

# HOMESTEAD MARKET

A DIVISION OF HEFTY CREEK INTERNATIONAL, LLC

## Erythritol

*Erythritol is a good-tasting bulk sweetener which is suitable for a variety of reduced-calorie and sugar-free foods. It has been part of the human diet for thousands of years due to its presence in fruits and other foods. Erythritol has a high digestive tolerance, is safe for people with diabetes, and does not promote tooth decay.*

Erythritol, a polyol (sugar alcohol), is currently used as a bulk sweetener in reduced calorie foods. It has been part of the human diet for thousands of years as it is present in fruits such as pears, melons and grapes, as well as foods such as mushrooms and fermentation-derived foods such as wine, soy sauce and cheese. Since 1990, erythritol has been commercially produced and added to foods and beverages to provide sweetness, as well as enhance their taste and texture.

Erythritol is a white crystalline powder that is odorless, with a clean sweet taste that is similar to sucrose. It is approximately 70% as sweet as sucrose and flows easily due to its non-hygroscopic character. Like other polyols, erythritol does not promote tooth decay and is safe for people with diabetes. However, erythritol's caloric value of 0.2 calories per gram and high digestive tolerance distinguishes it from some other polyols. It has approximately 7 to 13% the calories of other polyols and 5% the calories of sucrose. Because erythritol is rapidly absorbed in the small intestine and rapidly eliminated by the body within 24 hours, laxative side effects sometimes associated with excessive polyol consumption are unlikely when consuming erythritol containing foods.

A GRAS (Generally Recognized As Safe) affirmation petition submitted by a consortium of erythritol manufacturers was accepted for filing by the U.S. Food and Drug Administration on January 15, 1997. This allows manufacturers to produce and sell erythritol containing foods in the United States. Erythritol is regulated as a direct food ingredient in Japan and since 1990 it has been used in many Japanese food categories.

### Benefits of Erythritol

- **Low in calories:** Erythritol has a very low caloric content; its value is 0.2 calories per gram for food labeling purposes in the United States and 0 (zero) calories per gram for food labeling purposes in Japan. This very low calorie value is due to erythritol's unique absorption and elimination process which does not require the metabolism of erythritol. Thus, erythritol is uniquely qualified as a very low calorie bulk sweetener for formulating "light" and "reduced calorie" products which require a 25% or more calorie reduction from the standard formulation.
- **High digestive tolerance:** Erythritol is rapidly absorbed in the small intestine due to its small molecular size and structure. Several clinical studies conducted in Europe and Japan have shown that more than 90% of ingested erythritol is absorbed and excreted unchanged in urine within a 24-hour period. This digestive pathway allows less than 5% of ingested erythritol to reach the large intestine and be fermented into volatile fatty acids or metabolized into carbon dioxide. As a result, foods containing substantial amounts of erythritol are very unlikely to cause gaseous and laxation side effects. A recent clinical study concluded daily consumption of 1 gram per kilogram body weight is well tolerated by adults as compared to sucrose containing foods.
- **Safe for people with diabetes:** Single dose and 14-day clinical studies demonstrate erythritol does not affect blood serum glucose or insulin levels. Clinical studies conducted in people with diabetes conclude that erythritol may be safely used to replace sucrose in foods formulated

specifically for people with diabetes. Of course, those with diabetes should consider the impact on their diet of other ingredients used in foods sweetened with erythritol.

- **Does not cause tooth decay:** Erythritol like other polyols is resistant to metabolism by oral bacteria which break down sugars and starches to produce acids which may lead to tooth enamel loss and cavities formation. They are, therefore, non-cariogenic. The usefulness of polyols, including erythritol, as alternatives to sugars and as part of a comprehensive program including proper dental hygiene has been recognized by the American Dental Association. The FDA has approved the use of a "does not promote tooth decay" health claim in labeling for sugar-free foods that contain erythritol or other polyols.

### **Erythritol**

- Bulk sweetener which can be blended with low-calorie sweeteners (e.g., acesulfame potassium and aspartame) and/or other polyols (e.g., sorbitol and xylitol)
- Clean sweet taste with no aftertaste
- Reduced-calorie sweetener with only 0.2 calories per gram
- Potential use in a variety of low-calorie, low-fat and sugar-free foods--from candies to yogurts
- Beneficial for people with diabetes because it does not raise blood glucose or insulin levels
- Does not contribute to the formation of dental caries

### **Safety**

The safety of erythritol as a food ingredient under conditions of its intended use is substantiated by a number of human and animal safety studies, including short- and long-term feeding, multi-generation reproduction and teratology studies.

The U.S. GRAS affirmation petition states erythritol is intended for use as flavor enhancer, formulation aid, humectant, nutritive sweetener, stabilizer and thickener, sequestrant and texturizer. The petition lists maximum erythritol use levels of 100% in sugar substitutes, 50% in hard candies, 40% in soft candies, 1.5% in reduced and low calorie beverages, 60% in fat based creams for cookies, cakes and pastries, 7% in dietetic cookies and wafers, and 60% in chewing gum.

Erythritol has been used in Japan since 1990 in candies, chocolates, soft drinks, chewing gums, yogurts, fillings, cookie coatings, jellies, jams and sugar substitutes. Petitions have been submitted to additional governmental agencies throughout the world to expand the use of erythritol.

### **Multiple Ingredient Approach to Calorie Control**

Erythritol blends well with other polyols and flavors and can mask off-flavors such as bitterness sometimes associated with other low-calorie sweeteners. Erythritol is synergistic with low-calorie sweeteners such as aspartame and acesulfame potassium, resulting in a sweetener combination which is sweeter than the sum of the individual components and with an improved taste profile with superior taste, economic and stability advantages.

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