FSS Organic Emulsifier Blend 60

Code Number: FSSA60014
INCI Name: Oryza Sativa (Rice) Bran Extract & Cyamopsis Tetragonoloba (Guar) Gum
Appearance: Light Beige to Tan Free Flowing Powder
Suggested Applications: Primary Emulsification, Improves Sensory Attributes, Pigment Dispersion

Suggested Usage Rate: 1.0 - 4.0%
Solubility: Water Dispersible

Benefits of Organic Emulsifier Blend 60
• Stabilizes Emulsions
• Enhances Aesthetics of Formulations
• Great for Oil-in-Water Systems
• USDA-NOP Certified
BACKGROUND
Today’s consumer is concerned about synthetic ingredients in cosmetic products they use every day. Due to growing consumer awareness of sustainability and vegan lifestyle, all natural and plant-based products are on demand, while most functional ingredients in cosmetic formulations are synthetically derived. FSS Organic Emulsifier Blend 60 combines the natural emulsifying properties of rice bran with guar gum to stabilize emulsions for elegant formulations.

Traditionally, organic emulsifiers lack the ability to deliver elegant formulations. Due to the fact that emulsification is a natural process, nature has the solution for cosmetic formulators. Nature produces its own emulsifiers, which allow both oil and water-soluble biomolecules to coexist as complex systems in plants. Specifically, the combination of organic rice bran and guar gum form a natural emulsifier ideal for oil-in-water systems. FSS Organic Emulsifier Blend 60 is developed through a proprietary manufacturing process to bring elegance in organic formulations.

SCIENCE
Rice bran is a byproduct of rice milling, and is rich in protein, carbohydrates, and fatty acid content. Rice bran naturally contains lipase, an enzyme that hydrolyzes lipids into free fatty acids (FFA) leading to rancidity in final products. If rice bran is stabilized, immediately after milling, rancidity is prevented. Some of the common methods used for lipase deactivation in rice bran are high temperature treatments and chemical processing. These methods are known to improve the shelf life of rice bran products but also they can significantly lower the nutrient content and purity of ingredients.

A proprietary method was developed of three dimensional particle assembly designed with stabilized, pure rice bran proteins and lipids combined in guar gum, which help create an exceptional certified organic emulsifier ideal for a variety of oil-in-water systems.

This method combines only physical processes including wet extrusion and cryogenic milling to avoid the use of harsh chemicals or denaturing high temperatures preventing the loss of natural emulsifying properties of rice bran.

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Organic rice bran is stabilized using a wet extrusion process, carried out in high moisture, a low-temperature system in the presence of amylase, an enzyme capable of digesting starches. The high moisture environment helps gelatinize carbohydrates of rice bran allowing the amylase enzymes to selectively digest the extra starch particles leaving out a high content of lipids and proteins. Then, protein and lipid content is determined prior to the addition of organic guar gum powder in the micro-milling process. Derived from Cyamopsis tetragonolobles, guar gum mainly functions in the water phase of an emulsion by naturally binding with water molecules to improve viscosity and texture of formulations. The cryogenic miller allows us to design the ideal microparticles composed of a balanced amount of dehydrated lipophilic and hydrophilic components necessary for stable emulsification. As a result, the three dimensional design of rice bran and guar gum microparticles encourages a stable and balanced affinity to both oil and water molecules in systems with a 20% lipid load. Dehydrated components of microparticles hydrate immediately once mixed in oil and water phases of emulsions creating homogenous, smooth creams and lotions. FSS Organic Emulsifier Blend 60 is a USDA certified organic emulsifier composed of selectively assembled microparticles that exhibits a natural affinity to both oil and water molecules allowing formulators to create stable emulsions.

**BENEFITS**
The physical texture of a formula offers the immediate perception of a cosmetic product. A formulation that glides smoothly on the skin elicits positive emotions for the product. However, organic cosmetic regulations challenge formulators when creating organic finished products. FSS Organic Emulsifier Blend 60 is able to establish purely luxurious, stable emulsions that deliver multifunctional benefits all in one. We combine the efficacy from nature with our green and clean technology. Forming an easy to use, all-in-one emulsifier that breaks the challenges in the organic cosmetic marketplace. FSS Organic Emulsifier Blend 60 is ideal for oil-in-water emulsions to help form a variety of textures involving gels, creams, and lotions. This product not only elevates the sensory properties of formulations but also adds pigment dispersion and moisturization benefits to organic cosmetic products.

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Efficacy
Emulsion Study

An emulsification study was performed to determine the ability of FSS Organic Emulsifier Blend 60 to form stable emulsions compared to a generic non-organic emulsifier and organic rice emulsifier blend with guar gum. Generally, a good emulsion lacks clumps or crystals and contains small and evenly dispersed micelles. Clumps, crystals, and agglomerates are signs of unstable emulsions that are prone to phase separation. As shown in Figure 1, the emulsion created with FSS Organic Emulsifier Blend 60 contains various small size micelles evenly dispersed throughout the emulsion. Figure 2, represents an emulsion made with a standard organic rice emulsifier and guar gum, which displays a good amount of small size micelles, however, crystals and agglomerates are also present.

In-Vivo Sensory Analysis

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A sensory analysis study was performed with FSS Organic Emulsifier Blend 60 in an organic lotion to determine its physical properties in skin care applications. 12 panelists were asked to apply a small amount of lotion containing 3% FSS Organic Emulsifier Blend 60 onto the volar arm area. This analysis ranked the glide, cooling, and dragging properties on a scale of 0-10. After 60 seconds, the panelists assessed softness, anti-tackiness, and absorption. As shown by Figure 4, the average scores for immediate skin properties are 9.33, 6.5, and 0.42 for glide, cooling, and drag. 3% FSS Organic Emulsifier Blend 60 in the organic lotion delivered a gliding and cooling sensation with minimal to no drag when tested on the volar arms. After 60 seconds, average scores for softness, anti-tackiness, and absorption are 7.58, 8.25, and 9.83. These results show that lotion containing FSS Organic Emulsifier Blend 60 is able to absorb quickly while enhancing the softness and smoothness of the skin.

**Compatibilities/Incompatibilities Data**

<table>
<thead>
<tr>
<th>Compatibilities of Organic Emulsifier Blend 60</th>
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</thead>
<tbody>
<tr>
<td>Ethanol (up to 15%)</td>
</tr>
<tr>
<td>Glycols</td>
</tr>
<tr>
<td>Anionic/Amphoteric Surfactants</td>
</tr>
<tr>
<td>Electrolytes (monovalent and divalent)</td>
</tr>
<tr>
<td>Salicylates</td>
</tr>
<tr>
<td>Cationic Surfactants</td>
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</tbody>
</table>

**Table 1.** Compatibilities

As shown in Table 1, FSS Organic Emulsifier Blend 60 is compatible with ethanol, glycols, surfactants, electrolytes, salicylates, and even cationic surfactants. No incompatibilities concerning organic formulations have been determined.

**References**


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