



## Brinemakers by Design Tanks, LLC.

Design Tanks has over 60 years of fiberglass manufacturing experience. With responsive sales and service, value-added engineering, and streamlined manufacturing processes, we will satisfy our customers' needs with the highest quality brine making solution available.

Whether you need a brine storage tank or a complete operating system, we can customize our product with components (pneumatic fill line, vent/dust collection, brine plenum, automatic liquid level system, etc.) to meet your specific requirements.

When given the opportunity, our Brinemakers allow companies to realize the benefits of saturated brine. In addition to the obvious bulk salt advantage, consistency of product, and meeting "peak-demand" requirements, companies quickly recognized an increase in warehouse space and fewer work-related injuries versus handling individual salt bags.

Over the years, meeting soft water requirements has been a difficulty for a variety of industries: laundries, correction facilities, etc. Furthermore, with our FDA compliant resins and post-curing, we offer the Food & Beverage Industry a cost-effective FRP alternative.

For high usage (50 GPM and over) demand customers, Design Tanks recommends, in conjunction with our Brinemaker, incorporating a brine day tank (reservoir) within the brine withdrawal system. In some cases, companies make unrealistic demands upon Brinemakers. To ensure saturation and avoid channeling, the brine making rate should not exceed 0.5 GPM per square foot of cross-sectional area. Be aware, with vacuum granulated salt, the maximum brine making rate is 40 GPM for a 10'-0" diameter tank and 50 GPM for a 12'-0" diameter tank.



\* The following chart shows standard sizes, but custom sizes are able - call to inquire.

Tank Diameter (D)	8'-0"	9'-0"	10'-0"	12'-0"	12'-0"	12'-0"
Tank Height (H)	16'-11"	17'-11"	18'-3"	15'-6"	18'-0"	22'-7"
Usable Storage (Tons)	23	30	36	40	51	72
Maximum Brine Draw Granulated Salt (GPM)	40	40	40	50	50	50
Maximum Brine Draw Rock/Solar Salt (GPM)	20	20	20	25	25	25

# Standard Brinemaker Components

## Pneumatic Fill Line

Air unloading salt creates an abrasive situation. To remedy this, we utilize a 304 Stainless Steel fill line. Bolted to the center of the tank top, a typical fill line consists of one 180-degree radius section, one vertical straight section with a 3/4" water injection port, and one Kamlock adapter with a screened/vented cap. Depending upon truck accessibility, our radii fill line can be one-piece (180-degree radius) or two-piece (90-degree). With a two-piece radius and horizontal straight run, we can customize the fill line to meet your specific tank placement.

## Pneumatic Fill Line Post

Depending upon the Brinemakers support pad/floor, Design Tanks offers two versions; a concrete galvanized post with two fill line clamps or an existing concrete galvanized post with a base pad, sidewall support brackets, and two fill line clamps for existing concrete pads.



## Water Spray Ring

To increase the efficiency of the Brinemaker, the water is induced through a 1-1/2" polyethylene spray ring which is mounted around the interior circumference to distribute water evenly.



## Brine Collection System

Located on the tank bottom, our brine collection system consists of a fiberglass reinforced plastic plenum in the center with six lateral slotted PVC filter arms. From the top of the center plenum, the brine will flow (pumped or gravity) through an internal bolted piping to an external sidewall attachment flange. When the brine is pumped directly to the in-plant usage points, to avoid the line solidification, contact your salt supplier for a pump recommendation. Depending on the quality of the salt, Design Tanks recommends "back flushing" our brine collection system with a low-pressure water source. Understandably, this periodical process will enhance your Brinemakers efficiency by dissolving solidification within the brine lines and slots.



## Venting/Dust Control

To eliminate the tank pressurizing in the filling phase, an 8" U-Vent and 24" hinged manway with a weighted cover is mounted on the top of the tank. Connected to the U-Vent is clamped a rubber boot, which is attached to a side-mounted, bracketed vertical PVC downpipe, and a polyester bag for dust control. To minimize the dust, a 3/4" water injection port on the pneumatic fill assembly should be utilized. Also, Design Tanks recommends having the bag cleaned (soak in water for 4-8 hours) after each salt loading.

## Access Ladder Assembly

When the installation requires access to the top of the tank, an OSHA approved ladder assembly constructed of steel (galvanized or epoxy coated), or FRP (Fiberglass Reinforced Plastic) is available. Depending upon the tank height, a safety system may be required.



# Brinemaker Options

## Insulation

Our insulation package is located around the circumference of the tank and up 8'-0" on the tank sidewall. It consists of a two-part spray-on polyurethane foam with an insulation R-value of 6.3/inches of thickness (k value of 0.14). To protect the insulation, we utilize a spray-on overcoat. The overcoat is a polyurethane elastomer base coat overlaid with a white polyurea coat, totaling at least 40 mils dry thickness. Besides excellent UV protection, the overcoat materials are rated as a Class A Flame Retardant per UL 790.

## Heating

Our heating system consists of electrical (20 amp/120V) panels with a single master control thermostat. To eliminate potential tank damage, each panel is equipped with a "high temperature shut-down" feature. By locating the panels on the lower sidewall, the panels can be periodically checked. After years of service, an individual panel can be replaced by cutting the insulation, removing the old panel, installing a new panel, and replacing the insulation.

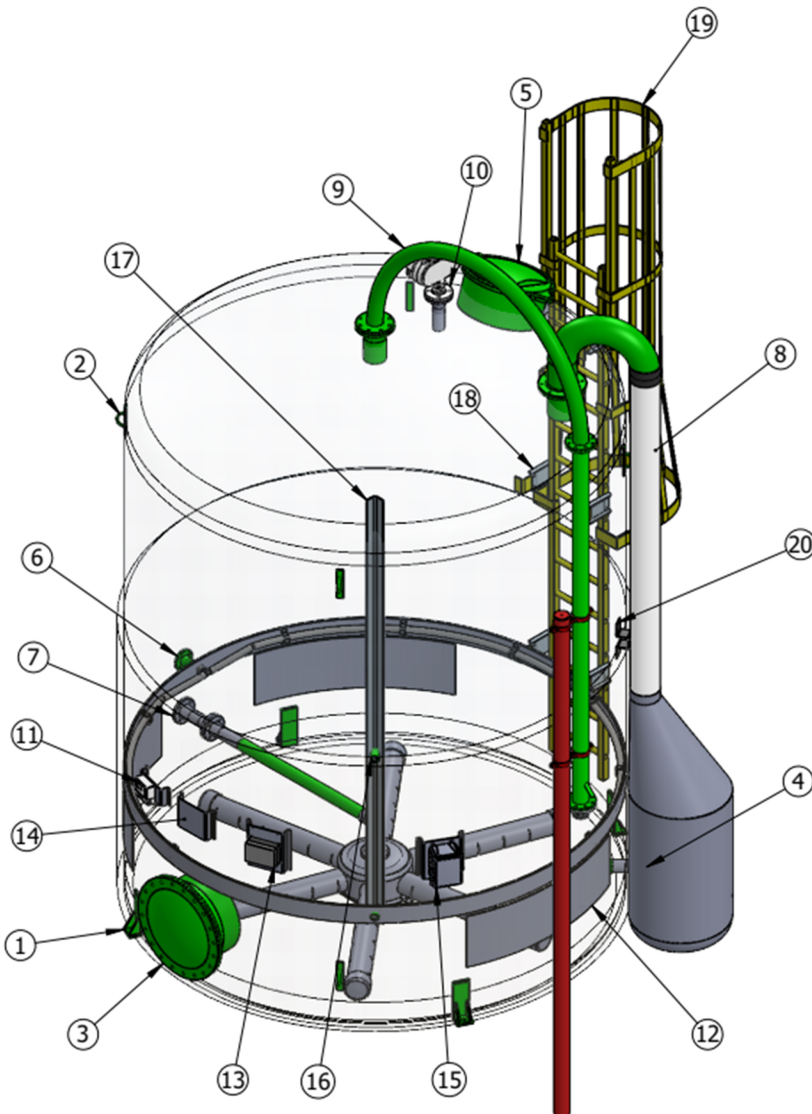


## Automatic Liquid (Brine) Level Control System

To maintain a constant liquid level in our Brinemaker, we incorporate two tuning forks, which send a signal to a digital panel meter to open or close a solenoid valve located in the water supply line. Additionally, the digital panel meter is capable of sending a 4-20 MA output (Remote PC or Laptop) and optional relays for visual on/off light/s and/or audible alarm.

## Automatic Solid (Salt) Level Control System

In order to monitor solid salt levels, we can include an automatic weighted bob level measurement unit. The measurement unit mounts directly to a 3" flange on top of the Brinemaker and is paired with a compact controller mounted on the side. The controller provides a display for solid salt level and can output a 4-20mA signal for PLC or DCS systems.



Item	Description	Standard Item
1	Hold Down	✓
2	Lift Lug	✓
3	Side Manway	✓
4	Siphon Drain Flange	✓
5	Quick Access Manway	✓
6	Water Inlet	✓
7	Brine Outlet	✓
8	Salt Dust Vent Assembly	✓
9	Stainless Steel Salt Fill Pipe	✓
10	Salt Level Sensor	✓
11	Salt Level System Display	
12	Heat System Panel	
13	Heat Panel Control Box	
14	FRP Bracket with Content Label	✓
15	Water Level Control Box	
16	Tuning Fork Coupling	
17	FRP Stilling Well	
18	FRP Ladder Standoff Set	
19	FRP Ladder with Cage	
20	FRP Mounting Lug	



## Saturated Brine Facts

- One gallon of saturated brine weighs 10.027 pounds
- One Gallon of saturated brine contains 2.647 pounds of salt
- One gallon of water will produce 1.13 gallons of saturated brine
  - One gallon of water will dissolve 2.991 pounds of salt
- One ton of salt will produce 755.5 gallons of saturated brine

## Salt Facts

### Southern Rock or Corase Solar Salt (Approximately 44% Void Volume)

#### Maximum Brine Making Rate

- 10'-0" diameter tank - 20 GPM
- 12'-0" diameter tank - 25 GPM

#### Weight Per Foot of Tank Height

- 10'-0" diameter tank - 2.7 tons
- 12'-0" diameter tank - 3.8 tons

### Vacuum Granulated or Fine Solar Salt (Approximately 40% Void Volume)

#### Maximum Brine Making Rate

- 10'-0" diameter tank - 40 GPM
- 12'-0" diameter tank - 50 GPM

#### Undissolved Salt Per Foot of Tank Height

- 10'-0" diameter tank - 3.0 tons
- 12'-0" diameter tank - 4.2 tons

