

What Type of Concrete Is It?

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Like products in the supermarket, concrete comes in various types. In case you are confused, here are some definitions from the American Concrete Institute,¹ unless marked as an American Association of State Highway and Transportation Officials (AASHTO)² definition.

Cast-in-place concrete — concrete placed in its final location in the structure while still in a plastic state (AASHTO definition).

Class of concrete — an arbitrary characterization of concrete of various qualities or usages, usually by compressive strength.

Concrete — mixture of hydraulic cement, aggregates, and water, with or without admixtures, fibers, or other cementitious materials.

Fiber-reinforced concrete — concrete containing dispersed, randomly oriented fibers.

Flowing concrete — a cohesive concrete mixture with a slump greater than 7½ in.

Fresh concrete — concrete that possesses enough of its original workability that it can be placed and consolidated by the intended methods.

Green concrete — concrete that has undergone final setting but not hardened appreciably.

Hardened concrete — concrete that has developed sufficient strength to serve a defined purpose or resist stipulated loading without failure.

High-early-strength concrete — concrete that, through the use of additional cement, high-early-strength cement, or admixtures, has accelerated early-age strength development.

High-performance concrete — concrete meeting special combinations of performance and uniformity requirements that cannot always be achieved routinely using conventional constituents and normal mixing, placing, and curing practices.

High-strength concrete — concrete that has a specified compressive strength for design of 8000 psi or greater.

Lean concrete — concrete of low-cementitious-material content.

Lightweight concrete — concrete containing lightweight aggregate conforming to AASHTO M 195 and having an equilibrium density not exceeding 0.135 kip/ft³, as determined by ASTM C567 (AASHTO definition).

Monolithic concrete — concrete cast with no joints other than construction joints.

No-fines concrete — a concrete mixture containing little or no fine aggregate.

Non-air-entrained concrete — concrete in which neither an air-entraining admixture nor air-entraining cement has been used.

Normal weight concrete — concrete having an equilibrium density greater than 0.135 kip/ft³ and a density not exceeding 0.155 kip/ft³ (AASHTO definition).

No-slump concrete — freshly mixed concrete exhibiting a slump of less than ¼ in.

Packaged concrete — mixture of dry ingredients in packages, requiring only the addition of water to produce concrete.

Plain concrete — structural concrete with no reinforcement or with less reinforcement than the minimum amount specified for reinforced concrete in the applicable building code.

Precast concrete — concrete cast elsewhere than its final position.

Prestressed concrete — concrete components in which stresses and deformations are introduced by application of prestressing forces (AASHTO definition).

Recycled concrete — hardened concrete that has been processed for reuse, usually as aggregate.

Reinforced concrete — structural concrete containing no less than the minimum amounts of prestressing tendons or nonprestressed reinforcement specified herein (AASHTO definition).

Rich concrete — concrete of high cement content.

Self-consolidating concrete — fresh concrete that can flow around reinforcement and consolidate within formwork under its own weight without vibration.

Shotcrete — concrete placed by a high velocity pneumatic projection from a nozzle.

Shrinkage-compensating concrete — concrete containing expansive components usually based on formation of calcium sulfoaluminate (ettringite) in a mixture of calcium aluminate and gypsum.

Shrink-mixed concrete — ready-mixed concrete mixed partially in a stationary mixer and then mixed in a truck mixer.


Structural concrete — all concrete used for structural purposes (AASHTO definition).

Structural mass concrete — any large volume of concrete where special materials or procedures are required to cope with the generation of heat of hydration and attendant volume change to minimize cracking (AASHTO definition).

Underwater concrete — concrete placed underwater by tremie or other means.

Vibrated concrete — concrete consolidated by vibration during and after placing.

References

1. ACI (American Concrete Institute). 2016. *ACI Concrete Terminology (ACI CT-16)*. Farmington Hills, MI: ACI.
2. AASHTO (American Association of State Highway and Transportation Officials). 2017. *AASHTO LRFD Bridge Design Specifications*. 8th ed. Washington, DC: AASHTO. 

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