

Fatty Acid Monoesters with Glycerol or Propanediol Fact Sheet (011288)

ACTIVE INGREDIENT NAME OPP CHEMICAL CODE (CAS NO.) (alternate chemical name)

- Glycerol monocaprylate (octanoic acid monoester with glycerol), 011292 (CAS No. 26402-26-6)
- Glycerol monocaprinate (decanoic acid monoester with glycerol), 011291 (CAS No. 26402-22-2)
- Glycerol monolaurate (dodecanoic acid monoester with glycerol), 011290 (CAS No. 27215-38-9)
- Propylene glycol monocaprylate (octanoic acid monoester with 1,2-propanediol), 082074 (CAS No. 68332-79-6)
- Propylene glycol monocaprinate (decanoic acid monoester with 1,2-propanediol), 011289 (CAS No. 68795-69-7)
- Propylene glycol monolaurate (dodecanoic acid monoester with 1,2-propanediol), 011288 (CAS No. 27194-74-7)

Summary

These active ingredients may be used on food and feed crops both before harvest to protect against mites, and after harvest to prevent microbial damage during storage. These chemicals and their breakdown products are approved for food use by the FDA. No harm is expected from use of these substances in pesticide products as long as users follow label instructions.

I. Description of the Active Ingredient

This fact sheet summarizes information about six chemicals with similar structures. Three of the chemicals consist of glycerol monoesters containing specified fatty acids, and the other three chemicals consist of propylene glycol monoesters containing the same specified fatty acids (C8, C10, and C12 straight chain saturated fatty acids). These chemicals control mites on growing crops. They also control microbes that can cause decay on stored food; researchers suggest that these monoesters act by disrupting microbial membranes.

Glycerol fatty acid esters are found in all living organisms, including plants and humans, whereas propylene glycol esters are manufactured. However, the six substances behave the same in various toxicity tests, and are metabolized by living organisms using the same biochemical pathways. The six substances and their breakdown products are approved by the United States FDA for use in food and feed.

II. Use Sites, Target Pests, and Application Methods

- **Use Sites:** Major use sites are expected to be both
 1. in the field,
 2. on food and feed in indoor storage facilities

- **Target pests:**
 1. Mites in the field;
 2. Fungi, yeast, gram positive and gram negative bacteria, and lipid-coated viruses that cause decay in stored crops.

- **Application Methods:**
 1. In the field, the first end-use miticide product is sprayed at a concentration of up to 25 oz/100 gal of water, with a minimum application of 50 gal/acre.
 2. After the crop is harvested and ready for storage, the first fungicidal/biocidal product will be applied as a liquid containing less than 1% by weight of active ingredient.

III. Assessing Risks to Human Health

Whether a substance poses a risk to humans or other organisms depends on two factors: how toxic the substance is, and how much of it an organism is exposed to. Therefore, the EPA considers toxicity data and exposure data in deciding whether to approve a pesticide for use. In studies using laboratory animals, the fatty acid monoesters showed no adverse effects except for mild eye irritation for both the glycerol and the propylene glycol monoesters and dermal sensitization for the propylene glycol monocaprylate. Therefore, special precautions were put on some of the propylene glycol monoester labels to warn users that the product might cause an allergic response: An example of a precautionary statement is: "Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals exposed to this product."

IV. Assessing Risks to the Environment

Adverse effects on birds and higher organisms are expected to be low due to the low mammalian toxicity found in animal testing and the ability of most organisms to metabolize these substances. Testing has demonstrated, however, that the miticide is moderately toxic to fish and algae and very toxic to aquatic invertebrates, although harmless to honey bees. The label on the first registered miticide product must specifically warn users not to apply the product to bodies of water or to contaminate bodies of water during application, cleaning, or disposal.

V. Regulatory Information

The six fatty acid monoesters were initially registered (licensed for sale) as manufacturing use products in September 2003 by 3M. Two end products were registered as of October 2004:

June 2004. 3M registered an end product to prevent microbial growth on stored potatoes. Product (Reg # 10351-61) contains propylene glycol monocaprylate as its major active ingredient.

October 2004. Toagosei Co. Ltd, Japan, registered an end product to control mites on food crops and ornamental plants. The product (Reg # 70231-2) contains propylene glycol monolaurate as the active ingredient.

VI. Registrant Information

Iain Weatherston, Ph.D. (U.S. contact for Toagosei, Co., which is the registrant.)

Senior Regulatory Consultant

Pesticide Division

Technology Sciences Group, Inc.,

4061 North 156th Drive

Goodyear, AZ 85338

e-mail: jazkatz@qwest.net

ph: 623-535-4060 (fax 623-535-4061)

Toagosei Co., Ltd.

1-14-1, Nishi Shimbashi

Minato-Ku, Tokyo 105-8419, Japan

VII. Additional Contact Information

[Ombudsman, Biopesticides and Pollution Prevention Division](#) (7511P)

Office of Pesticide Programs

Environmental Protection Agency

1200 Pennsylvania Avenue, NW

Washington, D.C. 20460