(PREVIEW)

Indian Standard
MULTIPURPOSE AQUEOUS FILM FORMING FOAM LIQUID CONCENTRATE FOR EXTINGUISHING HYDROCARBON AND POLAR

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Fire Fighting Sectional Committee had been approved by the Civil Engineering Division Council.

Foam is a homogeneous mass of tiny air or gas filled in bubbles of low specific gravity which, when applied in correct manner and in sufficient quantity, form a compact fluid and stable blanket which is capable of floating on the surface of flammable liquids and preventing atmospheric air from reaching the liquid. It is produced, by mechanically mixing a gas or air to a solution of a foam compound (concentrate) in water. This standard covers the foam compound in the form of a homogeneous opaque liquid, free from suspended matter and visible impurities used for the production of fire fighting foam which is produced by mechanical aeration of water foam compound solution.

The foam produced from concentrates are of low expansion (up to 20 times), medium expansion (20 to 200 times) and high expansion (above 200 times). The low expansion foam concentrates are of following types:

a) Protein foam,
b) Aqueous film forming foam (AFFF),
c) Fluoro - Protein foam,
d) Synthetic foam (This can also be medium and high expansion foam), and
e) Multipurpose aqueous film forming foam.

Conventional foams such as Protein Fluoro Protein, AFFF and chemical foams are suitable only for fighting tires of hydrocarbon fuels that are insoluble in water. The water soluble flammable liquids such as alcohols, ketones, amines, easters, ethers, aldehdes, etc, in pure form or mixture with hydrocarbons (Gasohol) rapidly destroy these foams and are ineffective on such fires. Increased complexities and varieties of flammable liquids and their mixtures have necessitated the development of new foam formulations suitable for water miscible flammable liquids. Though, there are more than a thousand of flammable liquids and 4/5 types of foam compounds, it is not possible for the user to keep different types of foams for different hazards in the same premises. It is however known that basically there are two types of flammable liquids, namely, hydrocarbon and polar solvents. The multipurpose foam concentrate covered under this standard is developed to combat the fires of both the types effectively using 3 percent for hydrocarbons and 6 percent concentration for alcohol and other water miscible liquids.

The principle of extinction of fire for hydrocarbon is same as that by other foams but for polar solvents the mechanism is that where foam produced by mixing foam concentrate with water as laid down in this standard is applied through foam nozzles on alcohol fires, a tough polymeric membrane is formed on the surface of the fuel, which in turn supports the foam blanket. The polymeric membrane produced is lighter

than alcohols and spreads uniformly and floats over its surface. This foam blanket over the polymeric membrane foam formed under heat excludes the external air, thereby extinguishing the fire.

The shelf-life of the foam covered in this standard and stored in proper storage condition is generally not less than 5 years in tropical conditions.

The composition of Committee responsible for the formulation of this standard is given at Annex L.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 ‘Rules for rounding off numerical values *(revised)'*. The number of significant places retained in the rounded off value should be the same as that of specified value in this standard.