

Fomtec High Expansion Foam Systems consist of a proportioning system, high expansion foam concentrate and high expansion foam generators. The typical proportioning system is the Fomtec Bladder Tank and Ratio Controller. Fomtec High Expansion Foam Concentrate is an ECO Friendly synthetic based foaming agent designed to be used with both medium or high expansion foam generating equipment and is normally proportioned at a 6% concentration (6 parts to 94 parts of water). Extensive development work at the dedicated Fomtec Fire Test Facility has produced a fully integrated state-of-the-art high expansion foam system package using the latest technology available. When applied to a fire, the following extinguishing mechanisms take place:

- The large volume of foam produced blankets the area being protected, smothering and preventing air from reaching the fire to continue the combustion process.
- As the foam is generated and comes in contact with the fire, the foam bubbles convert back to foam/water solution and a large amount of steam is generated which inerts the atmosphere, aiding in the fire extinguishing process.
- The water content in the foam produces a valuable cooling effect on the fire and the immediate surroundings.
- The foam solution has a low surface tension and as such will effectively penetrate Class "A" combustibles to control deep-seated fires.

High expansion foam systems are designed for the most part to be Total Flooding Systems and require a confining structure to ensure that the highly expanded foam remains inside the protected area. As a result, high expansion foam systems find applications in the following highly protected risk areas:

- Cable Tunnels
- Aircraft Hangars
- Mine Shafts
- Underground Parking
- Tire Warehouse
- Hazardous Material Storage
- Flammable Liquid Storage
- Engine test Cells
- LNG Spills
- Basements
- Paper Storage Warehouses
- Ship Holds

The key to the performance of high expansion foam systems is the synergy between the High Expansion Foam Generator and the High Expansion Foam Concentrate. The Fomtec High Expansion Foam Generators have been designed with functionality, reliability and serviceability in

mind. For example, the foam solution discharge is projected across the stainless steel aeration screen using nozzles. The nozzles optimally atomizes the foam solution and yet has a large enough orifice that silt, rust and other normal pipe debris will not block the nozzle.

We purposely designed the Fomtec High Expansion Foam Generators to operate with no external power requirements, other than flowing water.

The foam expansion ratio from the generator varies according to a number of factors, which include water pressure at the foam generator, water temperature and environmental effects, but typical values range from 400:1 up to 900:1, although optimum expansion ratios are in the range of 500:1 – 700:1.

Fomtec High Expansion Foam Systems offer some features not found in other foam fire suppression systems. They typically exhibit lower firewater consumption when compared to a deluge system; which can mean less water damage or run-off and reduced containment. Enhancing this effect is the Fomtec High Expansion Foam Concentrate, which is considered “ECO- Friendly” and contains no reportable substances. As for life-safety, submergence in high expansion foam for a short period of time should not be harmful. The foam concentrate is not considered toxic but the foam solution does have a low surface tension and as a result can in some remote cases liberate natural oils from the skin surface. In the event this was to occur, application of a lanoline based skin treatment lotion is recommended. In the event personnel are caught in a discharge of high expansion foam, some senses (hearing & visibility) will be impaired and there will be a loss of orientation, extreme care should be taken when moving around a room filled with high expansion foam. Thus evacuation from the area should be carried out as soon as possible and if entry to a room after or during a high expansion foam discharge is desired, (rescue purposes) self-contained breathing apparatus should be used and a lifeline attached to the point of egress. Due to the high expansion ratio, the finished foam tends to be “light” and as such does not have a true application outdoors, since light winds will blow the foam blanket away from the hazard area. Therefore, care should be taken when considering high expansion foam as an extinguishing agent to ensure that proper containment can be achieved. The number of generators used for a given risk should be optimized to allow an even build up of foam over the entire hazard area.

A single large generator may not give an even build-up and consideration should be given to several smaller units, giving the same combined output, equi-spaced over the hazard area to produce the desired effect. In this case, another advantage would be that if one generator were to fail, foam would still be falling from other units, thus providing some fire fighting capability.

High expansion foam systems are designed for specific risks and a proper evaluation should be carried out to ensure that the appropriate guidelines are followed. Consideration should be given to generator locations, rate of foam spread, which will vary based on the substrate and the configuration of the hazard. For example, the foam blanket will spread at a much

slower rate on dry concrete, than it will on a fuel spill or other wet surface. Protected areas with large obstructions (such as gensets) will impede the foam travel and speed due to increased friction between the expanded foam and the object. Thus the quantity and location of high expansion foam generators becomes quite critical, to ensure that the appropriate flooding time is achieved.

Due to the low water content of high expansion foam and in some cases, medium expansion foam, these agents can be used quite effectively on various hazardous materials. In some cases where plain water would react violently with for example a fuming acid or other equally hazardous material, the low water content of high expansion foam is less reactive and can cover the spill to reduce harmful vapor release. Maintaining the foam blanket gives First-Responders an opportunity to assess the risk and determine a suitable course of action. In addition, the low water content of high expansion foam means that the mitigating agent does not significantly add to the problem. The foam/water solution is reduced and there is less run-off to contend with.

Fomtec has up to the minute experience with high expansion foam systems and their application. We have significant data on the behavior of this material and can provide indepth experience and advice as to the proper application of high expansion foam and the related proportioning and delivery systems.