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MICRONISED LLDPE RESIN (MFR ≈ 6) – D99 < 75 µm

Introduction

Micronised LLDPE resin powders are increasingly used in applications where powder flow, controlled sintering, and uniform melt behaviour are critical to part quality and process stability. For rotational moulding grades, D99 < 75 microns represents the most commercially viable particle size range, delivering clear improvements in melting behaviour and surface finish while maintaining economic scalability. Finer grades such as D99 < 50 µm and D99 < 30 µm may be supplied for niche or performance-driven applications, but the 75-micron class remains the primary grade for sustainable production volumes in rotational moulding.

1) Benefits of Micronised LLDPE Powder – D99 < 75 µm

Micronizing rotational moulding grade LLDPE to D99 < 75 µm enhances the performance of powder-based moulding processes without altering the base resin chemistry.

Faster and more uniform sintering	Reduced particle size increases surface area, enabling quicker heat absorption and more uniform sintering during rotational moulding cycles.
Improved fusion and layer uniformity	Finer particles improve inter-particle contact, reducing voids, pinholes, and incomplete fusion within moulded parts.
Improved surface appearance	Lower risk of orange peel, roughness, and unmelted particle defects, particularly in large hollow parts.
Stable powder flow and charging	Compared to coarse ground powders, D99 < 75 µm powders provide more consistent mould charging and reduced segregation. This particle size range delivers clearly visible improvements to moulders while remaining practical for high-volume production.

2) Performance parameters that improve with micronised LLDPE powder

Transitioning from conventional coarse roto moulding powders to micronised LLDPE (D99 < 75 µm) results in measurable improvements in:

Sintering efficiency	More complete fusion at equivalent or slightly reduced oven temperatures.
Surface finish quality	Smoother internal and external surfaces with reduced surface defects.
Part-to-part consistency	More predictable wall thickness distribution and reduced variability between moulding cycles.

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Process stability	Improved repeatability across long production runs, especially in thick-walled or large moulded articles. These benefits are achieved without compromising the inherent toughness and impact resistance associated with rotational moulding grade LLDPE.

3) Potential end uses of Micronised LLDPE (D99 < 75 µm | MFR ≈ 6)

This grade is specifically aligned with rotational moulding processes where controlled powder melting and sintering are essential.

Key end uses include:

Rotational moulded containers and tanks

Water storage tanks	Chemical storage tanks
Septic tanks and industrial containers	

Infrastructure and outdoor products

Pallets and material handling bins	Outdoor furniture
Agricultural and industrial housings	

Automotive and industrial rotomolded parts

Ducts, enclosures, covers	Impact-resistant hollow components

4) Industries and applications that benefit most

Industries that derive the highest value from D99 < 75 µm micronised LLDPE include:

Rotational moulding manufacturers

- Large-volume hollow articles
- Thick-walled or structurally demanding parts

Water, chemical, and waste management sectors

- Storage and containment products requiring uniform wall thickness and mechanical reliability

Infrastructure and industrial product manufacturers

- Pallets, bins, and outdoor-use components exposed to mechanical stress and environmental conditions

These applications benefit directly from improved fusion quality, surface finish, and cycle-to-cycle consistency.

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5) Availability of finer grades

D99 < 50 µm

A premium grade offering improved surface finish and faster sintering for demanding mould designs. Suitable for customers seeking incremental quality improvements and willing to accept higher material cost.

D99 < 30 µm

A specialty grade intended for niche applications where ultra-fine powder behaviour is critical. Typically supplied on an enquiry basis due to increased micronisation complexity and reduced production yield.

These grades complement—but do not replace—the commercial relevance of the D99 < 75 µm grade.

6) Cost justification: micronisation vs value delivered

Micronisation of rotational moulding grade LLDPE involves cryogenic processing, precise classification, and yield control, which increases cost compared to standard ground powders. However, these costs are offset by tangible benefits:

- Reduced surface defects and scrap rates
- Improved moulding consistency
- Enhanced part quality without resin reformulation
- Better utilisation of moulding cycles and energy input

For most rotational moulders, the added cost of micronisation is justified by higher-quality parts, reduced rejects, and improved process reliability.

TECHNICAL SPECIFICATION

Micronised LLDPE Resin Powder

Rotational Moulding Grade | MFR ≈ 6 g/10 min | CAS 9002-88-4

1) Particle Size Distribution (PSD)

Parameter	Standard Grade	Premium Grade	Specialty Grade
	D99 < 75 µm	D99 < 50 µm	D99 < 30 µm
D10	10 – 18 µm	6 – 12 µm	4 – 8 µm
D50	30 – 45 µm	20 – 32 µm	12 – 20 µm
D90	≤ 65 µm	≤ 45 µm	≤ 28 µm
D99	≤ 75 µm	≤ 50 µm	≤ 30 µm
Particle shape	Irregular / fractured	Irregular / fractured	Irregular / fractured
Agglomeration tendency	Low	Moderate	High

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Recommended Processing & Applications (D99 < 75 µm)

Application	Suitability
Rotational moulding	★★★★★
Thick-walled hollow parts	★★★★★
Surface-critical rotomolded parts	★★★★☆
Injection moulding	Not recommended
Film extrusion	Not recommended

Legal Disclaimer

Polymer Add Thailand does not manufacture polymer resins and does not act as a supplier, distributor, or representative of any resin producer. Polymer Add Thailand makes no claims regarding the inherent properties, performance, suitability, or fitness for purpose of any base polymer resin referenced in this document. Any mention of resin brand names, grade designations, or manufacturer identifiers is provided strictly for technical reference only and does not imply endorsement, affiliation, or commercial relationship with the respective resin manufacturer.

Technical Note

Polymer Add Thailand undertakes cryogenic micronisation of customer-specified polymer resins based on individual application requirements defined by the customer. References to specific LLDPE resin grades in this document reflect micronisation work performed for particular customer projects and are intended solely to demonstrate achievable particle size distributions and micronisation capability. Polymer Add Thailand's scope of expertise is limited to particle size reduction and classification; end-use performance, formulation design, and application validation remain the sole responsibility of the customer, and the specific applications for which such micronised resins are used may be proprietary and unknown to Polymer Add Thailand.

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