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MICRONISED LITHIUM STEARATE – FOR HIGH-TEMPERATURE GREASES

CAS Number	4485-12-5
IUPAC Chemical Name	Lithium octadecanoate
Common Industry / Trade Synonyms	Lithium stearate Stearic acid lithium salt

Physical and Chemical Properties

Property	**Description**
Appearance	White to off-white fine powder
Density	~1.00–1.05 g/cm^3
Melting Range	220–225 °C (decomposition)
Solubility	Insoluble in water; dispersible in oils
Particle Size Distribution (Micronised Grade)	D50: 5–8 µm D90: ≤ 15 µm D99: ≤ 25 µm

Known Uses (Grease-Specific)

- Lithium soap greases
- High-temperature industrial greases
- Automotive bearing greases
- Heavy-duty lubrication systems
- Specialty lubricant formulations

Known Applications

- Thickener
- Lubricant
- Structure former
- Rheology modifier

1) Base Oil Systems and Role of Lithium Stearate

Typical Base Oils:

- Mineral oils
- Synthetic hydrocarbons
- Ester-based lubricants

Role in Grease Systems:

- Primary **soap thickener** providing grease structure
- Forms a fibrous network that retains base oil
- Enables **high dropping point** and thermal stability
- Contributes to mechanical stability under shear

Lithium stearate is a **foundational grease thickener**, particularly suited for elevated-temperature and mechanically demanding lubrication environments.

2) Typical Benefits of Micronised Lithium Stearate

Benefits attributable specifically to **micronised particle size**:

- Faster soap dispersion during grease cooking
- More uniform thickener network formation
- Reduced risk of localized gel formation
- Improved batch-to-batch consistency
- Better control at low thickener concentrations

3) Processing Conditions

- Suitable for **kettle and continuous grease production**
- Compatible with **high-shear mixing and soap formation stages**
- Supports consistent structure during cooling and finishing

Micronised grades assist in **shorter processing cycles** and improved reproducibility.

4) Working Temperatures

- Typical grease operating range: **–20 °C to 180 °C**
- Dropping points commonly **> 190 °C**, formulation dependent
- Maintains structural integrity under sustained heat exposure

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5) Typical Dosage

Grease Type	Typical Dosage Range
General-purpose lithium grease	6 – 10 wt %
High-temperature grease	8 – 14 wt %

Exact dosage depends on base oil, target consistency (NLGI), and performance requirements.

6) Competing Products for the Same Application

Product	Chemical Class	Relative Position
Lithium 12-hydroxystearate	Modified lithium soap	Higher dropping point
Calcium sulfonate	Overbased detergent	Superior load-bearing
Aluminum complex soaps	Metal complex soap	High-temperature specialty
Polyurea thickeners	Organic thickener	Ash-free systems

Regulatory Note

Regulatory status depends on grade, purity, and intended use. Compliance requirements are addressed in separate regulatory documentation.

Disclaimer

Information provided for technical reference only. No warranty of fitness for a particular purpose is implied. Users must validate performance and compliance.

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