

# Excavation/Backfill Comparison

## Plasteel® Tank vs. FRP Tank



### U.L. Listed Plasteel® Elutron® Double Wall Jacketed Tank Assume: 3-10,000 Gallon Tanks per site (Stable Walls)

#### Hole Size Requirements: Minimum requirements for calculations

- Nominal tank dimensions: 9'6" diameter x 20'6" long
- Actual Capacity: 10,054 gallons
- Tank burial requirements: 6" between tank sides and banks of the hole  
6" between tank heads and banks of the hole  
6" beneath tank
- Backfill requirements: Clean, debris free, sand, or pea gravel
- Tank excavation dimensions: 31.5' x 21.5' x 14' deep (4' burial)



Hole Volume = 9482 cf = 351 cy  
Total (3) Tank Volume = 149 cy  
Backfill required: 351 cy - 149 cy  
= 202 cubic yards



## Typical Non-Metallic (FRP) Double Wall Tank Assume: 3-10,000 Gallon Tanks per site (Stable Walls)

### Stable Walls

In stable soil conditions for 4' through 10' diameter tanks (550-20,000 gallons), the hole must be large enough to allow a minimum of 18" (24" preferred) between the tank sides and ends and the banks of the hole.



### Twelve Foot Diameter Tanks

(25,000-48,000) gallon models require 24" between tanks and hole sides, and require 24" between adjacent tanks.

### Unstable Walls (all size tanks)

In muck, bog, peat, swamp, or landfill type areas with expansive clay soils, a larger hole is required to support tanks. In these types of conditions, the holes must be large enough to allow a minimum of half the tank diameter from ends to sides of tanks to hole walls.



Unstable soils are defined as those soils having less than 750 lbs/sq. ft. cohesion as calculated from an unconfined compression test; or soils with an ultimate bearing capacity of less than 3,500 lbs/sq. ft. Unstable soils or areas with expansive clay may require a reinforced concrete slab under tank for support.

For unstable soils with less than 250 lbs/sq. ft., a filter hole liner is a recommended to prevent backfill migration.

### FRP Published Data:

- 10,000 gal tank dimensions:  
8' diameter x 30'9" long
- Actual Capacity:  
9,730 gals
- Minimum Excavation:  
32' x 35' x 13' deep: 4' burial
- Required backfill:  
Pea gravel or crushed stone
- Excavation Volume:  
539 cy
- Total (3) Tank Volume:  
145 cy
- Backfill Required:  
539 cy - 145 cy  
= **394 cubic yards**

## Backfill Material Cost Comparison Summary

Average cost of backfill materials in Southern California, USA

Pea Gravel = \$29/cy ▪ Washed Sand = \$19.00/cy

**FRP Tank Installation:** Pea Gravel or Crushed Stone

Pea Gravel cost for FRP Tank Installation: 394 cy x \$29.00/cy = \$11,426.00

vs.

**Plasteel® Tank Installation:** Pea Gravel or Washed Sand

Pea Gravel cost for Plasteel® Tank Installation: 202 cy x \$29.00/cy = \$5,858.00

**Plasteel® Savings over FRP = \$11,426.00 - \$5,858.00 = \$5,568.00**

Washed Sand cost for Plasteel® Tank Installation: 202 cy x \$19.00/cy = \$3,838.00

**Plasteel® Savings over FRP = \$11,426.00 - \$3,838.00 = \$7,408.00**

NOTE: Above savings does not include installation labor  
Additional positive cost reductions factors for Plasteel® Tanks:

1. Reduced volume of backfill that must be removed and disposed.
2. Flexibility of backfill choice.
3. Reduced surface cut.
4. No additional backfill required for unstable walls

