

# Ashland composites bulk tank storage

## best practices for bulk tank storage

- a. tank size:** It is recommended to have a minimum capacity of 8,000 gallons. This provides flexibility in ordering and improves inventory control. It allows for 1.5 tank wagons while still providing a 10% free space for overflow protection.
  - b. tank construction:** The bulk storage tank should be made out of stainless steel or epoxy-lined carbon steel. It is important to note, that the epoxy liner will eventually fail, and the epoxy coating must be reapplied.
  - c. tank configuration:** A vertical tank with a conical bottom is preferred, as it reduces the surface area of the air to resin interface. Bottom draining 4"–6" line with cam lock is ideal for draining the last portions of resin from the tank
  - d. tank venting:** A closed/conservation vent should be used to reduce the amount of free flowing oxygen getting into the tank. Venting is prone to polystyrene buildup, causing blockage and/or failure of the vent. Care should be taken to ensure venting is unobstructed, operational and well maintained.
  - e. gauge/access hatch:** This hatch is used to manually check the tank level. It should be lockable and vapor tight to avoid a free flow of oxygen getting into the tank.
  - f. inert gas blanketing:** For safety and stability, it is recommended to use a mixture of 5% oxygen to 95% nitrogen to blanket the resin tank head space to prevent premature resin gelling.
  - g. agitation:** A top-mounted explosion proof mixer is best to ensure proper performance of the resin. It also helps to control the temperature of the resin. Agitation should be done for 30 minutes before starting each shift.
  - h. temperature control:** It is best practice to store the resin inside between 70 and 85 °F. Outdoor tanks are not recommended however, well insulated internal climate controlled tanks achieving a consistent temperature range of 70–85 °F would be acceptable. It is also recommended that external tanks have a structure built around and over them to minimize the direct sunlight on the tank.
  - i. outlet pipe:** The tank exit pipe should be at minimum 4" and be unobstructed inside the tank by any sort of screen or filter. This will help minimize blockages caused by large gelled particles.
  - j. filtration:** Filtration is critical to the bulk tank resin system. Multiple filters are needed to achieve clean unobstructed resin flow throughout the plant and to the equipment. An adequate filtration system will be the best safeguard in protecting your bulk tank against frequent tank cleanings.
- i. required filters:**
    - 1. filter 1:** A #2 solid stainless sock filter 7"x 30" (minimum) with a 4" inlet from bulk tank and 2" outlet to pump. The basket will be used with 1/8"–1/4" screen size holes to catch large debris.
    - 2. filter 2:** A #2 solid stainless sock filter 7"x 30" with a 2" inlet from pump and 2" outlet to plant. The basket will be fitted with a 450–600 micron (30–40 mesh) disposable nylon filter bag to remove smaller debris.
    - 3. filter 3:** Small inline Y trap strainer filter before each piece of equipment. This should be equipped with 200–250 micron (60–70 mesh) stainless steel basket insert.
    - 4. filter 4:** Surge chamber standard filter. This should be 200–250 micron (60–70 mesh).

**k. pump:** A bolt together double diaphragm pump with a 2" inlet and outlet is recommended.

**l. incoming bulk delivery:** it is critical to prevent air from being introduced into the bulk storage tank during the unloading process. A bypass valve and inline canister filter containing a filter basket with 1/32"–1/8" screening should be installed to allow the initial resin/air mixture from the hoses to purge into a drum. This will also help reduce the potential for any contamination, if the hoses are not completely clean. Once only resin is flowing through the bypass valve, it can be closed and the main tank fill line opened, so the tank wagon can be unloaded into the bulk storage tank. This process should be repeated, when clearing the hoses after the tank wagon has been emptied.

## expectations on tank cleanings

**DCPD Resin Storage. The bulk resin storage tanks should be cleaned with the following frequency:**

- i. If the tank is not in direct sunlight and maintains a temperature below 85 °F, the cleaning frequency is expected to be once per year;
- ii. If the tank is in a temperature controlled environment (stored at or below 80 °F) and has closed venting, the cleaning frequency can be extended to 1.5 years;
- iii. If the tank is blanketed with inert gas (5% oxygen and 95% nitrogen), the cleaning frequency can be extended to 1.5 years; or
- iv. If the tank has both (ii) and (iii), the cleaning frequency can be extended to 2 years.

AME Resin Storage. When storing AME resins in bulk storage tanks, the cleaning frequencies set forth in the above section apply but can be extended by an additional 6 months.

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