



Designation: C 1613 – 07

Standard Specification for Precast Concrete Grease Interceptor Tanks¹

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1. Scope

1.1 This specification covers design requirements, manufacturing practices, and performance requirements for monolithic or sectional precast concrete grease interceptor tanks.

1.2 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

1.3 This standard describes precast concrete tanks installed to separate fats, oils, grease, soap scum, and other typical kitchen wastes associated with the food service industry.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

- A 82/A 82M Specification for Steel Wire, Plain, for Concrete Reinforcement
- A 184/A 184M Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement
- A 185/A 185M Specification for Steel Welded Wire Reinforcement, Plain, for Concrete
- A 496/A 496M Specification for Steel Wire, Deformed, for Concrete Reinforcement
- A 497/A 497M Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete
- A 615/A 615M Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
- A 706/A 706M Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement
- C 33 Specification for Concrete Aggregates
- C 39/C 39M Test Method for Compressive Strength of Cylindrical Concrete Specimens

- C 94/C 94M Specification for Ready-Mixed Concrete
 - C 125 Terminology Relating to Concrete and Concrete Aggregates
 - C 150 Specification for Portland Cement
 - C 260 Specification for Air-Entraining Admixtures for Concrete
 - C 330 Specification for Lightweight Aggregates for Structural Concrete
 - C 494/C 494M Specification for Chemical Admixtures for Concrete
 - C 595 Specification for Blended Hydraulic Cements
 - C 618 Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
 - C 685/C 685M Specification for Concrete Made by Volumetric Batching and Continuous Mixing
 - C 890 Practice for Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures
 - C 923 Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals
 - C 990 Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants
 - C 1116 Specification for Fiber-Reinforced Concrete and Shotcrete
- #### 2.2 ACI Standard:³
- ACI 318 Building Code Requirements for Reinforced Concrete
- #### 2.3 IAPMO Documents:⁴
- Uniform Plumbing Code
 - IAPMO PS-80 Grease Interceptors and Clarifiers
- #### 2.4 AASHTO Standard:⁵
- Standard Specifications for Highway Bridges

3. Terminology

3.1 For definitions of terms relating to concrete, see Terminology C 125.

3.2 *Definitions of Terms Specific to This Standard:*

¹ This specification is under the jurisdiction of ASTM Committee C27 on Precast Concrete Products and is the direct responsibility of Subcommittee C27.30 on Water and Wastewater Containers.

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² 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.

³ Available from American Concrete Institute (ACI), P.O. Box 9094, Farmington Hills, MI 48333.

⁴ Available from International Association of Plumbing and Mechanical Officials (IAPMO), 5001 E. Philadelphia St., Ontario, CA 91761.

⁵ Available from American Association of State Highway and Transportation Officials (AASHTO), 444 N. Capitol St., NW, Suite 249, Washington, DC 20001.

3.2.1 *access opening, n*—a hole in the top slab used to gain access to the inside of the tank for the purpose of cleaning and removing grease, floating scum and sludge without a person actually having to enter the tank.

3.2.2 *air scum volume, n*—the number of cubic inches (centimeters) in the space between the liquid surface and the underside of the top slab.

3.2.3 *baffle, n*—a device, such as a sanitary tee or other deflector, used to direct the flow of influent down below the scum layer at the inlet and prevent scum from exiting the tank through the outlet.

3.2.4 *grease interceptor capacity, n*—the volume of liquid the tank is designed to hold.

3.2.5 *grease interceptor tank system, n*—a single tank or series of tanks in which wastes from a kitchen or food service establishment containing no sanitary discharges from toilets, urinals and other similar fixtures are received and retained, and from which the liquid effluent, which is comparatively free from fats, oils, greases and settleable and/or floating solids, is then discharged to a public sewer, septic or other approved treatment system.

3.2.6 *inspection opening, n*—a hole in the top slab used for the purpose of observing conditions inside the tank.

3.2.7 *joint, n*—a physical separation where two pieces of precast concrete are in contact.

3.2.8 *non-sealed joint, n*—a joint where sealant is not used but where a machined fit will minimize the movement of liquid from one side of a precast concrete wall to the opposite side.

3.2.9 *owner, n*—is by definition end user, customer, or purchaser.

3.2.10 *sealed joint, n*—a joint that is sealed to prevent liquid passing from one side of a precast concrete wall to the opposite side.

3.2.11 *tank dividing wall, n*—a partition across the width of the tank that extends partially between the top and bottom intended to deflect influent downward and increase the length of the flow path of the liquid as it travels through the tank.

4. Ordering Information

4.1 The purchaser shall include the following information in bidding documents and on the purchase order, as applicable to the units being ordered:

4.1.1 Reference to this specification, and date of issue.

4.1.2 Quantity, that is, number of units ordered.

4.1.3 Capacity of tank in gallons or litres.

4.1.4 Special cement requirements including moderate sulfate-resisting cement, Specification C 150 Type II, or highly sulfate-resisting cement, Specification C 150, Type V. If the purchaser does not stipulate, the manufacturer shall use any cement meeting the requirements of Specification C 150 or C 595 (Type IS or Type IP only).

4.1.5 Acceptance will be based on a review of the calculations or on proof tests.

4.1.6 Design requirements such as depth of earth cover, live load applied at the surface, and ground water level.

4.1.7 Testing for water leakage shall not be required at the job site unless specifically required by the owner at the time of ordering.

4.1.8 Manufacturer is permitted to require testing at the job site prior to backfill in accordance with section 9.1.2.

5. Materials and Manufacture

5.1 *Cement*—Portland cement shall conform to the requirements of Specification C 150 or shall be portland blast-furnace slag cement (Type IS) or portland-pozzolan cement (Type IP) conforming to the requirements of Specification C 595.

5.2 *Aggregates*—Aggregates shall conform to Specification C 33 and lightweight aggregates shall conform to Specification C 330, except that the requirements for grading shall not apply.

5.3 *Water*—Water used in mixing concrete shall be clean and free of deleterious amounts of oils, acids, alkalis, salts, organic materials, or other substances that are incompatible with concrete and/or steel.

5.4 *Admixtures*—Admixtures, when used, shall conform to Specification C 494/C 494M, Specification C 618, or Specification C 260 and shall not be detrimental to other products used in the concrete.

5.5 *Steel Reinforcement*—Steel reinforcement shall conform to Specification A 82/A 82M or A 496/A 496M for wire; Specification A 185/A 185M or A 497/A 497M for wire fabric; or Specification A 184/A 184M, A 615/A 615M, or A 706/A 706M for bars.

5.5.1 *Locating Reinforcement*—Reinforcement shall be placed in the forms as required by the design.

5.5.2 *Holding Reinforcement in Position During Pouring Placement*—Reinforcement must be securely tied in place to maintain position during concrete placing operations. Chairs, bolsters, braces, and spacers in contact with forms shall have a corrosion-resistant surface.

5.6 *Concrete Mixtures*—The aggregates, cement, and water shall be proportioned and mixed to produce a homogeneous concrete meeting the requirements of this specification, and in accordance with Specification C 94/C 94M or Specification C 685/C 685M.

5.7 *Forms*—The forms used in manufacture shall be sufficiently rigid and accurate to maintain the dimensions of the grease interceptor tank within the stated tolerances. All casting surfaces shall be of smooth nonporous material. Form releasing agents used shall not be injurious to the concrete.

5.8 *Concrete Placement*—Concrete shall be placed in the forms and consolidated such that all reinforcement steel and fixtures are embedded without segregation of materials or voids in the concrete.

5.9 *Curing*—The precast concrete sections shall be cured by any method or combination of methods that will develop the specified compressive strength at 28 days or less.

5.10 *Concrete Quality*—The quality of the concrete shall be in accordance with the chapter on concrete quality in ACI 318, except for frequency of tests, which shall be specified by the purchaser. Concrete compressive strength tests shall be conducted in accordance with Test Method C 39/C 39M.

5.11 *Fibers*—Polypropylene or polyolefin fibers are only permitted as a secondary reinforcing material, at the manufacturer's option, in precast concrete grease interceptor tanks. For the purposes of this standard, secondary reinforcing material is only used to resist temperature and shrinkage effects. Only