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SODIUM BENZOATE- MICRONISED

(Industrial Polymer & Compound Applications)

1. Product Introduction & Context

Micronised Sodium Benzoate is the sodium salt of benzoic acid, supplied in a finely controlled particle size form for use in polymer, compound, and specialty material applications. In polymer systems, sodium benzoate is primarily utilised for its ability to influence crystallisation behaviour, thermal response, and processing consistency, particularly when used at low addition levels.

The micronised form is selected to ensure uniform dispersion, rapid functional availability, and reproducible performance, especially in applications where coarse or standard powder grades show delayed action or inconsistent distribution.

2. Chemical & Physical Nature (High-Level Overview)

Sodium benzoate is an organic carboxylate salt with good thermal stability within typical polymer processing temperature ranges. It does not act as a plasticiser, lubricant, or reactive modifier, but functions as a solid-state additive interacting with polymer crystallisation and thermal behaviour.

The material is water soluble and exhibits limited solubility in organic media. In polymer matrices, performance is governed primarily by dispersion quality and particle size, rather than chemical solubility.

3. Role of Micronisation (Particle Size Relevance)

Micronisation plays a critical role in enabling sodium benzoate to function effectively in polymer systems. Typical micronised grades are supplied with controlled upper particle-size limits (e.g. D100 < 20 µm, with finer grades available on request).

Fine particle size provides:

- Faster and more homogeneous dispersion in polymer melts
- Increased availability of active nucleation sites
- Reduced risk of agglomeration or local over-dosage
- More consistent performance at low addition levels

Compared with coarse sodium benzoate powders, micronised material delivers greater reproducibility and process stability.

4. Functional Mechanism (How the Product Works)

In semi-crystalline polymers, micronised sodium benzoate functions primarily as a heterogeneous nucleating agent. It provides initiation sites for polymer crystal formation during cooling, promoting faster crystallisation and a more refined crystalline structure.

In certain formulations, sodium benzoate also contributes to thermal stabilisation synergy, supporting primary stabiliser systems and improving processing consistency. The mechanism is physical chemical in nature and does not rely on decomposition or migration to deliver performance.

5. Key Application Areas

Polyolefins & Engineering Plastics

Used as a nucleating additive in polymers such as PP, HDPE, PET, and PA systems, where controlled crystallisation and improved thermal-mechanical behaviour are required.

PVC & Rubber Compounds

Functions as a stabiliser synergist and acid scavenger, supporting thermal stability during processing.

Masterbatch & Compound Formulations

Applied in performance and optical masterbatches, where fine dispersion and low dosage are essential.

Specialty Polymers

Used in technical resin systems to promote controlled crystallinity, dimensional stability, and surface quality.

6. Performance Benefits (Qualitative)

- Faster and more uniform crystallisation behaviour
- Improved consistency of mechanical and thermal performance
- Enhanced processing stability
- Reduced batch-to-batch variability
- Effective performance at low addition levels

7. Compatibility & Processing Considerations

Micronised sodium benzoate is compatible with a wide range of polymer compounding and melt-processing operations, including extrusion and injection moulding.

Key considerations include:

- Uniform dispersion through dry blending or masterbatch incorporation
- Moisture control during storage and handling
- Appropriate dust management for fine powder grades

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8. Regulatory & Compliance Position (High-Level)

This product is intended for industrial use in polymer, compound, and specialty material applications. Regulatory acceptance may vary by region and application. Use in food-contact, pharmaceutical, or medical applications is not implied and requires separate certification and verification by the user.

9. Limitations & Non-Recommended Uses

- Not intended for pharmaceutical or medical applications
- Not recommended for direct food-contact use unless specifically certified
- Not designed for aqueous systems where solubility may affect performance
- Final performance depends on formulation and processing conditions

10. Reference to Technical Specifications

Detailed physical, chemical, and analytical properties — including purity, particle size distribution, impurity limits, and test methods — are provided in the applicable Technical Data Sheet (TDS). This article intentionally avoids duplicating specification data.

11. Handling, Storage & Safety (Article-Level)

The product should be stored in a dry, cool environment, protected from moisture. Standard industrial dust-handling practices are recommended.For detailed safety, handling, and regulatory information, users should refer to the Material Safety Data Sheet (MSDS).

12. Disclaimer & User Responsibility

This article is provided for technical and informational purposes only. Product performance depends on formulation design, processing conditions, and end-use requirements. Users are responsible for conducting appropriate testing and validation prior to commercial implementation.

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