

FACE OFF

KV - LITE NEWS

TRIUMPH OVER FIRE

Magazine From the house of K. V. Fire Chemicals (India) Pvt. Ltd.

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In My Own Words...

We thank all our well-wishers for the overwhelming response to our first Newsletter and for appreciating of our efforts.

We sincerely congratulate Mr. Arun Joshi, Sr. Safety Officer (Chambal Fertilisers & Chemicals Ltd. -Kota) winner of best article / photo contest and our holiday package.

Environmental protection has been our priority and we take great pleasure to announce that our efforts have been recognized with ISO 14001 certification by DNV.

In the last quarter, there have been major fires in the Metropolitan City Mumbai, Haldia Dock Complex etc, causing considerable damage to property. It is very painful to learn of the irreparable loss to human lives and families left homeless.

Reports show that it was difficult to control the fire due to various factors beyond control such as congestion, traffic jam, hydrant pressure and accessibility. Such limitations or some other difficulties are always encountered during industrial fires too. In many instances, before the fire is brought under control, considerable damage takes place.

We feel there is a need to take a serious look to find out and opt for the best options available in respect to the latest advancement in fire fighting equipments and chemicals.

The Tsunami has created havoc. We appeal all to collectively rise to the occasion & contribute for rehabilitation.

On behalf of KVFC family, I wish you all a very Happy New Year and pray for Peace, Prosperity and Happiness.



Mr. H. M. Sabadra
(Managing Director)

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FIGHT FIRE WITH SCIENCE

Fire service professionals have rich field experience and it's now time to take a close look to fight fire with science.

This article will highlight on fire chemicals - Dry powder type, their extinguishing mechanism, manufacturing practice, efficiency, limitations and options available to select between Good, Better and Best extinguishing media.

CHEMISTRY OF FIRE

Though for initiation of fire, Energy, Fuel & Oxygen are required; the propagation is due to the free radicals. So now fire is represented by Tetrahydron instead of triangle.



What are free radicals?

Free radicals are unstable chemicals, containing one or more unpaired electrons due to which they are very reactive.

How free radicals are generated in fire?

Fuel molecules in the heat zone are subjected to combustion, they decompose and produce free radicals such as nascent 'O', nascent 'H', Hydroxyl group 'OH', etc.

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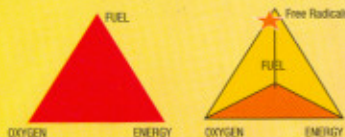
New Developments

FIGHT FIRE WITH SCIENCE



What is free radical reaction?

Free radicals generated in flame zone, being unstable molecules, in order to become stable, they react with the molecules of fuel or oxygen and either donate or accept an electron. This leads to generation of more free radicals, which in turn again react with fuel molecules and in this fashion chain reaction sets in, producing millions of free radicals. And this process continues until complete fuel is exhausted.



What are the damaging effects of free radicals?

Free radicals are catalyst or carrier or promoter of fire. Increased level of free radicals propagates the fire and is responsible for converting a small spark into a towering inferno.

Any fire extinguishing chemical which removes / consumes these free radicals will help in controlling the fire.

Extinguishing mechanism by powder

Conventionally dry chemical powders when applied on fire, decompose and produce free radicals like OH, H, COO, CL etc. depending on the base material of powder.

These free radicals combine with free radicals generated from the burning fuel and thereby interferes/breaks the chain propagation reaction.

Types of Powder

There are two types of the powders

- Physically blended products
- Reaction Base products

Limitations of Physically blended powders

Due to the chemical nature of conventional physically blended powders, such as SBC, PBC, MAP Base, they remove free radicals at a rate, which is far less than the rate of production of free radicals in large fires.

So defence mechanism of conventional powders is inadequate to remove excess free radicals generated in high-risk situation and hence the large fire are difficult to extinguish by any quantity of conventional physically blended powders.

Base material percentage

Efficiency of fire fighting is directly proportional to percentage of base material, which decomposes due to heat in flame zone.

In physically blended powder, manufacturer has scope to alter i.e. reduce the percentage of base material.

Powder base material itself has the inherent limitations of its capacity of removal of free radicals. Now if the percentage of the same is reduced, then it will further aggravate the situation in controlling the fire.

Whereas in reaction base product powders, percentage cannot be varied, so fire-fighting efficiency remains unchanged without any compromise.

Types of physically blended conventional Powders Base - SBC, PBC & MAP

Every type of the powder composition consists of three parts:

- 1) Base material - Responsible for fire fighting efficiency
- 2) Anti caking agent - Offers water / moisture repellency
- 3) Free flow agent - Offers excellent flowability.

Now Anti Caking Agent & Free flow agent generally required are in the range of maximum 6-8%. So any good & efficient powder must have about 90% of base material.

In physical blended powders, one can make 90% not necessarily by 90% of base material but can use bare minimum base material and make up balance quantity with suitable inert & low cost fillers. Such fillers look alike the base material but they may not have real role in fire fighting capability / extinguishment.

Continued on page 3.►

SPECIALIZATION



UL LISTED AFFF



FP-AR 3x6, 3x3.



HAZMAT FOAM

KV-LITE FOAM CONCENTRATES

- PROTEIN
- HIGH EXPANSION
- FILM FORMING
- FLUORO PROTEIN
- FLUOROPROTEIN
- AQUEOUS FILM FORMING
- ALCOHOL RESISTANT

Safety Awareness

REACTION PRODUCT POWDERS

It's universal truth that chemical reaction has to be complete with the chemical equation balanced, so weight / volume of materials taking part in reaction are definite and fixed.

There is no scope for manufacturer to alter composition once the basic chemicals are specified and final reaction product is governed by reaction.

In view of the above, the variation / play with percentage of base material is eliminated in reaction product base powders and there is no loss of fire fighting efficiency.

CONCLUSION:

It is concluded that physically blended powders based on Sodium Bi-Carbonate or Potassium Bi-Carbonate or Mono-

Ammonium Phosphate have the limitations regards capacity of removal of free radicals i.e. fire fighting capability.

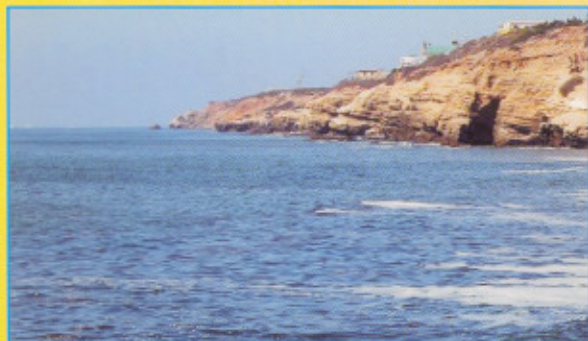
Fire fighting efficiency will be further impaired in case such powders having lower percentage of base material.

Therefore experts recommend reaction product powders to protect high-risk fires.

Industry world over prefer such reaction product powders for first attack to control the flames followed by secured foam protection. Law in India makes use of reaction base powders statutory for high fire risks.

Which is that reaction base product ? What's so unique about it? Why industries world over only prefer such reaction base product for protection ??..... Next issue

ENVIRONMENTAL CONCERN - FIRE FIGHTING FOAM DISPOSAL



Fire fighting foam concentrate have impact on the environment. Measures should therefore be adopted to dispose off foams responsibly.

Foam-Water Solution

Foam-water solution is generally discharged under either controlled conditions e.g. training exercises, foam system commissioning or uncontrolled conditions e.g. manual fire fighting and vapour suppression operations.

Foam-water solution should be contained and disposed off in an environmentally responsible manner. It should not be diluted and dispersed into watercourses, soils, or foul water drains.

There are a variety of containment measures that may be employed, ranging from temporary arrangements to permanent engineered systems.

Once the foam-water solution has been contained, the most common method of disposal is to treat it biologically in a wastewater treatment plant (WWTP). Such treatment will require a Material Safety Data Sheet for the foam concentrate, an estimate of the total volume of foam-water solution to be discharged, and the anticipated timing of the discharge.

A WWTP may require foam-water solution to be diluted in advance. NFPA recommends that the concentration of any foam-water solution in the total volume of WWTP influent should not exceed 1700 ppm.

Foam-water solution may cause aesthetic and operational problems at WWTPs by foaming in activated sludge aeration basins. This may be prevented or controlled by the use of environmental friendly defoaming agents.

Foam-water solution pre-treated in oil/water separators may emulsify with hydrocarbon fuels and so carry them over into the water stream. Synthetic detergent based foams have a greater tendency to emulsify than natural protein-based foams.

Foam-water solution generally exhibits low toxicity to bacteria in WWTPs.

Foam Concentrate

Foam concentrate may need to be disposed off in the event of a spillage. It should be taken for disposal by controlled release to a WWTP, incineration, or liquid landfill.

SPECIALIZATION



KV-OLFEX



TEC POWDER



TEAL POWDER

KV-LITE DRY CHEMICAL POWDERS

- | | |
|----------------|----------|
| • SBC STANDARD | • ABC 50 |
| • SBC SUPER | • ABC 70 |
| • PBC STANDARD | • ABC 90 |
| • PBC SUPER | |

LITE MOVEMENT

FUN CORNER

Trivia

November 16, 2004 Venezuela's biggest oil refinery Paraguana Refinery Complex in western Venezuela caught fire, injuring one worker before the blaze was brought under control. The injured worker was employed by the state oil company. The company did not have any comment on the fire. The blaze was extinguished by firefighters before it could do serious damage. Venezuela is the world's fifth-largest oil exporter.

STRANGE FACTS

Coca-Cola was originally green.

Hawaiian alphabet has 12 letters.

State with the highest percentage of people who walk to work:
Alaska

The cruise liner, Queen Elizabeth II, moves only six inches for each gallon of diesel that it burns.

LET US SHARE YOUR JOY

All are invited to send in articles, developments, anecdotes, jokes, messages, poems, photographs or anything that might make an interesting reading or worth sharing with others across the country. It could be also success it could be an escape stories of any of your family members or any other event that you feel is worth letting the world know

E-mail to kvfc@mtnl.net.in

Rack Your brains

answers to the puzzle in the last issue

	7	
4	1	3
6	8	5
	2	

The boxes had to be filled with numbers from 1 to 8, without having the successive and previous numbers in the corresponding boxes, horizontally, vertically or diagonally.