



Brine Make-up & Storage Systems



Bulk Briner 101:

What You Need to Know When Considering a Bulk Briner

The transition away from packaged salt to bulk delivery for brine make-up may represent significant advantages to operations at your company. Before that decision can be made however, it is important to have a firm grasp of the issues that should be considered.



What is Bulk Salt?

Bulk salt is defined as salt which is supplied without packaging, generally in a truck which is pneumatically offloaded into a vessel that converts salt and water into saturated brine.

Bulk deliveries range in weight from 22-25 tons depending on regional weight limitations and can also be impacted by the density of the salt. Bulk salt density ranges from about 68 pounds per cubic foot to about 85 pounds per cubic foot.



Packaged vs Bulk Salt

The move away from packaged salt to bulk delivery has risen in popularity for several compelling reasons; the cost per ton is a fraction of packaged salt, there is no employee bag handling and therefore no related injuries, the space dedicated to salt storage is reduced to the footprint of the bulk briner, bag handling and disposal is eliminated, and other than providing access to the delivery truck, employee involvement is essentially eliminated.



Industrial Applications for Bulk Briners

A broad range of industries employ bulk brining as a solution to their saturated brine needs, with applications including:

Food Processing: Meat packing, vegetable packing, seasonings, flavorings, mayonnaise, salad dressing, sauces, etc.

Water Softening: Hospitals, universities, hotels, oil production

Chemical Processing

On-Site Hypochlorite Generation Systems



Is a Bulk Briner the Right Solution for Your Company?

When evaluating conversion to bulk salt, these are the basic questions that you will want to address to assist you in the decision making process:

1. How much salt is being (or will be) consumed on a daily, monthly, annual basis?
2. What is the delivered cost difference between packaged and bulk salt?
3. How much time is currently dedicated to handling packaged salt?
4. How much space does the packaged salt require?
5. What are the bag disposal requirements?
6. Is a suitable salt product available in bulk in your area?
7. Is there an acceptable location within your facility for a bulk briner?
8. Is there reasonable truck access to the briner location?
9. Does it meet your capital expenditure criteria?



Determining the Ideal Capacity of Your Briner

Once the decision has been made to convert to a bulk briner to satisfy your saturated brine requirements, the next considerations to address are capacity and dimensions. For the average bulk consumer, a 35 ton capacity briner is the most popular choice.

The 35 ton capacity enables the end user to receive a full 25 ton delivery (the best price per ton) while having additional capacity to avoid running out of salt before the next delivery. It can be helpful to incorporate a salt level indication device into your system in order to monitor salt level which will enable you to order salt at the point that you will accomplish two objectives; you will not run out of salt and will have the capacity to receive the full 25 ton delivery.

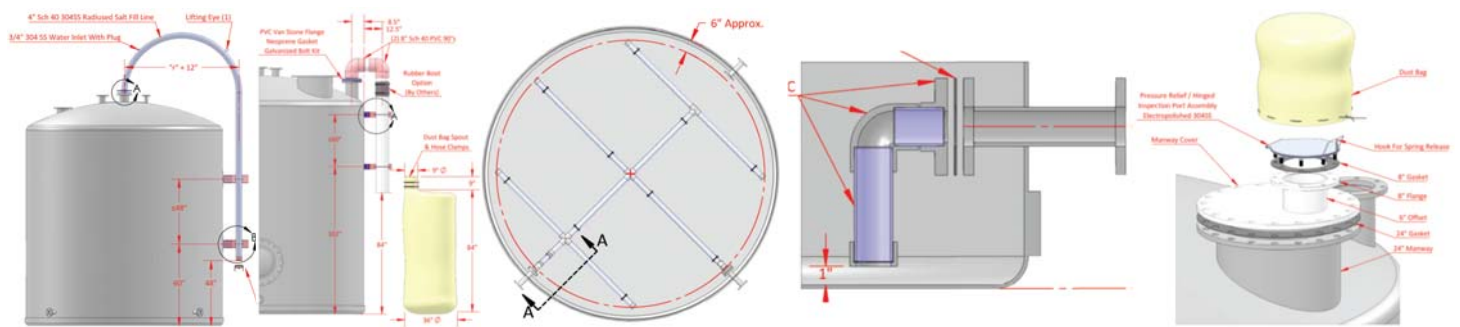
When your salt requirements exceed one 25 ton delivery per week, you will want to consider a larger capacity briner in order to avoid running out of salt and to minimize the number of critical path scenarios that can occur. Basically, bigger is better.



Basic Briner Design

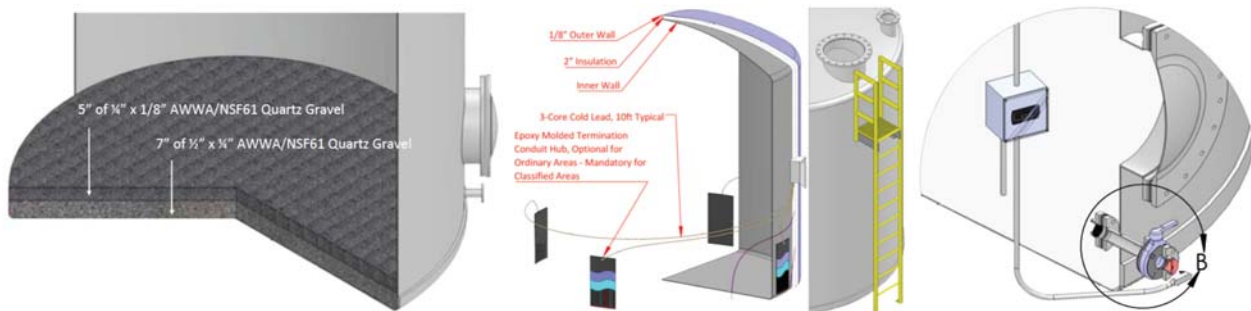
Regardless of briner construction, the basic essentials are the same:

- A salt inlet flange and radiused stainless steel fill line with supports as required
- An oversized vent connection, ducting, dust collection, and supports as required
- An outlet with internal collection plenum
- A drain with screened downpipe
- A side manway for ease of access for installation and maintenance
- A top manway for installation and inspection
- A method of reliable pressure relief



Most briners include a variety of *optional* features that automate the process and simplify operation:

- Water level control
- Salt level indication
- Brine concentration monitoring
- Dust bag housing
- Access ladder
- Seismic design
- Gravel bed (filtration zone)
- NSF61 or food grade materials
- Freeze protection



Installation

The installation of a bulk briner requires three primary disciplines:

- Rigging: Offloading and setting of the briner into the desired location
- Electrical: Level control and level indication components such as sensors, valves, and controllers
- Mechanical: Incoming water, outlet brine, salt loading piping, and vent ducting

Operation

In the most basic terms, briners function to convert salt and water into saturated brine on a continuous basis. The three elements necessary to produce saturated brine are salt, water, and sufficient time for conversion. This is true regardless of briner configuration or the intended use of the brine.

BASICS OF OPERATION

- 1) Salt is pneumatically loaded into the briner
- 2) Dust is captured during the pneumatic loading process to prevent local corrosion
- 3) Water level is maintained either automatically or manually to assure brine availability
- 4) The water inlet assembly distributes water on top of the salt mound (or brine)
- 5) Salt level is monitored and maintained to assure that only saturated brine is delivered to process
- 6) The pressure relief device prevents over-pressurization of the vessel
- 7) An inspection port allows for quick and simple interior visual inspection
- 8) Brine is captured and delivered via the collection plenum
- 9) A drain with screen allows for draining the briner for maintenance purposes
- 10) A side manway provides for ease of access for installation and maintenance

About BrineMaker

BrineMaker brings unrivaled briner expertise and salt knowledge to your project. From feasibility to sizing, design and supply, we will provide you with the data to make an informed decision, the best briner on the market, and the service you expect from the industry leader.

With over 35 years of industry leadership experience, our only business is briners. Our offering of fiberglass, poly, underground, bulk, manually loaded, and bulk bag briners is the most comprehensive in the industry. When getting it right the first time is important, you can trust BrineMaker to deliver.



By the Numbers

Making the decision to convert from packaged salt delivery to pneumatically offloaded bulk delivery (directly into your briner) can be a simple one when taking a pragmatic and objective approach.

Your systematic evaluation should include the following questions:

1. What are your brine requirements today, and looking forward?
2. How do your brine requirements translate into salt consumption?
 - One gallon of saturated brine contains 2.647# of salt
3. What is the cost per ton differential between packaged salt and bulk salt?
4. How much space is currently (or would be) dedicated to packaged salt storage?
5. How much time is currently (or would be) invested into offloading the packaged salt?
6. How much time is currently (or would be) invested into loading packaged salt into your briner?
7. How much time is currently (or would be) invested into disposal of the packaging?
8. What is currently (or would be) the cost of packaging disposal?
9. Is salt currently (or would be) manually loaded into your briner?
 - Have you experienced any related back injuries?

Annual Savings Projection

___ tons of salt consumed annually x \$___/ton savings for bulk = \$___/year savings
___ manhours saved annually unloading and loading salt x \$___/hr wages = \$___/year savings
___ manhours saved annually disposing of packaging x \$___/hr wages = \$___/year savings
___ insurance premium savings due to elimination of manual handling = \$___/year savings
Projected Annual Savings \$_____

Acquisition and Installation Costs Projection

Cost of new briner including options, sales tax, and shipping costs \$_____
Offloading, setting, plumbing, and electrical \$_____
Projected Total Cost \$_____

Payback Calculation:

- Projected Total Cost \$___ ÷ \$___ Projected Annual Savings = ___ **years to payback**

