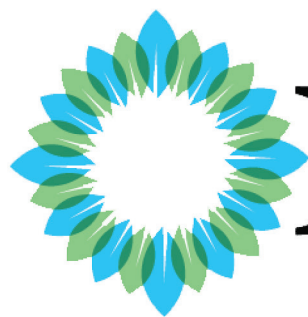




Fresh ExtendTM

TLS

Meat/Fish



Beverages



Dairy & Bakery



Extending Shelf-Life
&
Promoting
*freshness*TM

Greater than 99% purity

**GRAS, NonGMO, Allergen-free, &
manufactured in a cGMP environment**

**Scientifically proven more effective and
stable than other preservatives**

**Known to inhibit microbial growth of a
diverse range of fungi & bacteria**

**Offers nutritional value as a
derivative of vitamin B1**

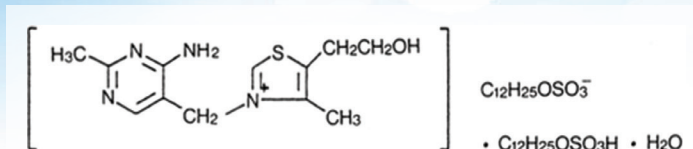
According to the United States Center for Disease Control (CDC), roughly 48 million people become sick due to foodborne illness every year, equating to nearly 1 in every 6 people! With ever-growing public concerns about microbial safety in food products, it is more important than ever that precautionary measures be taken to prevent harm to consumers. Although preservatives are an effective means of combating foodborne pathogens, their effectiveness and potentially harmful side effects from consuming them is often called into question. Fortunately, there are extensively studied and proven preservatives available, like thiamine dilaurylsulfate.

History and Origins

Thiamine dilaurylsulfate (TLS) was incorporated into use by the food industry after initially being established as safe and effective in Japan from 1956 to 1958. Today, TLS is at GRAS status and confirmed as a nontoxic preservative with no adverse effects. Notably, the compound was originally intended for use in nutrient fortification due to its thiamine component derived from vitamin B1. Vitamin B1 is present in many foods, including oats, sunflower seeds, flax, rye, kale, asparagus, oranges, eggs, and bovine, poultry, porcine liver and many other natural sources. Thiamine is produced via fermentation for use in supplements and preservatives. The other portion of the compound, sodium laurylsulfate, is also a widely used additive with natural occurrences in palm and coconut oil.

Preservatives, both synthetic and natural, protect the degradation of food products. Specific preservatives act as antioxidants that slow rancidity by binding free radicals. Some block the natural ripening and enzymatic processes of organic material, and others have antimicrobial properties. TLS functions as a bacteriostatic preservative by inhibiting the microbial growth that can lead to food spoilage and foodborne illness.

TLS molecule



fish

ba

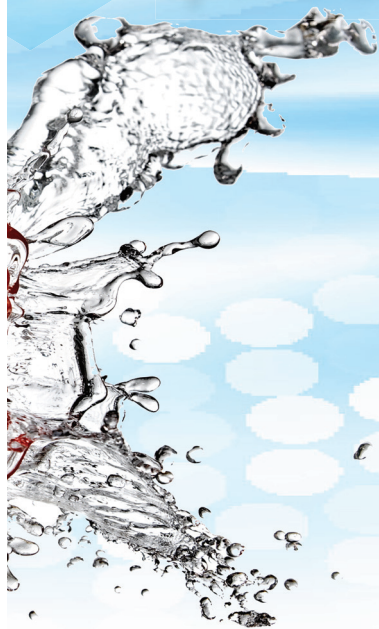
produce





baked goods

sports drinks



Attributes, Applications, and Advantages of TLS

Food preservation allows us to utilize life-sustaining resources for extended durations. As noted, TLS was originally a material of interest for its nutritional value. For this reason, it is a more desirable preservative than many common alternatives. Other preservatives often come with associated adverse effects, including even toxicity and carcinogenic properties.

TLS has a high thermal stability, distinguishing it from most vitamins and vitamin derivatives. TLS additionally has the ability to function over a range of pH values, which opens TLS for use in preservation of a diverse group of food and beverages, including:

- Meats and fish
- Dairy products
- Grain and rice products
- Produce
- Carbonated beverages and sports drinks
- Condiments, dried foods, and pickled foods

TLS is also used as a sterilizing wash for produce which reduces the concern of surface microbe proliferation associated with raw vegetables and fruits.

Quality Matters

At Vesta Ingredients Inc., we are dedicated to providing innovative products with exceptional performance. Extensive studies were performed to provide optimal working conditions and concentrations for **FreshExtendTLS™** across a variety of applications. We will work with you to achieve the best preservation of your product and provide the highest level of safety for your consumers without compromising taste or quality!

Introducing FreshExtendTLS™

Vesta's **FreshExtendTLS™** (thiamine dilaurylsulfate, TLS) is available at nearly 100% purity. TLS does not display toxicity or adverse side effects, is at GRAS status, is **nonGMO**, and is manufactured in a **cGMP** environment. TLS is highly effective for use in shelf-life extension and preservation of freshness, with the additional feature of vitamin B1 fortification. TLS displays greater stability under a wider range of pH's and thermal conditions over other preservatives and vitamin derivatives.

Uses

- Preservative
- Nutritional fortification as vitamin B1
- Fine Chemical

Product Information

Appearance: White Crystalline Powder

Odor/Taste: Characteristic

Solubility: Complete in an aqueous matrix
≤ 200 ppm to thiamine and SLS

Learn more at

www.freshextendtls.com

See site for literary and technical references.



Packaging and Storage

- ☒ Store in a cool, dry place
- ☒ Do not freeze
- ☒ Keep away from direct light
- ☒ Package Unit: 1, 5, 10 Kg

Specifications

Vesta Ingredients offers FreshExtendtls™ in stock concentrations

Name	FreshExtendTLS™ (thiamine dilaurylsulfate)
Alt Names	Derivative of vitamin B1 lauryl sulfate
CAS Registry Number	56595-19-8
Molecular Formula	$C_{36}H_{68}N_4O_9S_3 \cdot H_2O$
Physical Form	Powder
Purity	98%-100%
Carrier	Not Applicable

About the Company

Vesta was founded in 1996 with a single uncompromising focus: deliver the absolute highest-quality nutritional ingredients for every customer and at the most competitive prices. While Vesta has grown into a premier cGMP and FDA-registered full-service provider of nutraceutical supplements, we continue to apply our founding values in every facet of our business.

Vesta Ingredients employs the latest technology and techniques to produce the finest ingredients for our customers. By maintaining our industry certifications, you can rest assured that everything we produce will be exactly as you expect.

Trust Vesta to deliver.



Vesta®

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These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.