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MICRONISED LDPE RESIN (MFI ≈ 2) – D99 < 75 µm

Introduction

Micronised LDPE resin powders are increasingly used in applications where powder handling, controlled melting, and uniform dispersion are more critical than high flow rates. Among the available particle size options, D99 < 75 microns represents the most commercially balanced grade, offering clear processing and performance benefits while remaining economically scalable. Finer grades such as D99 < 50 µm and D99 < 30 µm exist for niche requirements, but the 75-micron class remains the primary driver for sustainable volumes.

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

- **Faster and more uniform melting**
  Reduced particle size increases surface area, allowing the LDPE powder to absorb heat more efficiently and melt uniformly without localized overheating.
- **Improved sintering and fusion**
  In powder coating and rotational moulding, finer particles promote better inter-particle contact, reducing voids, pinholes, and incomplete fusion.
- **Consistent powder flow and handling**
  Compared to coarse ground powders or flakes, D99 < 75 µm powders exhibit more stable feeding in gravimetric and volumetric dosing systems.
- **Reduced surface defects**
  Lower risk of unmelted particles, surface roughness, and visible imperfections in finished articles.

This particle size range represents the point where performance improvements become obvious to the processor, without introducing excessive cost or handling complexity.

2) Performance parameters that improve with micronised LDPE powder

Switching from coarse LDPE powders or pellets to micronised LDPE (D99 < 75 µm) leads to measurable improvements in several performance parameters:

- **Melting uniformity**
  Narrower thermal gradients during heating cycles, particularly in slow-heating processes such as rotational moulding and dip coating.
- **Surface finish quality**
  Smoother coatings and moulded surfaces with fewer defects related to incomplete melting.
- **Dispersion efficiency in blends**
  Faster and more homogeneous dispersion when used as a modifier in PE or PP compounds, reducing mixing time and energy input.

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- **Process stability**
  More predictable behaviour during heating and cooling cycles, resulting in improved batch-to-batch consistency.

3) Potential end uses of Micronised LDPE (D99 < 75 µm | MFI ≈ 2)

This grade aligns well with applications that rely on powder melting rather than high shear flow.

Key end uses include:

- **Thermoplastic powder coating**
  - Fluidized bed and dip coating processes
  - Protective and decorative coatings on metal wire goods and fabricated parts
- **Rotational moulding (powder-based processing)**
  - Storage tanks, containers, bins
  - Outdoor and industrial products requiring toughness and impact resistance
- **Polymer compounding and modification**
  - Flexibility and impact modification in PE and PP blends
  - Soft-phase introduction without relying on high-MFI waxes
- **Specialty masterbatch applications**
  - When a true LDPE carrier is required instead of lubricating waxes
  - Improved compatibility with polyolefin matrices

4) Industries and applications that benefit most

Industries that gain the highest value from D99 < 75 µm micronised LDPE include:

Powder coating and metal finishing	Wire shelving, baskets, racks, grids, and industrial fixtures
Rotational moulding manufacturers	Water and chemical storage Outdoor furniture and infrastructure components
Plastic compounders	Flexible polyolefin compounds Cable and specialty PE formulations Masterbatch producers

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5) Availability of finer grades

(D99 < 50 µm)

A premium grade offering enhanced dispersion and surface finish for demanding applications. Suitable for customers seeking incremental performance improvements and willing to accept higher material cost.

D99 < 30 µm

A specialty, niche grade for advanced formulations where ultra-fine dispersion is critical. Typically supplied on an enquiry basis due to higher processing cost and lower production yield.These finer grades complement—but do not replace—the commercial relevance of the 75-micron class.

6) Cost justification: micronisation vs value delivered

Micronisation of LDPE resin requires additional energy, cryogenic processing, classification, and yield control, all of which increase production cost compared to pellets or coarse powders. However, these costs are justified by tangible benefits:

- Reduced processing defects and scrap
- Improved surface quality without formulation changes
- Shorter processing cycles and better heat utilisation
- More consistent end-product performance.

TECHNICAL SPECIFICATION

Micronised LDPE Resin Powder
MFI 1.8–2.2 | CAS 9002-88-4

1) Particle Size Distribution (PSD)

Parameter	Standard Commercial Grade	Premium Grade	Specialty Grade
	D99 < 75 µm	D99 < 50 µm	D99 < 30 µm
D10	8 – 15 µm	5 – 10 µm	3 – 7 µm
D50	25 – 40 µm	18 – 30 µm	10 – 18 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
Thermoplastic powder coating (dip / fluidized bed)	★★★★☆
Rotational moulding	★★★★☆
Flexible compound modification	★★★☆☆
Specialty masterbatch carrier	★★★☆☆
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 LDPE 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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