

## K-Flex® Dibenzoate Coalescents for Paints and Coatings

Coalescents have been and continue to be a key material used to enhance film formation and other properties in coatings formulations. Dibenzoate chemistry is becoming the preferred low-VOC coalescent for use in coatings. Dibenzoates aid the formulator in **lowering VOC content in formulations while improving key performance characteristics** and providing the best balance of performance and value to alternative chemistries.

As polar coalescents, K-FLEX® dibenzoates are used to coalesce polar polymers ranging from acrylic types including styrene or ethylene copolymers, polyvinyl acetate and acrylics. The original dibenzoate products were diethylene glycol dibenzoate (DEGDB) and dipropylene glycol dibenzoate (DPGDB). Many commercial products blend these two materials to yield liquids with good handling and tailored performance features in the end-use application.

Emerald Kalama Chemical offers the classic dibenzoates, as well as some new grades and blends created for the needs of the marketplace. K-FLEX® coalescents offer an excellent low-VOC solution for formulators looking to satisfy both legislative requirements and consumer demand.

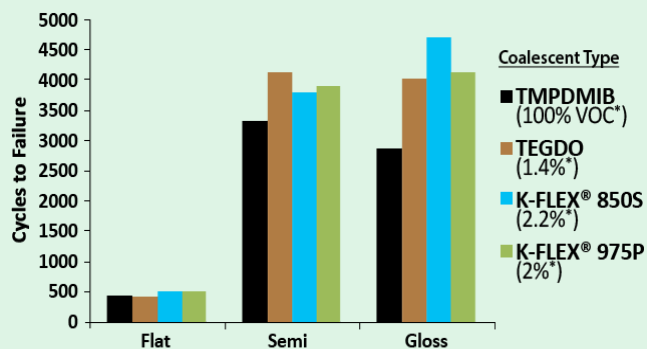
- **Low-VOC**
- **Non-SVHC**
- **Non-phthalate**
- **Approval for use in direct food contact applications**
- **Global registrations**
- **REACH compliant**

Classified as non-SVHC and non-PBT, K-FLEX® dibenzoates are label-free in the EU under CLP and GHS regulations. Additionally, K-FLEX® 975P and K-FLEX 850P risk-phrase-free.

### Next Generation Products

Coalescents based on dibenzoate chemistry are becoming increasingly common in applications where coalescents such as 2,2,4-trimethyl-1,3-pentanediol monoisobutyrate (TMPDMIB) might traditionally have been used. This is because they provide comparable—or, in many cases, improved—performance properties in addition to lowering VOCs. Dibenzoate coalescents

### Scrub Resistance as a Function of Coalescent



Dibenzoate coalescents such as **K-FLEX® 850S** and **K-FLEX® 975P** exhibit increased scrub resistance to higher-VOC coalescents while maintaining needed open time and block resistance.

\* % weight lost, 110°C for 1 hour, ASTM D2369, Part of EPA 24

are also compatible with typical coating polymers, leading to stronger, better coalesced films with excellent scrub resistance, gloss, toughness, clarity, and MFFT/Tg suppression.

### Evaluation Methodology



Emerald Kalama Chemical uses analytical instruments such as those depicted above to evaluate performance of coalescents in a variety of applications, including coatings.

## Recommended Products for Paints and Coatings

**K-FLEX® 975P** – Economical to use and created to offer a broad range of compatibility with polar polymers, with improved handling due to its lower freeze point. Highly recommended low-VOC coalescent for interior and exterior latex paints, industrial coatings, and special purpose coatings.

**K-FLEX® 500P** – Specifically designed for coatings formulations where very low VOC content is required. Highly recommended for use in a variety of coatings, including interior and exterior latex paints, industrial coatings, lacquers, and special purpose coatings.

**K-FLEX® 850S** – A value-added blend of classic dibenzoate coalescents. Very effective and low-VOC choice for interior and exterior latex paints, industrial coatings, and special purpose coatings.

### COATINGS PERFORMANCE CHARACTERISTICS

In paints and coatings, our research & development Team found that low-VOC coalescents such as **K-FLEX® 850S** and **K-FLEX® 975P** developed better gloss than higher VOC coalescents such as TMPDMIB, forming tighter, better films while also maintaining compatibility. Because of gloss development with K-FLEX® coalescents, the formulator also has the opportunity to add more filler to keep the original gloss level, making the system more economical.



**Emerald Kalama Chemical** is a business group of Emerald Performance Materials, a manufacturer of additives and polymers that make your products last longer, look, taste, smell, or perform better. We are a world-scale producer of toluene oxidation products, shipping 425 million pounds annually to nearly 70 countries across the globe. Products include benzoic acid and various benzoate and dibenzoate ester, alcohol and aldehyde derivatives for food preservatives, flavor and fragrance ingredients, coalescents and industrial applications. Manufacturing in Kalama, WA (USA) and Rotterdam, The Netherlands – service to our customers globally.

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