20000FGOPCYL120

**20,000-Gallon Capacity Aboveground Horizontal Cylindrical Fireguard®**

**UL-2085 Thermally Insulated, Double-Wall Steel Storage Tank**

**“OP” Overfill Protection**

Quantity: \_\_\_\_

Nominal Capacity: 20,000 gallons, as indicated on the drawing.

Nominal Tank Dimensions: Diameter Length

Primary Tank: 10-feet, 0-inches 34-feet, 0-inches

Overfill Chamber 10-feet, 0-inches 6-feet, 10-inches

Secondary Tank: 10-feet, 6-inches 41-feet, 5-inches

Minimum Steel Thickness: Head Shell

Primary Tank: 5/16-inch ¼-inch

Secondary Tank: 5/16-inch ¼-inch

The tank shall be manufactured, tested, and labeled in conformance with Underwriters Laboratories

UL-2085 Standard for Protected Aboveground Tanks for Flammable and Combustible Liquids, Double-wall Construction. The tank shall be manufactured and labeled in strict accordance with Steel Tank Institute (STI) Fireguard® Thermally Insulated, Double-wall Steel Aboveground Storage Tank standards as applied by a licensee of the STI. Tank shall be subject to the STI’s Quality Assurance program and shall be backed by

the STI 30-year limited warranty.

The tank shall be a cylindrical, horizontal steel tank intended to store flammable and combustible liquids at atmospheric pressure. It shall include integral steel secondary containment and thermal insulation that provides a minimum two-hour fire rating. The tank design shall comply with the UL 2085 "Protected" Tank standard, having been tested for Ballistics, Impact, Hose Stream, and Pool Fire performance standards. The tank shall be designed for possible relocation at a future date. Concrete-encased tank designs are not equal and will NOT be permitted.

Inner (primary) and outer (secondary) tanks shall be fabricated from mild carbon steel with flat-flanged heads and lap welds at all seams and joints. Primary and secondary tanks are air-tested at the factory. (The Primary tank may need to be retested for tightness at the job site before commissioning. Consult AHJ for requirements.) Tanks shall be supplied with emergency vents for the primary and secondary containment tanks. Emergency venting by "form of construction" is not equal and will NOT be permitted.

The tank shall comply with the latest edition of the National Fire Protection Association NFPA 30 Flammable and Combustible Liquids Code. The tank system shall also meet or exceed the requirements of:

 • National Fire Protection Association NFPA 30A Automobile And Marine Service Station Code

 • Uniform Fire Code (UFC) "Protected" AST criteria as per Appendix II-F,

 including ballistics protection

 • California Air Resources Board (CARB) testing requirements for air emissions

 • International Fire Code

**Construction**

The tank shall be double-wall construction and provide complete secondary containment of the primary storage tank’s contents by an impervious steel outer wall. The inner and outer tanks shall be manufactured following the UL-142 Standard for Steel Aboveground Tanks for Flammable and Combustible Liquids, as referenced in UL-2085. The tank shall be fabricated of mild carbon steel with shell seams of continuous lap weld construction.

A minimum of 3" of porous, lightweight monolithic thermal insulation material shall be installed at the factory within the interstitial space between the inner and outer walls. Thermal insulating material:

• Shall be per American Society of Testing Materials (ASTM) Standards C-332 and C-495.

• Shall allow liquid to migrate through it to the monitoring point.

• Shall not be exposed to weathering and shall be protected by the steel secondary

 containment outer wall (an exterior concrete wall or vault exposed to the elements will NOT be permitted).

Tank to be equipped with an Integral “OP” Overfill Protection System (U.S. Patent No. 5,381,923). The integral overfill compartment shall be sized to store a 20% minimum of the total tank compartment’s volume to comply with the facility's Spill Prevention Control and Countermeasures (SPCC) plan requirements. The sizing of the overfill chamber is consistent with industry protocols for complying with the minimum spill regulations; therefore, a chamber of smaller volume is not permissible.

The “OP” compartment must be separated from the primary tank by a solid bulkhead extending from the bottom to the top. The bulkhead shall be constructed so there is no overflow or leakage from the primary tank to the overfill chamber. (Overflow by an internal baffle weir, transfer pipe, or bulkhead penetration shall not be permitted as a tank installed off-level and out of plumb will not operate as intended.)

The “OP” compartment must be capable of tightness testing (i.e., the primary tank must be air pressure testable separately from the “OP” compartment). The inability to prove that the primary tank and “OP” compartment are separate and non-continuous shall result in product rejection.

The “OP” compartment shall be connected to the primary tank through the Overfill Protector chute, which shall include one emergency vent appropriately sized for the entire volume of the primary vessel and the “OP” compartment.

Each tank shall be delivered as a complete UL-listed assembly, including an access manway and the following fittings and components: (All fittings NPT or flanged, shall be supplied with plastic protectors for shipment)

Standard tanks shall include, at a minimum, fittings for normal vent, interstitial monitoring, emergency vent

for the primary tank, emergency vent for the secondary tank, product fill, product pump/supply and liquid level

gauge. The “OP” compartment shall also have fittings for gauge, vent, and access.

See standard drawings at www.highlandtank.com for the quantity, size, and location of fittings on

standard tanks. All fittings must be above the maximum fluid level per UL-2085 / STI Fireguard

requirements. Normal vent sizes equal to or larger than the largest fitting for filling or

withdrawing from the tank. Emergency vent size is based on the wetted surface area of the tank.

• Two (2) Welded-on Saddles - Design, size, and location determined per STI specifications

• Lifting lugs shall be provided at balancing points to facilitate handling and installation.

Exterior Protective Coating:

• Surface Preparation: Grit blast - SSPC-SP-6 White Blast

• Finish: White urethane paint system 5-7 DFT on the shell and heads

Tank shall be supplied with a High-LINK® LevelShield Series P, Level Management System that includes:

1. One (1) Magnetostrictive probe for continuous monitoring of product and water levels and

 product temperature (provides temperature-compensated volume monitoring).

 Probe Specs:

* Probe length: 59″ - Additional probe length required \_\_\_\_\_\_\_″ (Available in 10″ increments)
* Communication cable 78″ (included) - Additional cable length required \_\_\_\_\_\_\_″

• RS-485 Communication

 • Two floats – (1) for product level, (1) for water level

 • Thermocouple for product temperature measurement

 • Measuring accuracy up to +/- 0.02″

 • Resolution +/- .004″

 • 316 Stainless Steel Shaft

 • Polypropylene float material

 • Explosion-proof head

 • ¾" compression fitting

 • ¾" x 2” NPT reducer bushing supplied (minimum 2″ opening required)

 • Compatible with gasoline and diesel (Contact Highland Tank for other chemical/product compatibility)

2. CommBox transmits data from connected sensors/probes to the cloud-based High-LINK® software platform.

 • CommBox specs: Note: Maximum of two (2) probes per CommBox.

 • NEMA 4 Enclosure

 • 120VAC with terminals for electrical landing

 • 5A 120VAC breaker

 • Active barrier

 • 12VDC power converter

 • Terminal blocks for probe wire landing

 • 4G cellular technology

 • Two (2) Integrated LED/Horn combinations with dry contacts for audible/visual alarms.

3. High-LINK® Cloud-Based Software Platform

**Optional Equipment**

\_\_\_\_ Bulkhead(s) for Split Tank – Single or Double (Double bulkhead required if storing dissimilar products)

 Tank splits: \_\_\_\_\_-gallons and \_\_\_\_\_-gallons (Contact Highland Tank for three or more compartments)

\_\_\_\_ Manway(s) Qty: \_\_\_\_\_, \_\_\_\_\_-inch diameter with gasket, bolts, nuts, washers, and lid

\_\_\_\_ 7 or \_\_\_\_ 10-gallon Spill/Overfill Container

\_\_\_\_ Pump mount(s): \_\_\_\_ Top Mount, \_\_\_\_ Side Mount, or \_\_\_\_ for Free Standing Pumps and

 Dispensers on Standard or Split Tanks

\_\_\_\_ Remote fill cabinet (\_\_\_\_ Post-mounted or \_\_\_\_ Tank-mounted: \_\_\_\_ head or \_\_\_\_ shell)

 External Access component(s) please specify:

 \_\_\_\_ Ladder(s), \_\_\_\_ Stairs, \_\_\_\_ Platform(s), \_\_\_\_ Walkway(s) with Handrails

\_\_\_\_ Internal Ladder(s) per drawing

\_\_\_\_ HTLP 1.5” Interstitial Float Switch Sensor for leak detection (Requires HTSC 2″ Pipe Cap)

\_\_\_\_ HTF-1 Float Switch Interface Stem Sensor for overfill detection

\_\_\_\_ Electronic Alarm Panel. Channel Quantity: \_\_\_\_\_

\_\_\_\_ High-LINK **Fuel**Shield®, Fuel Management System

\_\_\_\_ Additional High-LINK Magnetostrictive probe for **Level**Shield Inventory System (2 Maximum)

\_\_\_\_ Equipment Packages available:

 \_\_\_\_ Gasoline Dispensing \_\_\_\_ Diesel Dispensing

 \_\_\_\_ Emergency Generator \_\_\_\_ Waste Oil Handling

 - Consult Factory for Aviation Fuel (Avgas, Jet-A, or Jet A-1) Dispensing

Additional threaded fittings with thread protectors shall be supplied as follows. Add as needed.

1. \_\_\_\_-inch diameter, intended for \_\_\_\_\_\_\_\_\_\_\_\_\_\_ use, location indicated on drawing(s)
2. \_\_\_\_-inch diameter, intended for \_\_\_\_\_\_\_\_\_\_\_\_\_\_ use, location indicated on drawing(s)

Flanged fittings Class 150# (RF-Raised-Face, FF-Flat-Face, SO-Slip-On, WN-Weld-Neck) with flange protectors shall be supplied as follows. Add as needed.

1. \_\_\_\_-inch diameter, Type: \_\_\_\_\_, intended for \_\_\_\_\_\_\_\_\_\_\_\_\_\_ use, location indicated on drawing(s)
2. \_\_\_\_-inch diameter, Type: \_\_\_\_\_, intended for \_\_\_\_\_\_\_\_\_\_\_\_\_\_ use, location indicated on drawing(s)

Optional Interior & Exterior Coatings & Linings:

\_\_\_\_ Interior Commercial grit blast (SSPC-6)

\_\_\_\_ Internal coating \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Minimum size 500 gallon

 (Must include interior weld and minimum (1) 18-inch diameter manway)

\_\_\_\_ Exterior polyurethane paint color: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_ Other exterior coating \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, Color: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Execution**

The tank is to be set at a level on a solid foundation of reinforced concrete constructed by the installer. Installation and testing shall strictly follow STI’s Fireguard® Installation Instructions and be performed by a licensed installer.

**Warranty**

The tank is warranted by Highland Tank & Mfg. Co. is to be free from manufacturing, workmanship, and materials defects. Highland Tank will repair or replace, at its sole discretion, any item of our manufacture at the F.O.B. factory within 30 years after the date of shipment. All other items shall be warranted by their respective manufacturers. Liability hereunder is limited, as stated above, and does not include labor, installation costs, or indirect or consequential damages. Tanks must be returned to the factory and, if found defective upon examination, will be repaired or replaced, or credit will be issued at our option.

Highland Tank will manufacture the Tank at one of the following locations: Stoystown, PA; Manheim, PA; Watervliet, NY; Greensboro, NC; Friedens, PA; Clarkston, MI; or Mancelona, MI.