

Stearates

PRODUCT

Lithium Stearates for Grease

- Description**

Lithium Stearate (LS) is the lithium salt of distilled, hydrogenated fatty acids derived from animal or vegetable sources. Lithium 12-hydroxystearate is the salt of distilled, hydrogenated ricinoleic acid derived from castor oil, LS #90A, #90B, #304, and #306 differ in their excess acidity or alkalinity. LS #90A and #90B also have fatty acid distribution limitations.

- Applications**

Lithium Stearates (LS) 390A and #90B are designed to meet the requirements of silicone-based greases. LS #304, #306, and Lithium 12-hydroxystearate are designed to meet the requirements of hydrocarbon and synthetic lubricant-based greases. For food processing.

- Specifications/Typical Properties of Lithium Stearates**

| Product ID | 90A | 90B | 304 | 306 | 12-Hydroxy |
|------------------------------------|-----------|-----------|-----------|---------|------------|
| Moisture, % | ≤0.5 | ≤0.4 | ≤2.0 | ≤2.0 | ≤1.0 |
| Lithium, % | - | 2.7-3.0 | 2.4-2.6 | 2.4-2.6 | 2.2-2.3 |
| Free Fatty Acid, % | - | ≤Trace | -0- | ≤0.5 | ≤0.3 |
| Free Alkalinity, %* | ≤0.5 | 2.3-3.0 | 0.02-0.15 | ≤0.02 | ≤0.02 |
| Color, Visible | - | - | Ivory | Ivory | Ivory |
| Fineness, % | | | | | |
| Thru 200 mesh | ≥99.0 | ≥99.1 | ≥99.0 | ≥99.0 | - |
| Thru 100 mesh | ≥99.5 | ≥99.6 | - | - | ≥94.0 |
| Thru 40 mesh | - | 100 | - | - | 100 |
| Softening Point °C (°F) | - | - | - | - | 213(414) |
| Specific Gravity (T=25°C) | - | - | - | - | 1.01 |
| Sap. Value** | 198-203 | 198-203 | - | - | - |
| Iodine Value** | ≤1.0 | ≤1.0 | - | - | - |
| Titre, °C** | 62-64 | 62-64 | - | - | - |
| Fatty Acid Distribution: | | | | | |
| C18 | 77-81 | 77-81 | - | - | - |
| C16 | 12.3-17.7 | 12.3-17.7 | - | - | - |
| C14 | 2.0-4.2 | 2.0-4.2 | - | - | - |
| C12 | 0-0.3 | 0-0.3 | - | - | - |
| C(14 + 16) | ≥15.5 | ≥15.5 | - | - | - |
| C12-C18 | ≥95.0 | ≥95.0 | - | - | - |
| * As lithium hydroxide-monohydrate | | | | | |
| ** As stearic acid | | | | | |

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- **Solubility**

Lithium Stearates are:

- Insoluble in benzene, toluene, and xylenes
- Sparingly soluble in water, methanol, ethanol, esters, ketones, and vegetable oils
- Soluble in hot mineral oils and waxes, with gel formation upon cooling.

- **FDA Status**

The use of lithium stearate in polymers is sanctioned by the U.S. FDA under Title 21 of the *Code of Federal Regulations* sections:

| | |
|---|----------|
| In resinous and polymeric coatings | 175.300 |
| In xylene-formaldehyde resin condensed with 4,4'-diisopropylidenediphenol-epichlorohydrin resin | 175.380 |
| In zinc-silicone dioxide matrix coatings | 175.390 |
| As a component of paper and paperboard in contact with aqueous and fatty foods | 176.170 |
| As a component of paper and paperboard in contact with dry foods | 176.180 |
| In closures with sealing gaskets for food containers | 177.1210 |

- **Storage and Handling**

Lithium stearate products are not regulated by the Department of Transportation. They are noncorrosive and nonflammable; however, they are available in powder form and, like all powders, must be handled in such a way as to prevent eye contact and dust generation to minimize the potential for dust explosions.

Wear normal safety equipment, such as chemical safety goggles and rubber gloves, when handling lithium stearates and 12-hydroxy stearate products. In case of accidental eye contact, immediately flush with large amounts of water for at least 15 minutes and call a physician. If the material is swallowed, call a physician. Wash hands after handling.

Although lithium stearate and 12-hydroxystearate products are not classified as flammable, they will burn if ignited. Once ignited-as with any fat-based material-the fire should be extinguished with foam, dry chemicals, carbon dioxide, or fog. Do not use a stream of water, as fatty materials will float, causing the fire to spread.

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Storage and Handling (continued)

If spillage or leakage should occur, allow liquids to solidify, and then remove with a shovel. Liquids that will not solidify can be absorbed with a suitable absorbent. Waste disposal should be handled in accordance with federal, state, and local regulations.

Although chemically stable, lithium stearate products should be kept away from strong oxidizing agents. They should not remain at temperatures greater than 175-185°C (347-365°F) for extended periods of time.

- **Safety Recommendations**

Please read the appropriate Material Safety Data Sheet (MSDS) or contact the Polymer Additives Customer Service Center for needed technical information.

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