

# Best Practice Guidelines:

Bladder Tank Above Ground Temporary Fuel Storage Systems - Arctic Regions



Arctic King Fuel Tanks meet the Environment Canada TECHNICAL REQUIREMENTS FOR COLLAPSIBLE FABRIC STORAGE TANKS (BLADDERS) - December 17, 2009

## 1. Fuel Bladders

- a. The fuel bladder should be manufactured from a polymer fabric that consists of substrate (scrim) and topcoat (polyester) or (polyether) based polyurethane. The top coating must be compatible with the fuel being stored and the climate at the installation site. The substrate (scrim) is typically polyester or nylon woven base material.
- b. Material shall be suitable for environmental conditions found in Arctic operations:
  - i. Fabric should have strength characteristics equal to or exceed Mil-T-52983E.
  - ii. Fabric should have double off-set urethane coating facing the fuel.
  - iii. Fabric shall have passed low temperature bend per ASTM D-2136.
- c. All seams shall be radio frequency (RF) welded, complete with top and bottom cap strips, and body panels should be segregated. The welded seam strength shall be equal to or greater than the base material strength.
- d. Exposed substrate along top and bottom cap strips should be sealed inside and outside of the bladder.
- e. Tank capacity should be engineered to ensure the tank dimensions are correct for the intended volume with min 5% over capacity for volume expansion due to temperature changes. Static loading on base fabric and seams shall be less than one fifth the tensile strength of the base fabric.
- f. Corners should be designed according to acceptable engineering practices. Square corners should be protected from abrasion.
- g. Tanks shall be leak-tested at place of manufacturing and certified by the manufacturer to be free from leaks. Furthermore, tanks should include a vent and any interconnecting piping shall be pressure tested for leaks.
- h. Tanks shall include test strips for nine years of annual integrity testing.
- i. The bladders shall include design criteria and drawings that are stamped by a professional engineer.
- j. Bladders are designed for static storage only.
- k. Bladders should not exceed 125,000 litres in capacity.