Flexible tanks for Transporting Liquids or Semi-Liquid Materials

This application claims priority to U.S. Provisional Patent Application No. 62/579,612 filed on October 31, 2017, the contents of which are hereby incorporated by reference in their entirety.

Field of the Invention

The invention relates to flexible tanks for transporting liquids or semi-liquid materials. More particularly, the invention relates to flexible tanks having improved resistance to leakage and rupture.

Background

Lengthy shipments of goods frequently involve multiple modes of transport, such as ships, railroad cars and trucks. Standardized intermodal shipping containers can be easily moved from place to place in ports and warehouses, and between ships and railroad cars. The standards dictate certain characteristics such as size, location of doors, and the use of specific corners or fittings so that a container can be securely gripped and moved by equipment. Some containers may comply with the standards while having additional unique characteristics, such as being insulated or designed to transport liquids. However, the ability to use any generic standards-compliant shipping container is an advantage because the logistics of making many shipments of different kinds of goods is simplified when a particular shipping container is not necessary.

Flexible tanks (flexitanks) are useful because they enable one to transport bulk liquids within a generic intermodal shipping container so that a shipping container specifically designed for the transport of liquids is not necessary. A primary concern associated with flexitanks is the possibility of rupture. In addition to the obvious loss of the liquid inside, the rupture or failure of a liquid during transport can damage the container in which it is located. If rupture occurs while in the cargo hold of a ship, it may be undiscovered for a long period of time during which the liquid is loose within the cargo hold possibly causing damage thereto or to other containers. A related concern associated with flexitanks is movement of the flexitank within the container during transport. Movement can cause a