

NEW TRENDS IN PHOSPHINE FUMIGANTS

Rapid evolution of cylinderized phosphine fumigants

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The cylinderized phosphine fumigant ECO2FUME™ has been evolving in the US for nearly three years. In this period of time ECO2FUME™ has developed a large market share of agricultural seed storage and bulk ingredient storage fumigation. Areas of strong market advancement are bulk grain and tobacco storage fumigation. In the markets of dried fruit and tree nuts cylinderized phosphine products are being used and gaining ground over more conventional metal phosphide applications.

Many fumigation markets are taking a stronger look at some of the advantages of cylinderized phosphine like:

- No disposal of solid fumigant waste.
- Non-flammable.
- Remote application and re-dosing.
- No risk of losing solid fumigant material in food or feed product.

When weighing the advantages one must consider some disadvantages:

- Bulk weight of cylinders / cylinder pallet – 3600 lbs /1632 Kg.
- High Pressure gas application – 1,000 – 2,000 PSI.
- Monitoring for carbon dioxide – can exceed 5,000 ppm.

APPLICATION

A major asset of cylinderized phosphine is a diverse application capability. Cylinders can be connected together or manifolded for very large gas applications. ECO2FUME™ has been used to fumigate over 15,000,000 ft³ / 424,809 m² at one site. Gas application was completed in less than three hours. In this application equilibrium was achieved within three hours with gas penetrating tightly packed tobacco bales.

REMOTE RELEASE

A fumigation “smart system” is now commercially available to refine cylinderized phosphine fumigations. Having a pressurized phosphine product allows users the ability of remote release. The new Fosfoquim™ phosphine monitor will monitor gas levels and automatically add gas when phosphine gas levels fall below the pre-set low point. The system will continue to add gas until the gas levels reach a pre-set high point. This feature allows for the absolute least amount of fumigant to be used while maintaining efficacy.

THE NEXT GENERATION

New forms of cylinderized phosphine are now available. Fresin™ [Germany] is the next form of cylinderized phosphine using liquid phosphine and nitrogen. This delivery form has many advantages as well as disadvantages over liquid carbon dioxide delivery.

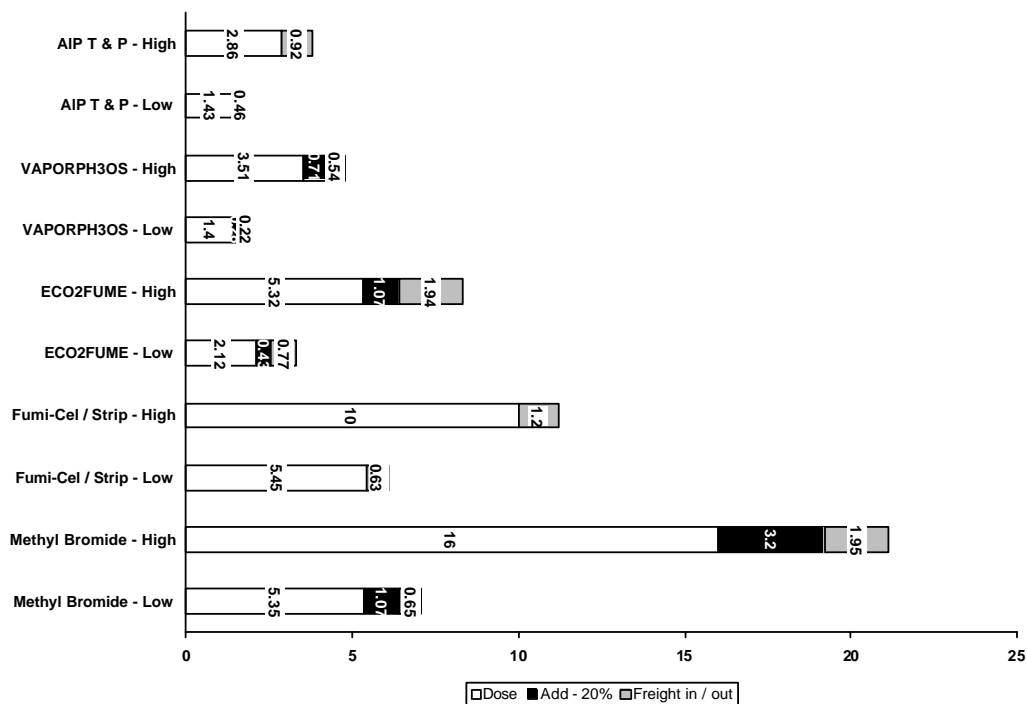
VAPORPH₃OS™ is the most recent form of cylinderized phosphine.

VAPORPH₃OS cylinders contain a much higher amount of phosphine and are flammable. The benefit of this higher phosphine content cylinder is a 30 fold decrease in shipping cost and a lower cost per gram on application.

VAPORPH₃OS™ can be blended with stationary carbon dioxide sources or used through the Diluphos™ application system by Fosfoquim S.A. The Diluphos™ system blends VAPORPH₃OS™ with ambient air making cylinderized phosphine fumigations very affordable for all markets.

COST

This graph shows an applied cost of fumigants. An “add gas” cost was assessed for cylinderized fumigant as those dosages are more specific. Unit cost is based on the cost to treat 1,000 ft³ or 28.32 m³



These costs reflect US market situations and may not reflect the cost dynamics of other countries.