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MICRONISED LITHIUM STEARATE – IN ENGINEERING PLASTICS

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 hydrocarbons
Particle Size Distribution (Micronised Grade)	D50: 5–8 µmD90: ≤ 15 µmD99: ≤ 25 µm

Known Uses (Plastics-Specific)

- Engineering thermoplastics
- High-temperature polymer compounds
- Filled polymer systems
- Masterbatch formulations
- Specialty molded articles

Known Applications

- Lubricant
- Processing aid
- Flow modifier
- Release agent

1) Resin Systems and Role of Lithium Stearate

Typical Resin Systems:

- Polyamides (PA)
- Polyesters (PBT, PET)
- Polycarbonates
- High-temperature specialty polymers

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Role in Plastics:

- Acts as an internal lubricant
- Reduces melt friction and torque
- Supports mold release in complex geometries
- Maintains performance at elevated processing temperatures

Lithium stearate is selected where thermal resistance exceeds calcium or zinc stearates.

2) Typical Benefits of Micronised Lithium Stearate

Micronisation-specific advantages:

- Rapid dispersion in high-melting polymers
- Reduced surface defects in molded parts
- Improved flow consistency at low addition levels
- Lower risk of additive blooming

3) Processing Conditions

- Suitable for extrusion, injection molding, and compounding
- Compatible with high-shear twin-screw systems
- Performs well in filled and reinforced formulations

4) Working Temperatures

- Typical polymer processing range: **220–300 °C**
- Maintains lubrication function where lower-melting metal soaps degrade
- Supports stable processing in engineering plastics

5) Typical Dosage

Polymer System	**Typical Dosage Range**
Engineering plastics	0.05 – 0.3 wt %
Filled compounds	0.1 – 0.5 wt %

Dosage depends on resin type, filler loading, and surface requirements.

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6) Competing Products for the Same Application

Product	Chemical Class	Relative Position
Calcium stearate	Metal soap	Lower temperature capability
Zinc stearate	Metal soap	Stronger lubrication, lower heat resistance
PTFE powders	Fluoropolymer	High cost, specialty use
PE waxes	Polymer wax	External lubrication focus

Regulatory Note

Regulatory status depends on grade, purity, and intended use. Compliance listings are addressed separately.

Disclaimer

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