



Propylene Glycol for Animal Feed and Pet Food

Enhancing Product Moisture and Shelf Life



Purity is essential...

Manufacturers looking to keep animal feed or pet food moist and fresh, and therefore, more easily digestible, may want to consider propylene glycol as an additive. Dow PuraGuard™ USP/EP offers 99.8 percent purity, which helps provide the performance and quality consistency demanded in animal feed and pet food applications. It features exceptional stability, high flash and boiling points, low vapor pressure and broad solvency power, as well as the following key benefits to manufacturers and end users:

- **Readily available energy source** - Has a caloric value of 4 calories¹ per gram (food calories) when defined as a carbohydrate, and a measured value of 5.7 calories per gram in chicks² - up to 1.5 times the caloric value of molasses, according to the general definition for a carbohydrate as given in the U.S. Food and Drug Administration (U.S. FDA) 21 CFR § 101.9(c) (1)(i)(B).

- **Excellent humectant** - Attracts and holds water in a formulation.
- **Natural preservative effects** - Protects against a wide range of bacterial and fungal species. Mold growth is inhibited in most feeds when propylene glycol (PG) is added at concentrations of 10-15 percent (w/w), while lower concentrations retard growth (see Table 1).
- **Effective solvent for many oils and organic compounds** - Many water-immiscible materials can be carried into clear water solutions by means of PG's coupling action. It enhances the penetration of the two most common liquid feed ingredients – fats and/or molasses – into the dry ingredients of the feed.
- **Acts as a wetting agent** - When mixed with molasses in the range of 1-2 pounds (0.5-1 kg) PG per ton of molasses, it increases the absorption of molasses by the feed

ingredients and improves the handling characteristics of the final feed mix.

- **Acts as a lubricant for the processing equipment** - When used in concentrations as low as 1-2 percent, it helps prolong pellet mill die life and reduces cleaning time intervals and power consumption.
- **Freezing point depressant** - It simplifies bulk handling by maintaining the feed at lower temperatures.
- **Helps control ingredient segregation and dustiness** - It avoids the rancidity issue associated with commonly used vegetable oils in mineral and vitamin-drug mixes.

¹ 21 CFR Ch. I (4-1-00 Edition) § 101.9 (c)(1)(i) - http://www.ecfr.gov/cgi-bin/text-idx?SID=5c82c51b85b81aebdc0e1fe9c0b07001&mc=true&tpl=/ecfrbrowse/Title21/21tab_02.tpl

² Yoshida; Hoshi; Morimoto, Nutritive Value of Glycols for Poultry Feed, Nippon Kakin Gakkaishi, 6(2), pgs. 73-81, 1969

Reliable Supply, Excellent Service and Support

With more than 60 years of experience as a worldwide leading PG manufacturer, Dow is a supplier you can trust for:

- **Reliable global supply** - Manufacturing sites are located in the U.S., Brazil, Germany, Australia and Thailand.
- **Inventory management solutions** - Strategically located global terminals ensure quick response for changing customer needs.
- **TS&D and EH&S support** - Customers can contact Dow for assistance in proper handling, storage and use in keeping with Dow's commitment to Responsible Care®.
- **Dedicated customer service representatives** - Offering support in effective usage specific to each customer's region.
- **Knowledgeable sales professionals** - Committed to serving customers and championing their needs throughout the sales process.

Regulatory Status

- The U.S. FDA lists PG as an emulsifying agent that is "generally recognized as safe" (GRAS) according to 21 CFR § 582.4666 and as a general food additive according to 21 CFR § 582.1666³ (except for use in cat food).
- No tolerance or use limitations are listed other than those dictated by Good Manufacturing Practices.
- PG is **not** GRAS for cat foods and should not be used in that application, according to 21 CFR § 500.50 and § 589.1001.⁴

Effect of Propylene Glycol on Mold Growth in Feeds⁵

Ratios to Make Additive ^(a)		
Molasses	Propylene Glycol	% Mold Inhibition After 18 Days ^(b)
1	0	None
5	1	25
2.5	1	25
1.7	1	50
1.25	1	75
1	1	Complete

(a) Molasses - PG mixture added to feed at 4% by weight level

(b) Feed incubated at 95° F (35° C)

For an acceptable animal feed shelf life, humectancy and mold inhibition are important, for example, in semi-moist dog foods with moisture contents of 15-40 percent.



³ 21 CFR § 582.4666

⁴ 21 CFR § 500.50

⁵ Source: Dow internal material

Innovating For You

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