

## **1.5. Foam Systems**

### **1.5.8. Aqueous Film Forming Foam (AFFF) Concentrate**

This concentrate is based on fluorinated surfactants plus foam stabilizers and usually diluted with water to a 1 percent, 3 percent, or 6 percent solution. The foam formed acts as a barrier both to exclude air or oxygen and to develop an aqueous film on the fuel surface capable of suppressing the evolution of fuel vapors. The foam produced with AFFF concentrate is dry chemical compatible and thus is suitable for combined use with dry chemicals.

### **1.5.9. Film Forming Fluoroprotein (FFFP) Foam Concentrate**

This concentrate uses fluorinated surfactants to produce a fluid aqueous film for suppressing hydrocarbon fuel vapors. This type of foam utilizes a protein base plus stabilizing additives and inhibitors to protect against freezing, corrosion, and bacterial decomposition, and it also resists fuel pickup. The foam is usually diluted with water to a 3 percent or 6 percent solution and is dry chemical compatible.

### **1.5.10. Alcohol Resistant Foam Concentrate**

This concentrate is used for fighting fires on water-soluble materials and other fuels destructive to regular, AFFF, or FFFP foams, as well as for fires involving hydrocarbons. There are three general types. One is based on water-soluble natural polymers, such as protein or fluoroprotein concentrates, and also contains alcohol-insoluble materials that precipitate as an insoluble barrier in the bubble structure. The second type is based on synthetic concentrates and contains a gelling agent that surrounds the foam bubbles and forms a protective raft on the surface of water-soluble fuels; these foams can also have film-forming characteristics on hydrocarbon fuels. The third type is based on both water-soluble natural polymers, such as fluoroprotein, and contains a gelling agent that protects the foam from water-soluble fuels. This foam can also have film-forming and fluoroprotein characteristics on hydrocarbon fuels. Alcohol-resistant foam concentrates are generally used in concentrations of 3 percent to 10 percent solutions, depending on the nature of the hazard to be protected and the type of concentrate.

### **1.5.11. Medium and High Expansion Foam Concentrate**

This concentrate, which is usually derived from hydrocarbon surfactants, is used in specially designed equipment to produce foams having foam-to-solution volume ratios of 20:1 to approximately 1000:1. This equipment can be air-aspirating or blower-fan type.

### **1.5.12. Air Aspirating Discharging Devices**

Devices specially designed to aspirate and mix air into the foam solution to generate foam, followed by foam discharge in a specific design pattern.

### **1.5.13. Non-Air Aspirating Discharging Devices**

Devices designed to provide a specific water discharge pattern.

### **1.5.14. Fixed Foam Discharge Outlet.**

A device permanently attached to a tank, dike, or other containment structure, designed to introduce foam.