6.2.2 Bulk Storage Tanks

Tanks and tank lining materials can vary considerably in their suitability and performance. Before selecting an appropriate storage vessel, be sure to perform a thorough and complete evaluation of potential alternatives. Consultation with suppliers of tanks and lining materials, and obtaining recommendations from those using their products in similar applications is recommended.

Sodium hypochlorite solutions will decompose with age. They can also leave sediment in the bottom of storage vessels. (Section 2.2 and 3.8) To avoid transferring this sediment into the process, locate the primary discharge nozzle 1 to 3 feet above the bottom of the tank. An additional discharge point, located as close to the bottom as possible, will allow for complete drainage and periodic cleaning. Cone bottom tanks can facilitate removal of sediment. Filtration systems are available to remove virtually all sediments.

6.2.2.4 Materials of Construction

a) Rubber-Lined Steel

Tanks of this type are generally custom fabricated for a specific process. They may be any size or shape depending on the needs of the user, but are typically atmospheric vertical or horizontal cylindrical vessels from 1,000 to 30,000 gallons capacity. Some have a capacity up to or exceeding 250,000 gallons.

b) Fiberglass

The success or failure of this type of tank when used in sodium hypochlorite service depends upon a large number of variables including resin type and additives, fabrication technique, storage temperature, environmental exposure and the characteristics of the solution. While many tanks of this type are currently in use, it is advisable to deal only with fabricators having experience with sodium hypochlorite and who are willing to warranty the vessel for the intended applications. It is also important to ensure that the tank has adequate UV (ultra violet) stabilizer or a gel coat outer layer designed for the area of intended use and if possible, locate tank in a shaded area.

c) High Density Polyethylene Tanks

Linear and cross-linked high density polyethylene tanks or tanks with these materials as liners have been used in sodium hypochlorite service. The success or failure of these types of tanks depends upon a number of factors including resin type and additives, fabrication technique, product temperature, environmental exposure, the characteristics of the solution (particularly trace metal contaminants) and the installation and piping connection methods. It is advisable to deal only with polyethylene tank manufacturers having experience with sodium hypochlorite and who are willing to warranty the vessel for the intended applications. Tanks used in more dynamic situations (i.e. loading and unloading several times per day) failed by developing stress cracks at the junction of the bottom and straight shell of the tanks.

d) Titanium Tanks

These tanks are generally very expensive compared to other alternatives, but due to their potential long service life (30-50 years), they may be cost effective in some applications.