IS 383 : 2016

Coarse and Fine Aggregates for Concrete - Specification

Ask about IS 383… e.g. "min cover for severe exposure"

IS 383:2016 is the Indian Standard (BIS) for coarse and fine aggregates for concrete - specification. This standard specifies the physical properties, mechanical limits, and grading requirements for naturally sourced, manufactured, and alternative (recycled) coarse and fine aggregates for use in concrete. It is the fundamental standard for evaluating aggregate quality for concrete mix design in India.

> *Specifies requirements for coarse and fine aggregates derived from natural sources for concrete.*

Quick Reference — IS 383:2016 Aggregate Acceptance Values

Gradation, deleterious limits, chloride/sulphate caps, soundness, flakiness/elongation and abrasion limits for fine and coarse aggregates including M-sand.

✓ Verified 2026-04-26

REFERENCE	VALUE	CLAUSE
Coarse aggregate — max nominal sizes	**10, 12.5, 16, 20, 40 mm**	Cl. 6.2 (Table 7)
Fine aggregate — gradation zones	**Zone I (coarsest) → Zone IV (finest)**	Cl. 6.3 (Table 9)
Fine aggregate — Zone II passing 600 µm	**35–59 %**	Cl. 6.3 (Table 9)
Manufactured sand (M-sand) — passing 150 µm (max)	**20 % (vs 10 % for natural)**	Cl. 6.3 (Table 9)
Water absorption — coarse aggregate (max)	**2 % by mass**	Cl. 5.4.1
Water absorption — fine aggregate (max, M-sand)	**Reported (typically <2 %)**	Cl. 5.4.1

REFERENCE	VALUE	CLAUSE
Specific gravity — natural aggregate (typical) *— report value, not a limit*	**2.6 – 2.8**	Cl. 5.4.1
Deleterious materials — clay lumps (max)	**1.0 % (fine), 1.0 % (coarse)**	Cl. 5.3.1 (Table 1)
Material finer than 75 µm — uncrushed coarse (max)	**3 % (concrete subject to abrasion)**	Cl. 5.3.1 (Table 1)
Material finer than 75 µm — M-sand (max) *— natural sand 3 % only*	**15 % (in concrete)**	Cl. 5.3.1 (Table 1)
Chloride content — RCC fine aggregate (max as Cl^-)	**0.04 % by mass (≈ 600 ppm)**	Cl. 5.5.1 (Table 4)
Chloride content — coarse aggregate RCC (max)	**0.02 % by mass (≈ 200 ppm)**	Cl. 5.5.1 (Table 4)
Sulphate content (as SO_3) — total aggregates (max)	**0.5 % by mass**	Cl. 5.5.2
Flakiness index — combined (max)	**35 % (typical for road-grade)**	Cl. 5.4.4
Elongation index — combined (max)	**35 % (typical)**	Cl. 5.4.4
Soundness — Na_2SO_4 loss (max, fine)	**10 %**	Cl. 5.4.6 (Table 5)
Soundness — Na_2SO_4 loss (max, coarse)	**12 %**	Cl. 5.4.6 (Table 5)
Aggregate impact value (max) — wearing surfaces	**30 %**	Cl. 5.4.3
Aggregate crushing value (max) — wearing surfaces	**30 %**	Cl. 5.4.3
Los Angeles abrasion value (max)	**30 % (wearing surface), 50 % (other)**	Cl. 5.4.5
Alkali-aggregate reactivity — mortar bar expansion (max)	**0.10 % (innocuous)**	Cl. 5.6