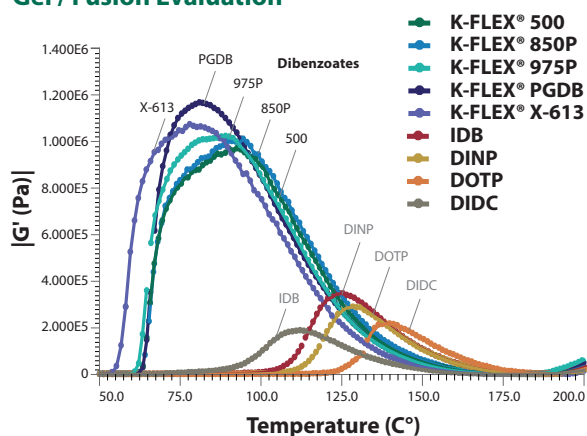




# KFLEX<sup>®</sup> Dibenzoate Plasticizers for Vinyl & Plastics

Phthalates are increasingly scrutinized for health and safety concerns, with consumer preference, deselection announcements, and legislation driving the industry toward phthalate alternatives. However, many common alternatives—such as DOTP, DIDC, and soy- or castor oil-based chemistries—can fall short on performance: poor compatibility, migration/exudation, slow fusion, high gel temperatures, and low gel strength. **Blending K-FLEX<sup>®</sup> dibenzoates with non-phthalate GP alternative plasticizers helps to address these shortfalls.**

## Gel / Fusion Evaluation



K-FLEX<sup>®</sup> dibenzoate plasticizers exhibit high solvation and fast fusion similar to BBP and superior to GP phthalates and other non-phthalate GPs.

## For the Compounder:

- Fusion and dry times and temperatures can be adjusted back to DINP or DOP performance, **improving manufacturing speed and output.**
- Stronger gelled layers results in less breakage on the web, leading to **less rework and downtime.**
- High solvation means better performance on the rolls—**less bagginess.**
- Expensive **copolymer levels can be reduced** while still achieving fusion at low temperatures and enhancing product strength.

## For the Consumer:

- Plasticizer **package compatibility is drastically improved**, reducing or eliminating exudation which could result in dirt pickup, a greasy surface, or delamination failures in the finished vinyl product.
- **PU topcoat performance can be extended** by providing superior stain resistance in difficult to coat grooves, and prolonged flooring life where topcoat has been worn down from use.
- For products used in contact with industrial liquids, **extraction resistance is greatly increased**, leading to longer product life.

## Next Generation Products

K-FLEX<sup>®</sup> dibenzoate plasticizers are excellent non-phthalate solutions for vinyl applications, enabling formulators to **economically achieve the same excellent performance associated with traditional phthalates.** In addition to contributing desirable performance characteristics, K-FLEX<sup>®</sup> plasticizers have **favorable regulatory and environmentally-friendly profiles** — non-phthalate, low-VOC, non-SVHC, global registrations, REACH compliant, approved for use in direct food contact applications.

K-FLEX<sup>®</sup> plasticizers have **high compatibility in vinyl** and **enhance desirable properties to close the performance gap with phthalates.** They also offer low freeze points for **easy handling and transport.** These properties make K-FLEX<sup>®</sup> plasticizers an economical and high performance choice for the production of vinyl flooring (wear layer/foam), extrusions, and plastisols – spread coatings, screen ink and more.



**Emerald Performance Materials<sup>®</sup>**  
**Kalama Chemical**

Emerald's R&D team uses a wide variety of analytical instruments to evaluate plasticizer performance in applications such as vinyl and plastisols, including an AR2000 rheometer (top) and a Mathis Labcoater Oven (bottom).

## Recommended Products for Vinyl & Plastics:

### 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. Optimized for performance in vinyl compositions, particularly plastisol (paste), offering excellent stain resistance and durability.

### K-FLEX® 850P

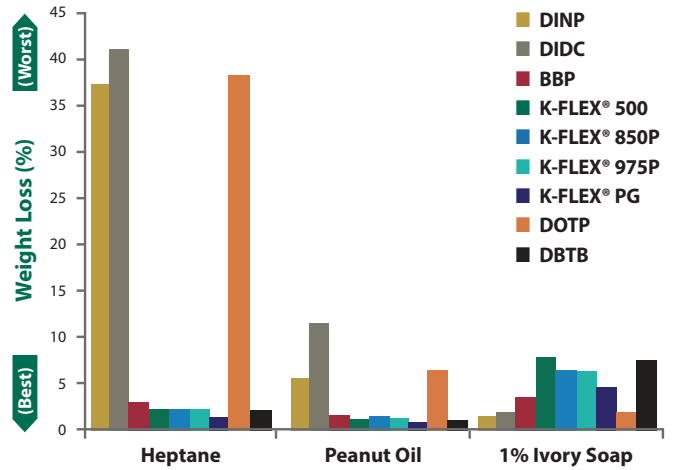
Economical to use and tailored specifically for vinyl, melt compounding and plastisol applications.

### K-FLEX® PG

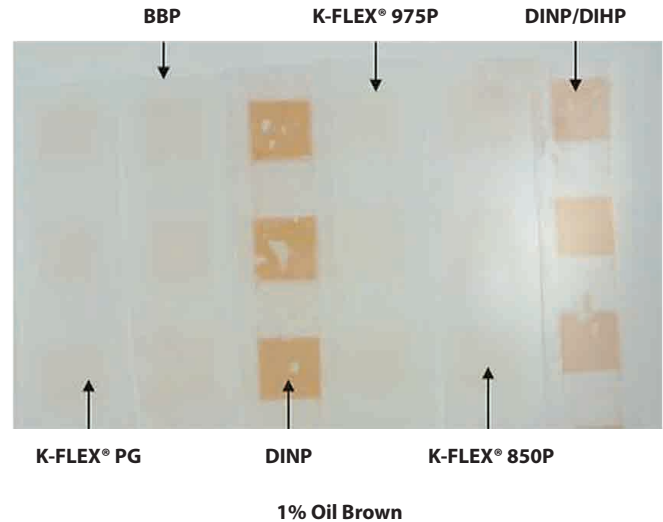
A very high solvator specifically designed for vinyl applications, making it particularly useful in blends of plasticizers to tailor characteristics and end-performance. Optimal stain resistance and durability properties.

**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 over 500 million pounds annually to approximately 75 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, plasticizers and industrial applications. With manufacturing in Kalama, WA (US), Rotterdam, Netherlands, and Widnes, UK, we serve customers globally.

## Extraction Resistance



## Stain Resistance



Fused vinyl films prepared with K-FLEX® dibenzoate plasticizers exhibit superior stain and extraction resistance when compared to films made using common phthalates and non-phthalate alternatives.

### Customer Service – Americas

Emerald Kalama Chemical, LLC  
Vancouver, Washington, USA  
800.223.0035 | +1.360.673.2550  
kflex@emeraldmaterials.com

### Customer Service – EMEA

Emerald Kalama Chemical, BV  
Geleen, The Netherlands  
+31.46.702.2911  
kflex.emea@emeraldmaterials.com

### Customer Service – Asia Pacific

Emerald Performance Hong Kong  
Wanchai, Hong Kong  
+852.2598.7990

[www.kflex.emeraldmaterials.com](http://www.kflex.emeraldmaterials.com) | [kflex@emeraldmaterials.com](mailto:kflex@emeraldmaterials.com)

© Registered trademark of Emerald Performance Materials, LLC  
© 2017 Emerald Performance Materials, LLC

August 2017

