



# Standard Terminology for Anchors and Fasteners in Concrete and Masonry<sup>1</sup>

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## 1. Scope

1.1 This document provides standard terminology for anchors and fasteners installed in structural members made of concrete or masonry.

1.2 This terminology does not cover terms relating to the mechanical properties of the materials used for fabricating anchors, nor does it cover their use.

1.3 The terms are listed alphabetically. Compound terms appear in the natural spoken order.

## 2. Referenced Documents

### 2.1 *ASTM Standards*:<sup>2</sup>

E 488 Test Methods for Strength of Anchors in Concrete and Masonry Elements

E 631 Terminology of Building Constructions

E 1190 Test Methods for Strength of Power-Actuated Fasteners Installed in Structural Members

E 1512 Test Methods for Testing Adhesive-Bonded Anchors

## 3. Terminology

**adhesive-bonded anchor**—anchor placed into a hole in the base material, and which derives its holding strength from a chemical adhesive placed between the wall of the hole in the base material and the embedded portion of the anchor.

**anchor**—cast-in-place or post-installed fastening device installed in the base material for the purpose of transferring loads to the base material.

**anchor loading: axial**—load applied concentrically with the anchor longitudinal axis.

**anchor loading: bending**—flexure induced in the anchor by application of a shear load at a distance from the surface of the base material.

**anchor loading: combined**—axial and shear loading applied simultaneously (oblique loading).

**anchor loading: shear**—load applied parallel to the surface of the base material and perpendicular to the anchor's longitudinal axis.

**anchor spacing**—distance between anchors measured centerline to centerline.

**attachment**—structural element (fixture) external to the surface of the base material, and which transmits loads to the anchor.

**base material**—material in which anchor is installed, such as concrete or masonry.

**bond failure**—failure mode characterized by loss of bond either between the anchor and adhesive or between the adhesive and the base material.

**cast-in-place anchor**—anchor installed in formwork prior to placement of concrete.

**characteristic value**—the 5 % fractile (value with a 95 % probability of being exceeded, with a confidence of 90 %).

**clamping force**—compression force transmitted to the base material as a result of preload in the anchor.

**connection**—attachment of load-bearing element to concrete or masonry base materials using anchors.

**critical edge distance**—minimum anchor edge distance, measured from the anchor centerline to the edge of the structural member, at which the full anchor capacity can be obtained without concrete edge breakout failure or splitting failure.

**critical spacing**—minimum anchor spacing, measured centerline to centerline of the anchors, at which the full anchor capacity can be obtained without influence from adjacent anchors.

**cure time**—the amount of time required for an adhesive anchor to develop its ultimate strength.

**diamond core bit**—non-percussion drill bit, usually utilizing a hollow cylindrical pipe or tube with a diamond-impregnated matrix at the end that is used to drill in the base material.

**displacement**—movement of anchor relative to the structural member. For tension tests, displacement is measured parallel to the anchor axis; for shear tests, displacement is measured perpendicular to the anchor axis.

**displacement-controlled expansion anchor**—a post-installed anchor that derives its holding strength by expansion against the side of the drilled hole through movement of an internal plug in the sleeve or through movement of the sleeve over an

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.