620;
  Lightweight aggregates conforming to BS EN 13055-1.

  Note: Provisions for recycled aggregates are not yet included in these standards. Until provisions for recycled aggregates are given in European technical specifications, suitability should be established according to the note in 5.1.1 of the standard BS EN 206-1:2000.

- **Mixing Water**

  Suitability is established for mixing water and for recycled water from concrete production conforming to BS EN 1008:1997.

- **Admixtures**

  General suitability is established for admixtures conforming to BS EN 934-2.

- **Additions (including mineral fillers and pigments)**

  General suitability as type I addition, see 3.1.23 of the standard BS EN 206-1:2000, is established for:

  Filler aggregate conforming to BS EN 12620:2000

  Pigments conforming to BS EN 12878

  General suitability as type II addition, see 3.1.23 of the standard BS EN 206-1:2000, is established for:

  Fly ash conforming to BS EN 450-1:2012

  Silica fumes conforming to BS EN 13263:1998