

**GENERAL SPECIFICATION
FOR CIVIL ENGINEERING WORKS**

2006 Edition

AMENDMENT NO. 2/2008 (June)

VOLUME 1

SECTION 1 GENERAL

1.1.1 of Appendix 1.1 BRITISH STANDARDS

(a) 19. BS 812 **Replace “BS 812: Part 2: 1975” with the following:**

BS 812: Part 2: 1995 Methods for determination of density

(b) 19. BS 812 **Add the following after BS 812: Part 110: 1990:**

BS 812: Part 111: 1990 Methods for determination of ten per cent
fines value (TFV)

(c) 19. BS 812 **Add the following after BS 812: Part 113: 1990:**

BS 812: Part 117: 1988 Method for determination of water – soluble
chloride salts

(d) 77. BS 3148: 1980 **Replace item 77 with the following:**

BS 3148: 1990 Methods of test for water for making concrete
(including notes on the suitability of the water)

**1.1.2 of Appendix 1.1 AMERICAN SOCIETY FOR TESTING AND MATERIALS
(ASTM) STANDARDS**

(e) New item 6a **Add the following after item 6**

6a. ASTM C 535-81 Test method for resistance to degradation of
large-size coarse aggregate by abrasion and
impact in the Los Angeles Machine

VOLUME 2**CONTENTS**

- (f) Clause 16.03 **Amend the words “Cementitious content” to “Mix constituents”:**

SECTION 16 CONCRETE AND JOINTS IN CONCRETE

- (g) Clause 16.03 **Amend the marginal note “*Cementitious content*” to “*Mix constituents*”.**

- (h) Clause 16.03 **Replace Clause 16.03 with the following:**

(1) Cementitious content is the mass of cement per cubic metre of compacted concrete or, if cement and PFA are used as separate constituents, the combined mass of cement and PFA per cubic metre of compacted concrete.

(2) Water content is the total mass of the free water contained in the aggregates plus the mass of the added mixing water plus the mass of water contained in any admixtures or additives used.

(3) Water/cement ratio is the ratio of the water content divided by the cementitious content.

- (i) Clause 16.08 **Replace Clause 16.08 with the following:**

(1) Aggregates shall be obtained from a source approved by the Engineer. Aggregates from marine source shall not be used. All-in aggregates shall not be used.

(2) Fine aggregate shall be clean, hard and durable crushed rock, complying with BS 882, except that the NOTE in Table 4 of BS 882 shall not apply. Natural sand shall not be used unless with the prior agreement of the Engineer.

(3) Coarse aggregate shall be clean, hard, durable crushed rock complying with BS 882 and free of shell. The ten percent fines values shall be at least 100 kN. The water absorption shall not exceed 0.8%. The flakiness index shall not exceed 30%. The elongation index shall not exceed 35%. The Los Angeles Value shall not exceed 30% loss. The magnesium sulphate soundness weighted average loss shall not exceed 6%. Recycled aggregates may be used subject to the prior agreement of the Engineer.

(4) Aggregates shall be inert to alkali-silica reaction (ASR) unless a control framework installed to guard against occurrence of ASR in concrete structures.

(j) Clause 16.09(2) **Renumber Clause 16.09(2) as 16.09(3)**

(k) New Clause
16.09(2) **Add the following new Clause 16.09(2):**

(2) Non-saline water from other sources may be used subject to the Engineer's approval, provided that it can be demonstrated that the water is neutral in PH value, free from suspended solids and liquid contaminants non-miscible with water and that when tested according to the procedures given in BS 3148, it had no significant effect on the setting time or strength of concrete.

(l) Clause 16.11(1) **Amend the words "80%" to "85%".**

(m) Clause 16.12(2) **Amend the words "design" to "designed".**

(n) Clause 16.12(3) **Delete the words "All-in aggregate shall not be used".**

(o) Clause 16.14(2) **Replace Clause 16.14(2) with the following:**

(2) Unless otherwise approved by the Engineer, the maximum cementitious content of designed mix concrete for water retaining structures and water tight structures shall be 400 kg/m³ for concrete containing PC and shall be 450 kg/m³ for concrete containing either PC and PFA or PFAC. The minimum cementitious content of designed mix concrete for water retaining structures shall be 325 kg/m³ and maximum water/cement ratio shall be 0.5. Unless otherwise approved by the Engineer, the maximum cementitious content of designed mix concrete other than for water retaining structures and water tight structures shall be 550 kg/m³.

(p) Table 16.3 **Amend the words “Slump value” to “Range of measured slump value”.**

(q) Clause 16.17(1)(d) **Add the following at the end of Clause 16.17(1)(d):**

- Elongation index of coarse aggregate
- Magnesium Soundness
- Abrasion Value/Los Angeles Value

(r) Clause 16.26(a) & (b) **Replace Clause 16.26(a) & (b) with the following:**

- (a) The average of the nine measured slump values shall be within +/- 20mm or +/- 25%, whichever is the greater, of the designed slump value. The average of the nine measured flow values shall be within +/- 50mm of the designed flow value.
- (b) The range of the three measured slump values for each batch of concrete shall not exceed 20% of the average of the three measured slump values for that batch. For flow table tests, the range of the three measured flow values for each batch of concrete shall be within 70mm.

(s) Clause 16.27(1)(a) **Replace Clause 16.27(1)(a) with the following:**

(a) The average of the six measured slump values shall be within +/- 20mm or +/- 25%, whichever is the greater, of the designed slump value. The average of the six measured flow values shall be within +/- 50mm of the designed flow value.

(t) Clause 16.27(2)(a) **Replace Clause 16.27(2)(a) with the following:**

(a) The average of the six measured slump values shall be within +/- 20 mm or +/- 25%, whichever is the greater, of the designed slump value. The average of the six measured flow values shall be within +/- 50mm of the designed flow value.

(u) Clause 16.41 **Renumber Clause 16.41(8) as 16.41(9), Clause 16.41(7) as 16.41(8), Clause 16.41(6) as 16.41(7), Clause 16.41(5) as 16.41(6), Clause 16.41(4) as 16.41(5), Clause 16.41(3) as 16.41(4), Clause 16.41(2) as 16.41(3).**

(v) New Clause 16.41(2) **Add the following new Clause 16.41(2):**

(2) Unless otherwise permitted by the Engineer, the temperature of fresh concrete when placed in position shall not exceed 30 °C for mixes of grade strength greater than 20 MPa. The Contractor shall submit for approval details of the proposal to ensure that this temperature will not be exceeded.

(w) Table 16.7 **Replace**

Coarse aggregate	Flakiness index	BS 812: Part 105.1
	Ten percent fines	BS 812: Part 111
	Water absorption	BS 812: Part 2

with

Coarse aggregate	Flakiness index	BS 812: Part 105.1
	Ten percent fines	BS 812: Part 111
	Water absorption	BS 812: Part 2
	Elongation index	BS 812: Part 105.2
	Magnesium Soundness	BS 812: Part 121
	Abrasion Value/Los Angeles Value	ASTM C131/C535

- (x) Clause 16.54(3) **Amend the words “slump value” to “measured slump value”.**
- (y) Clause 16.55(1) **Amend the words “slump value from 10 mm to 200mm” to “designed slump value from 20mm to 175mm”.**
- (z) Clause 16.55(1) **Amend the words “flow value from” to “designed flow value from”.**
- (aa) Clause 16.55(2) **Amend the words “slump value” and “flow value” to “measured slump value” and “measured flow value” respectively.**
- (bb) Clause 16.56 **Replace Clause 16.56 with the following:**
- (1) The average measured slump value of the two specimens taken from one sample of standard mix concrete shall be within the appropriate range of measured slump value stated in Table 16.3.
 - (2) The average measured slump value of the two specimens taken from one sample of designed mix concrete shall be within +/- 25 mm or +/- 33% of the designed slump value, whichever is the greater.
 - (3) The average measured flow value of the two specimens taken from one sample of designed mix concrete shall be within +/- 50mm of the designed flow value.

**Quality Management & Standards Unit
Civil Engineering and Development Department
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