

KV- LITE HF



HAZMAT FOAM CONCENTRATE

KVFC is a forerunner in the field of fire protection and we manufacture complete range of fire extinguishing agents- Dry chemical powders and foams.

Many chemicals are used whose vapours are harmful & hazardous. Controlling vapours release is major concern of transporters & inventory controllers of hazardous substances.

We have developed speciality products to suppress vapours of various hazardous chemicals.

HOW DO THE KVFC's Hazmat Foams help ?

- Suppress release of hazardous vapours
- Protect the on-site emergency crew
- Give extra time for evacuation & clean up operations.
- More time available for repairs and maintenance.

HAZMAT - SPECIALISED FOAM FOR SPECIAL NEEDS

Appropriate fire-fighting foams are effective as vapour-suppressing agents on spills of flammable or combustible chemicals.

However, many chemicals destroy the fire-fighting foam by

- combining with the surfactants used to produce it,
- changing its pH, or
- by removing water from the foam by reaction or dissolution.

Thus, conventional fire fighting foams are not suitable for vapour suppression on water-soluble polar organics, chemicals with extreme pH values or on highly reactive chemicals. The Hazmat foams are formulated specifically to function effectively on these chemicals.

TYPES OF HAZMAT FOAMS

We offer :

Hazmat number 1 for alkaline spills,

Hazmat number 2 for acid spills and

Hazmat number 3 for neutral material spills

Hazmat number 1 and 2

Hazardous vapours are produced by accidental spills of many acid or alkaline materials. The different chemical natures of these two classes of materials require separate and distinct treatment for each.

Thus, a foam, which is effective on acids, is not effective on alkaline materials. It could even intensify the release of toxic fumes from the alkaline product. Similarly, a foam, that is effective on alkaline materials is unsuitable for use on acids. Hazmat foams, suitable for alkali and acid spills are identified by respective number as under :

Hazmat number 1 suppresses alkaline vapours and is suitable for ;

Anhydrous Ammonia	Ethyl (& Alkyl) Amines	Methyl Amines
Ammonia Solution	Ethylene Di amine	Sodium Hypochlorite
DMA-Dimethyl Amine	Hydrazine	TMA-Tri methyl Amine

Hazmat number 2 suppresses acid vapours and is suitable for

Acetic Acid	Di methyl chloro silane	Nitric acid
Acetic Anhydride	Hydrochloric acid	Organic acids
Anhydrous Hydrogen Chloride	Methyl chloro acetate	Organic anhydrides
Bromine	HF (70%)	Sulphur Mono chloride
Chlorine	Titanium Tetrachloride	Tri chloro silane

Hazmat number 3

There are large number of hazardous materials are chemically neutral or very close to neutral pH. Hazmat No. 1 or No.2 will not produce stable blankets on such chemicals. Hazmat number 3 is recommended for these products.

Acetaldehyde	Esters	Hydroquinone in Methanol
Acetaldoxime	Ethers	Hydroquinone Vinyl Acetate
Acetone	Ethyl Acetate	Hydrogen Peroxide
Acetone Cyanohydrin	Ethyl Benzene	Ketones
Acrolein	Ethylene Diamine	Propylene Oxide
Acrylonitrile	Ethylene Oxide	Styrene
Aldehydes	Higher Amines	THF-Tetrahydrofuran
Chloro benzenes	Hydrazine Monoacetate	Toluene
Dimethyl Formamide	Hydrocarbons	Vinyl acetate

Further, our Hazmat No. 3 can even be used on acid or alkaline spills, and it will still have little blanketing effect.

We are continuously updating the list. If you want to know suitability about a specific chemical, contact us

HAZMAT FOAM CHARACTERISTICS

These characteristics are essential for controlling the emission of vapour

- stable blankets
- resist product pickup, and
- have a slow drainage rate.

APPLICATION TECHNIQUE

Hazmat foam can be applied with a portable equipment at spills or with a fixed systems for storage and processing areas. Hazmat foam concentrates are formulated to be used at a 6% concentration in fresh water.

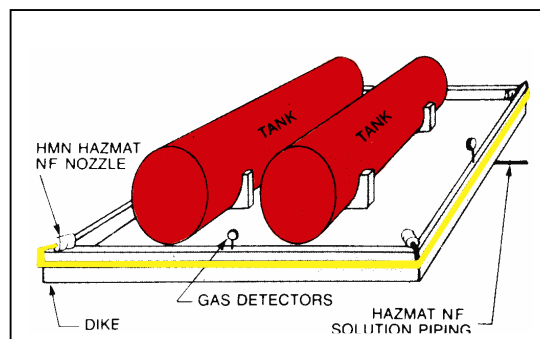
PORTABLE APPLICATION

Portable hand-held foam nozzles are used for application on spills produced in any location. Because of their flexibility, portable nozzles can be used for fixed installations also.

When applying foam to hazardous material spills, great care should be taken in not plunging the foam directly into spilled material. The foam should be applied by banking it off an obstacle such as a tank or wall, or by discharging the foam onto ground in front of spill and rolling it gently onto the spilled material.

FIXED SYSTEMS

Fixed Hazmat foam systems may be used on hazardous material processing, storage, or transfer systems. Fixed systems are used when the hazard is large, when quick actuation is desired, when trained personnel are not available, and when automatic actuation is desired



Typical Fixed Hazmat Vapour Suppression System

PHYSICAL & CHEMICAL PARAMETERS:

Sr.	Parameters	KV LITE HF-1	KV LITE HF-2	KV LITE HF-3
1	Appearance	Clear liquid	Clear liquid	Amber viscous liquid
2	Sp. Gravity @ 20 °C	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10
3	Viscosity @ 20° C	≤ 10 cSt	≤ 10 cSt	≤ 2500 cSt
4	pH @ 20° C	7.5 - 8.5	4.5 - 5.5	6.5 - 8.5
5	Freezing point	0 °C	0 °C	0 °C
6	Expansion	≥ 7 : 1	≥ 7 : 1	≥ 7 : 1
7	Sediment	≤ 0.25 %	≤ 0.25 %	≤ 0.25 %

STORAGE & SHELF LIFE:-

May be stored in shipping containers or tanks constructed of SS, FRP, or cross linked polyethylene only. Hazmat No-3 can be stored in Bladder tank also. Storage temp. should be below 49 °C. The product can withstand intermittent, short time exposure up to 60 °C temp. KV LITE HAZMAT (all 3 grades) has a minimum shelf life of 7 years, considering tropical conditions, if properly stored in its original container or tanks suitable for storage

APPLICATION RATE CALCULATION:-

It is recommended that Hazmat foam blanket fully covers the hazardous spill in shortest possible time. The coverage time for Hazmat foam to form a blanket on the spill is a function of the spill area, foam application rate and expansion ratio of foam.

It is based on a 100 mm (4 inch) foam blanket and an 1 : 8 expansion ratio for Hazmat number 3 and a 150 mm (6-inch) foam blanket with 1:20 expansion ratio for Hazmat number 1 & 2 foams. The application rate to blanket an area (a), in a given period of time (t, minutes).

For Hazmat number 1 and 2 :

$$\text{Rate (lpm)} = \frac{5.00 a}{t}$$

or

$$[\text{Rate (gpm)} = \frac{0.125 a}{t}]$$

For Hazmat number 3 :

$$\text{Rate (lpm)} = \frac{12.5 a (m^2)}{t}$$

or

$$[\text{Rate (gpm)} = \frac{0.311 a}{t}]$$

a = area in m²

t = time in minutes

a = area in ft²

t = time in minutes

Let the hazard to be protected is horizontal Cl₂ storage vessel located in a dike area 30.5 m (100 ft.) x 13.7m (45 ft). The dike is high enough to contain the contents of vessel. A vapour-suppressing blanket should be in place within 2 min. of start of foam operation, The area to which foam will be applied is

$$30.5 \times 13.7 = 417.85 \text{ m}^2$$

$$100 \times 45 = 4500 \text{ ft}^2$$

Using the formula for Hazmat number 2:

$$\text{Rate} = \frac{5.00 \times 418}{2}$$

$$= 1061.723 \text{ lpm}$$

or

$$\text{Rate} = \frac{0.125 \times 4500}{2}$$

$$= 281.25 \text{ gpm}$$

Two 454 lpm (120 gpm) and one 227 lpm (60 gpm) nozzles are required.

The foam concentrate requirement for 60 minutes of operation will be:

$$1100 \text{ lpm} \times 60 \text{ min.} \times 6\% = 3960 \text{ ltr.}$$

Say 4000 L

$$250 \text{ gpm} \times 60 \text{ min.} \times 6\% = 900 \text{ gallons.}$$

Say 1000 gallon

Periodic applications of foam may be necessary to maintain vapour-suppression until spill can be neutralized so sufficient foam concentrate be kept to operate system for 60 minutes.

LIMITATIONS

Hazmat foams are used for suppressing vapours from static spills of hazardous liquids. Foam blanketing is not effective on running spills. Therefore, spills should be contained by permanent or temporary dikes, low areas or ditches. But the foam will give reasonable measure of protection before containment is achieved or on a slow running spill.

There are certain highly reactive chemicals which destroys foam by reacting with water of foam blanket. Hazmat foams are little/ineffective on such chemicals. (Refer Table)

Anhydrous Hydrogen Fluoride	Oxychloride	Oleum
Chlorosulfonic Acid	Phosphorus Trichloride	Phosgene
Fluorosulfonic Acid	Sulfur Trioxide	Phosphorus
Sulfur Dioxide	Sulfuryl Chloride	Thionyl Chloride

Hazmat foams have some fire fighting ability, but not as effective as conventional fire-fighting foam. They may extinguish small fire in some acid or alkaline materials that destroy regular fire-fighting foams.

RELIABILITY:

Our In House R & D facility is approved by Govt. of India, (DSIR).

EMERGENCY SERVICE : HELP LINE + 91 9225124508

- The above data is given in good faith and for general guidelines only.
- We can match the product to your specifications and/or any applicable standards.
- The right is reserved to vary or modify any specification without prior notice.



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