



Summary of UL "new" Special Purpose Tanks March 22, 2023 Anaheim

Steve Pollock
Technical Manager
Steel Tank Institute/Steel Plate Fabricators
Association



What we will cover

- UL 142A quick glance
- Why we set standards, regulate and perform inspections



Most of the time you will be working with most common shop fabrication standards*



UL 142

STANDARD FOR SAFETY

Steel Aboveground Tanks for Flammable and Combustible Liquids

UL 2085

ISBN 0-7829-0238-8

Protected Aboveground Tanks for Flammable and Combustible Liquids



- * • “Cookbook”
- Steel specs
- Supports



A new shop fabrication standard March 2021 effective date



Tank types covered by this “sister” standard :

Generator Base Tanks

Work Top Tanks

Lube Oil Tanks

Used Oil Tanks

Day Tanks

Process Tanks



A new shop fabrication standard March 2021 effective date



1 Scope

1.1 These requirements cover special purpose steel aboveground tanks for **specific fuels or liquids** and/or **use applications as indicated for each special purpose tank type**, which are intended to address the specific designs, features, limitations, use factors and other unique characteristics of each type. These requirements are not covered by UL 142 for general purpose steel aboveground tanks for flammable and combustible liquids, as each special purpose tank deviates from them by construction, performance and/or **markings for the intended use**.

Why is this a sister standard?

4 General Construction for All Special Purpose Tanks

4.1 Containment type, shape, orientation, dimension

4.1.1 The minimum steel thicknesses and other general applicable parts of UL 142 below for the tank design construction requirements for each special purpose containment type, shape, orientation, dimension, capacity indicated by the specific construction requirements for each:

- a) Primary Horizontal Cylindrical – Per UL 142, Section 32.2;
- b) Primary Vertical Cylindrical – Per UL 142, Section 32.3;
- c) Primary Rectangular – Per UL 142, Section 32.4;
- d) Secondary Horizontal Cylindrical – Per UL 142, Section 32.2;

Tank supports shall comply with the general construction of UL 142, Section 32.1, and applicable requirements below for the specific rated generator, equipment or work top loads.

- a) Horizontal Cylindrical – Per UL 142, Section 32.2;
- b) Vertical Cylindrical – Per UL 142, Section 32.3; or
- c) Rectangular or Diked – Per UL 142, Section 32.4.

MANUFACTURER AND PRODUCTION TESTS

7 Production Leakage Tests

7.1 The manufacturer of each special purpose tank after fabrication but before shipping shall conduct the UL 142 Manufacturing and Production Tests for the tank type to be proven leak tight before shipping.

7.2 Each primary and secondary tank shall be leak tested per UL 142, Section 50.

7.3 Each diked tank shall be leak tested per UL 142, Section 50.



142A Special Purpose Tanks



Generator Base Tanks

- Designed for storing combustible fuel and structural support for diesel or turbine engine power generators.
- Limited to Combustible Class II or III or fuels such as diesel or kerosene
- Load test using a weight of 4 times the rated equipment load applied to structural frame/supporting pads for 5 minutes

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Generator Base Tanks

- Only Horizontal Cylinder, Rectangular, or Horizontal Obround
- Tank Height to Base ratio must be $\leq 1:1$
- Minor accessories allowed such as integral supports for rectangular tanks, heating coils, insulation
- Markings would include maximum weight of equipment

142A Special Purpose Tanks



Work Top Tanks

- Designed for storing combustible liquids and a structural working surface such as tool racks and shelves.
- Limited to Class III liquids such as new/used lube oils, transmission oils or similar fluids
- Working surface limited to 30-42 inches of at least 3' by 2' area accessible at one edge
- Reduced emergency vent requirements based on size
 - ≤ 330 gal – up to 15%
 - ≤ 660 gal – up to 10%
 - ≤ 1250 gal – up to 5%



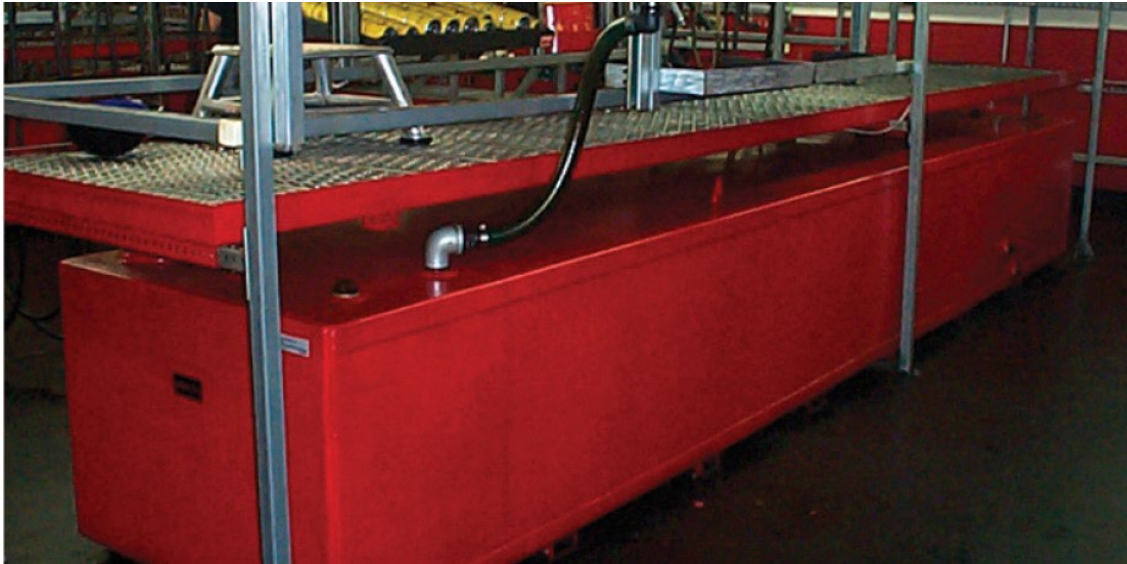
142A Special Purpose Tanks



Work Top Tanks

- Horizontal Cylindrical, Rectangular, Obround
- Tank H:B ratio $\leq 1:1$
- Working surface limited to 30-42 inches of at least 3' by 2' area accessible at one edge
- Similar minor accessories with addition of racks and tool storage
- Markings would include maximum weight for work surface

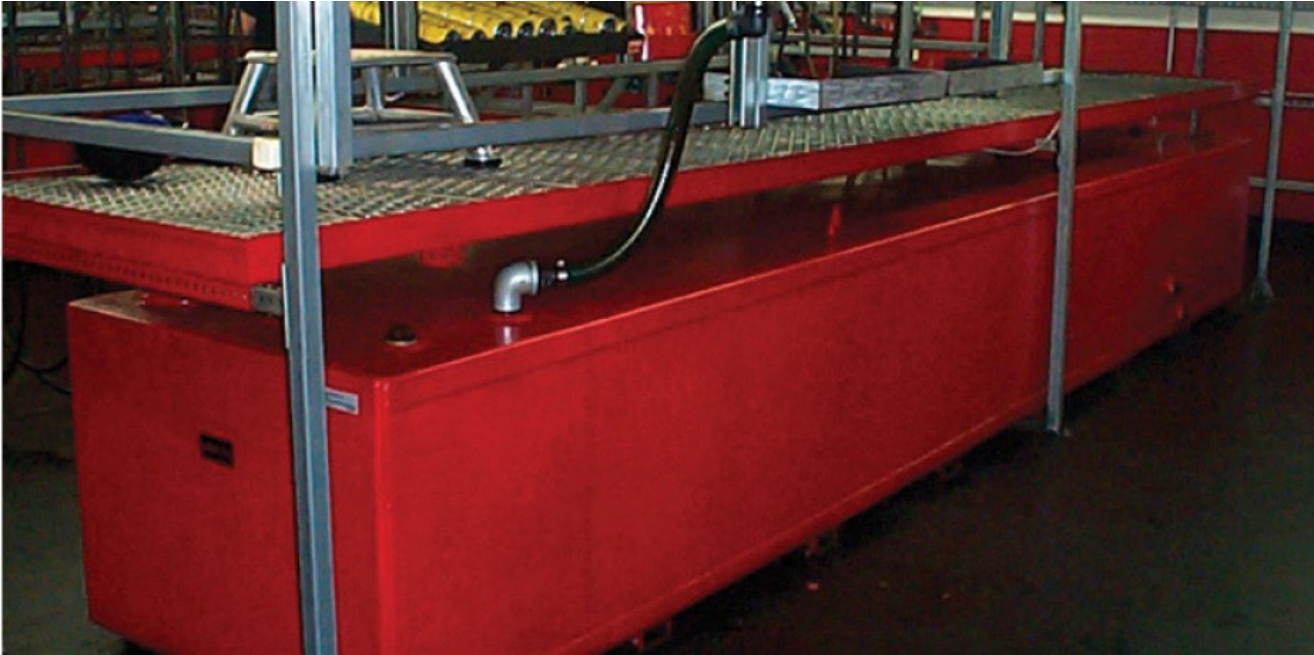
142A Special Purpose Tanks



Lube Oil Tanks

- Designed for storing unused lubricating oils.
- Limited to Combustible Class IIIB oils such as crankcase or transmission oils
- At least one opening shall be provided with a coupling for positive connection to oil supply delivery systems
- Reduced e-vent capacity
 - ≤ 330 gal – up to 20%
 - ≤ 660 gal – up to 15%
 - ≤ 1250 gal – up to 10%
 - ≤ 5000 gal – up to 5%

142A Special Purpose Tanks



Lube Oil Tanks

- Horizontal OR Vertical cylindrical, Rectangular, Obround
- H:B ratio \leq 2:1
- Similar allowable minor accessories with addition of hose reel brackets, internal gauges
- Markings would include combustible liquid class

142A Special Purpose Tanks



Used Oil Tanks

- Designed for storing used lubricating oils.
- Limited to Combustible Class IIIB oils such as crankcase or transmission oils
- Required recycling equipment including oil pans/drain funnels or oversized collection openings, or containment rings around openings
- Reduced e-vent capacity
 - ≤ 330 gal – up to 20%
 - ≤ 660 gal – up to 15%
 - ≤ 1250 gal – up to 10%
 - ≤ 5000 gal – up to 5%

142A Special Purpose Tanks



Used Oil Tanks

- Horizontal OR Vertical cylindrical, Rectangular, Obround
- H:B ratio $\leq 2:1$
- Minor accessories such as access devices, lift lugs, brackets for hose reels, pumps, internal gauges allowed
- Markings would include combustible liquid class

142A Special Purpose Tanks



CANADIAN UTILITY TANK ULC 601

Day Tanks

- Designed for small temporary or *backup supply* for engine driven equipment such as pumps or generators. Capacity range of **20 to 1,320 gallons**.
- Limited to specific fuels as marked but can be Flammable Class I or Combustible Class II
- Lift Lugs rated for 2X empty tank plus any rated equipment
- Integral tank supports for horizontal cylindrical and obrounds connected to bottom shell, evaluated for rated loads

142A Special Purpose Tanks



Day Tanks

- Horizontal or Vertical Cylindrical, Rectangular, Obround
- H:B ratio $\leq 1.5:1$
- Pumps, filters and gauges are allowed as optional equipment if they comply with other UL listings
- Markings would include a caution that that the tank is not for transporting fuel

142A Special Purpose Tanks



Process Tanks (LATE ADDITION)

- Tank with an easily removable top, access hatch, bottom outlet, and optional equipment intended for small batch mixing of different liquids and/or other materials. Capacity range is 20 to 1,320 gallons
- Limited to specific fuels as marked but can be Flammable Class I or Combustible Class II
- Removable tops shall be evaluated to UL 142 leakage tests, and gaskets shall be minimum 1/8" thick and determined to be acceptable for use with flammable liquids
- Hatches shall be less than 20% of top area or less than 3 sqft and secured by quick connects such as wing nuts or lock tabs



142A Special Purpose Tanks



Process Tanks (LATE ADDITION)

- Many more optional, minor accessories allowed as long as UL listed
 - Supports
 - Special fittings such as sanitary or quick hose connects
 - Gauges
 - Valves
 - Pumps
 - Motors to Hazloc Divisions of UL



Why do we have fabrication standards, regulate and inspect?

- How do you inspect these tanks?
- UL 142?
- UL 58?
- USTs are not ASTs



We want to be able to do this



We want to reduce effects of accidents



Who can influence?

- Underwriters Lab (ULI and ULC)
- American National Standards Institute (ANSI)
- Southwest Research Institute (SwRI)
- American Petroleum Institute (API)
- ASTM International (formerly American Society for Testing and Materials)
- NFPA
- AHJs
- All levels of regulators
- Tank Manufacturers
- Goal is Balanced Committees





[Steve Pollock, STI/SPFA](mailto:spollock@steeltank.com)
spollock@steeltank.com

