

An ACI Standard

# Specification for Unbonded Single-Strand Tendon Materials

Reported by Joint ACI-ASCE Committee 423

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## Specification for Unbonded Single-Strand Tendon Materials

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Reported by Joint ACI-ASCE Committee 423

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*This material specification provides materials criteria and fabrication requirements for unbonded single-strand tendons.*

**Keywords:** fabrication; post-tensioning; PT coating; tendon; unbonded.

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### 1—SCOPE

#### 1.1

This specification provides materials criteria and fabrication requirements for unbonded single-strand tendons.

#### 1.2

This specification shall not apply to post-tensioned slab-on-ground, mat, or raft foundations on expansive soils.

**NOTE 1**—For membrane-type structures primarily under tensile forces resulting from temperature effects and concrete shrinkage, the provisions apply where deemed appropriate by Architect/Engineer.

#### 1.3

The text of this standard references notes and footnotes that provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the standard.

#### 1.4

Values stated in inch-pound units are to be regarded as standard. Values given in parentheses are mathematical conversion to SI Units that are provided for information only, and are not considered standard.

### 2—DEFINITIONS

#### 2.1

The following definitions govern in this specification. See “ACI Concrete Terminology” for additional definitions. <http://www.concrete.org/Tools/ConcreteTerminology.aspx>

**anchorage**—a device used to maintain elongation in prestressing strand by transferring compression force to concrete.

**Architect/Engineer**—the architect, engineer, architectural firm, or engineering firm developing Contract Documents or administering the Work under Contract Documents, or both.

**Contract Documents**—a set of documents supplied by Owner to Contractor as the basis for construction; these documents contain contract forms, contract conditions, specifications, drawings, addenda, and contract changes.

**coupler**—a mechanical device that connects ends of two strands together, thereby creating a continuous tendon by transferring the post-tensioning force from one strand to the other strand.

**encapsulated tendon**—a tendon that is completely enclosed in a watertight covering from end to end, including anchorages, sheathing, post-tensioning coating, sleeves, and an encapsulation cap over the strand tail at each end.

**encapsulation cap**—plastic cap filled with post-tensioning coating that provides a watertight connection to all anchorages protecting the wedges and the tendon tail from moisture infiltration. The watertight connection shall include a mechanical interlock of a type that does not rely on friction alone to be held in place.

$f_{pu}$ —specified tensile strength of prestressing steel, psi (MPa).

**fixed anchorage**—anchorage located at end of tendon where stressing of tendon is not required (also known as dead-end anchorage).

**installation drawings**—drawings showing information about the specifics of the post-tensioning system and tendon placement such as the number, size, length, marking, location, elongation, and tendon profiles (also referred to as shop drawings).

**intermediate anchorage**—anchorage located between the ends of the tendon for application of post-tensioning force.

**local zone**—rectangular prism (or equivalent rectangular prism for circular or oval anchorages) of concrete immediately surrounding the anchorage device and any confining reinforcement.

**non-encapsulated tendon**—a tendon that has bare metallic anchorages, and sheathing that is continuous between anchorages but not connected to the anchorages.

**post-tensioning**—method of prestressing in which prestressing steel is tensioned after concrete has hardened.

**post-tensioning coating**—material used to protect the prestressing steel against corrosion and reduce friction between prestressing steel and sheathing.

**prestressed concrete**—structural concrete in which internal stresses are introduced to reduce potential concrete tensile stresses resulting from loads.

**prestressing steel**—high-strength steel, most commonly a seven-wire strand, used to impart prestress forces to concrete.

**sheathing**—an extruded high-density polyethylene or polypropylene covering that encases prestressing steel to