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SUCROSE BENZOATE
SPECIALTY PLASTICIZER FOR PVC PLASTISOLS

Sucrose Benzoate (CAS 12738-64-6) is a benzoate ester derived from sucrose and benzoic acid. In PVC applications, it is best positioned as a specialty secondary plasticizer for plastisol-based PVC systems, where low volatility, low odor, and long-term plasticizer permanence are required. Sucrose Benzoate is not a general-purpose PVC plasticizer and is not intended to replace conventional primary plasticizers used in extrusion, calendering, or dry-blend PVC processing.

Chemical and Physical Characteristics

Sucrose Benzoate consists of multiple aromatic ester groups attached to a sucrose backbone, resulting in a highly polar, high-molecular-weight structure. It is typically supplied as a crystalline solid and softens under heat rather than behaving as a low-viscosity liquid plasticizer.

Compatible PVC Systems

- Emulsion PVC (E-PVC)
- Paste PVC / PVC plastisols
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Sucrose Benzoate performs effectively only in formulations designed for plastisol preparation and heat-activated fusion.

Mechanism of Action in PVC Plastisols

In plastisol systems, Sucrose Benzoate dissolves into compatible liquid plasticizers during heating and curing. Its high polarity promotes strong interaction with the PVC matrix, contributing to:

- Reduced plasticizer volatility during processing
- Improved resistance to migration and fogging
- Low odor characteristics in finished products

Because it is solid at room temperature, Sucrose Benzoate relies on plastisol processing rather than dry-blend fusion.

Suitable Processing Methods

- PVC plastisol preparation
- Knife-over-roll coating
- Spread coating
- Dip coating (subject to application requirements)
- Standard plastisol curing processes

Not Suitable Processing Methods

- Dry-blend PVC compounding
- Extrusion
- Injection molding
- Calendering of suspension PVC

Performance Characteristics

In properly designed plastisol formulations, Sucrose Benzoate typically provides:

- Very low volatility

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- Low odor
- Excellent migration resistance
- Good optical clarity

Typical End-Use Applications
Sucrose Benzoate is suitable for indoor plastisol-based PVC applications, including:

- Low-VOC wallcoverings
- Indoor PVC flooring top layers
- Artificial leather and coated fabrics
- Decorative PVC films
- Sustainability-oriented or eco-label PVC products

Its use is driven by performance stability and emission control, not cost reduction.

Regulatory Reference (United States)
Sucrose Benzoate is referenced in the U.S. FDA Code of Federal Regulations under 21 CFR 175.105 (Adhesives) for indirect food-contact applications, subject to the conditions and limitations specified in that regulation.

This reference applies to adhesive-related uses and does not imply blanket approval for all PVC or food-contact applications. Suitability must be assessed based on the final formulation and intended use.

Conclusion
Sucrose Benzoate is best positioned as a specialty plasticizer component for PVC plastisols used in indoor applications, where low volatility, low odor, and long-term performance stability are required. When applied within its correct processing and end-use scope, it can be a valuable formulation tool for plastisol manufacturers.

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