Polymer Add (Thailand) Co.,Ltd.
Office - 106, Chalaremprakiat, Lor 9, Soi 22, Yak 5, Nongbon, Prawet, Bangkok, Thailand 10250
Factory - 188/3, Moo 8, Tambon Bangpu Mai, Amphoe Muang Samut Prakan, Samutprakan, Thailand 10280
Mobile - Thai : 0804531391, English: 0839415475, **E-mail –** contact@polymeradd.co.th

Micronised Potassium Sorbate
Use as an Antimicrobial in Polymers

Micronised Potassium Sorbate (CAS 24634-61-5) is widely known for its antifungal activity. In polymer applications, it is best positioned as a specialty antimicrobial additive for selected polymer systems, where moisture exposure and surface availability allow antimicrobial functionality. Micronised Potassium Sorbate is not a universal antimicrobial additive and is not suitable for high-temperature or non-polar polymer systems.

1. In polymers, Micronised Potassium Sorbate functions as:

- A contact-active antimicrobial additive
- A fungistatic / mold-inhibiting agent
- A migration-dependent surface antimicrobial

It is not intended to function as a sterilant, a broad-spectrum biocide, or a permanent antimicrobial in dry polymer matrices.

2.0 Micronised Potassium Sorbate is primarily effective against:

- Molds
- Yeasts
- Certain fungi

Its activity against bacteria in dry or non-polar polymer environments is limited. Antimicrobial performance depends on availability at or near the polymer surface, typically in the presence of moisture.

3. Suitable Polymer Systems

- Polar or hydrophilic polymer systems
- Moisture-exposed polymer matrices
- Starch-based polymers
- Cellulose-based materials
- PVA / PVOH systems
- Selected Biopolyester blends

Polymer Systems Where Use Is Not Recommended

- Polyolefins (PE, PP, EVA)
- Engineering plastics
- PVC (rigid or flexible)
- High-temperature polymers
- Highly non-polar or crystalline polymers

In these systems, dispersion is poor and antimicrobial functionality is ineffective.

4. Processing Routes

- Solution casting
- Low-temperature compounding
- Coating or surface-treated polymer systems
- Water-based polymer processing

Polymer Add (Thailand) Co.,Ltd.
Office - 106, Chalaremprakiat, Lor 9, Soi 22, Yak 5, Nongbon, Prawet, Bangkok, Thailand 10250
Factory - 188/3, Moo 8, Tambon Bangpu Mai, Amphoe Muang Samut Prakan, Samutprakan, Thailand 10280
Mobile - Thai : 0804531391, English: 0839415475, **E-mail –** contact@polymeradd.co.th

Processing Routes to Avoid

- Melt processing above defined temperature limits
- High-shear extrusion
- Injection molding
- Long residence-time thermal processing

5. Thermal Stability and Processing Window

Parameter	Guideline
Recommended processing temperature	≤160 °C
Maximum short-term exposure	≤180 °C
Processing to avoid	>180 °C
Residence time	Minimized

Exposure beyond these limits may lead to chemical degradation and loss of antimicrobial efficacy.

7. Micronised Grade and Agglomeration Control

Micronised Potassium Sorbate is supplied at very fine particle size (typically D100 < 30 μm) to enable uniform dispersion and surface activity. At this fineness, the material exhibits a strong tendency toward post-micronisation agglomeration. To ensure free-flowing behavior and stable handling, micronised Potassium Sorbate is typically stabilized using anti-caking or surface-modification approaches, such as Blending with fine silica or similar flow aids, Light surface treatment using compatible fatty-acid derivatives,

8. Typical Dosage Guidance

Application Type	Typical Range
Surface-active antimicrobial systems	0.2–1.0 wt%
Biopolymer films (trial range)	0.5–2.0 wt%

Final dosage must be validated through application-specific testing.

9. Suitable End-Use Applications

Micronised Potassium Sorbate may be considered for:

- Biodegradable packaging films processed at low temperature
- Agricultural or horticultural films exposed to moisture
- Compostable materials
- Hygienic coatings and surface-treated polymer systems
- Mold-resistant polymer products for humid environments
- It is not intended for sterile, medical, or long-life antimicrobial plastics.

10. Regulatory Perspective

Potassium Sorbate is widely approved and extensively used as a food preservative under multiple regulatory frameworks. This long history of safe use establishes a strong toxicological and exposure-safety foundation.In polymer applications, regulatory classification is typically application-specific rather than molecule-specific. The absence of a dedicated CFR listing for certain polymer uses does not imply unsuitability of the molecule, but rather reflects the fact that those specific applications may not have been separately evaluated or petitioned.

Polymer Add (Thailand) Co.,Ltd.
Office - 106, Chalaremprakiat, Lor 9, Soi 22, Yak 5, Nongbon, Prawet, Bangkok, Thailand 10250
Factory - 188/3, Moo 8, Tambon Bangpu Mai, Amphoe Muang Samut Prakan, Samutprakan, Thailand 10280
Mobile - Thai : 0804531391, English: 0839415475, **E-mail –** contact@polymeradd.co.th

In practice, industry assessment focuses on:

- Migration behavior from the final article
- Intended contact conditions
- Overall exposure and risk profile

Accordingly, Potassium Sorbate is commonly considered suitable for evaluation in polymer systems where migration, exposure, and end-use conditions remain within accepted safety boundaries.

Conclusion

Micronised Potassium Sorbate is a specialty antimicrobial additive suitable for selected polar and moisture-exposed polymer systems when processed under strict thermal and formulation control. Its effectiveness depends on surface availability and moisture, not bulk polymer incorporation.
When supplied in micronised form (D100 < 30 µm) with appropriate agglomeration control, it enables uniform blending, accurate dosing, and consistent antimicrobial performance in niche polymer applications.

Disclaimer

The information provided is offered for general technical guidance only. Antimicrobial performance, polymer compatibility, and regulatory compliance depend on formulation, processing conditions, and intended end use. Users are responsible for conducting their own trials and compliance assessments.

Month of creation : Dec 2025
Month of review : Dec 2027

END OF ARTICLE