

Best Practice Guidelines:

Bladder Tank Above Ground Temporary Fuel Storage Systems - Desert Regions



Background

The Desert King Tank™ was engineered specifically to store liquid fuel in desert climates. Originally developed in 1999 for the Egyptian Military for use in the Sahara Desert, the Desert King has become a standard tank for other militaries, oil and gas and mining companies working in remote, hot or cold, climates with low humidity and high UV. The Desert King tank has been designed to handle rapid vapor expansion and resist diffusion caused by high aromatics. It has a longer life expectancy than any other urethane collapsible fuel tank in desert environments. The Desert King is a light tan to reflect sunlight and reduce surface temperature as well as to camouflage the tank.

SEI can provide the tank individually or as part of a desert fuel system which includes

- Primary storage tank w. high capacity
- Secondary containment berm
- Rainwater filter system
- SunShade

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 desert operations (hot/cold/dry and high UV climate). Key fabric specs include:
 - Coating: Polyester polyurethane with UV resistance
 - Diffusion rate (permeability), ASTM D-814 (JP-8 Fuel): 0.02 fl oz/ft²/24 hrs
- 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.