



EMERALD KALAMA CHEMICAL
K-FLEX[®]

Plasticizers & Coalescents

K-FLEX[®] plasticizers are an excellent non-phthalate, low-VOC solution for formulators looking to satisfy both legislative requirements and consumer demand. K-FLEX plasticizers offer equal or superior performance over other recognized plasticizers and coalescents in a wide range of applications, including adhesives, caulks, sealants, coatings, and vinyl/plastisol applications.

- ▶ **Non-phthalate**
- ▶ **Biodegradable**
- ▶ **Non-SVHC**
- ▶ **Low-VOC**
- ▶ **Food contact approvals**
- ▶ **REACH Compliant**
- ▶ **Compatible in wide range of polymers**
(PVAc, EVA, acrylics, styrene-acrylic, PVC, cellulose, nitrile rubber)

Benefits in Coatings	Benefits in Caulks and Sealants	Benefits in Adhesives	Benefits in Vinyl Plastisols	Benefits in Vinyl Melt Compounding
Gloss	Good tack-free time	Chalk point/ Tg suppression	High solvator	Quicker drying & faster fusion at lower temperatures
Clarity	Can be used in formulations including nonspec, ASTM C920, and ASTM C834	Extended open & reduced set times	Increased line speeds	Efficient softening vs. some GP types
MFFT/Tg suppression	Excellent compatibility in wide range of polymers such as acrylic, PU, and MS Polymers	Wet tack	Lower gelation/ fusion temperature	Excellent stain resistance
Scrub resistance		Excellent viscosity response	Higher fused gel strength	Extraction resistance to oils & aliphatic solvents
Water resistance		Improved dry film resistance to oil, grease and water	Improved stain & extraction resistance	Good UV & heat stability vs. other high solvators
Hardness development		Excellent compatibility in wide range of polymers & formulation systems	Excellent wear layer toughness	Excellent compatibility with PVC/other GP plasticizers
Compatibility in a wide range of polymers and formulation systems			Good gloss	



Ask us about our wide global inventory status.

Emerald Kalama Chemical is a business unit of Emerald Performance Materials, a manufacturer of additives and polymers that make your products last longer, look, taste, smell, or perform better. Kalama is a world-scale producer of a variety of toluene oxidation products, including benzoic acid, various benzoate and dibenzoate esters, alcohol and aldehyde derivatives for food preservatives, antimicrobials, aroma chemicals, flavor ingredients, plasticizers for adhesives, vinyl, sealants & caulk, coalescents for coatings and a wide range of industrial applications.

Products Available

K-FLEX® 850S – Classic dibenzoate blend based on DEGDB and DPGDB optimized for waterborne latex applications. In coatings, K-Flex 850S is low in VOCs to assist the formulator on issues of VOC reduction. Other applications include use in acrylic systems. This product is not recommended for PVC applications. In the EU, K-Flex 850S is label-free.

K-FLEX® 850P – Dipropylene glycol dibenzoate (DPGDB) and diethylene glycol dibenzoate (DEGDB) blend specifically designed for vinyl applications with economy as a focus. As a high solvator for vinyl it can be formulated alone or in blends for plastisols as well as melt compounded vinyl. K-Flex® 850P can also be used in polysulfides.

K-FLEX® 500 – DPGDB and DEGDB blend in a ratio of about one to one by weight. A polar plasticizer that is a high solvator for PVC applications. Also compatible with polar polymers such as polyvinyl acetate and MS polymers.

K-FLEX® 500P – New product from our R&D team. Blend of DEGDB and DPGDB, slightly rich in the DEGDB component. Designed for coatings or other applications where ultra-low levels of VOCs are desired.

K-FLEX® 975P – Blend of DEGDB, DPGDB and propylene glycol dibenzoate (PGDB) offers a broad range of compatibility with polar polymers. Due to its lower freeze point, it has better handling properties than other modern binary dibenzoate blends. Applications include coatings, plastisols, latex caulk and sealant uses, including polysulfides and MS polymers.

K-FLEX® PG – New product from our R&D team. Based on PGDB and specifically designed for vinyl applications. A very high solvator making it particularly useful in blends of plasticizers to tailor characteristics and end-performance. Excellent stain resistance, durability, and extraction resistance.

K-FLEX® DP – DPGDB is one of the most versatile polar, high solvating plasticizers. Compatible with a wide range of polar polymers and rubbers, including TPU. Excellent pigment carrier in various masterbatch systems.

Typical Physical Properties

PROPERTY	K-FLEX® 850S	K-FLEX® 850P	K-FLEX® 500	K-FLEX® 500P	K-FLEX® 975P	K-FLEX® PG	K-FLEX® DP
Boiling point (5 mm Hg, °C)	180	180	191	236	215	157	195
Boiling point (750 mm Hg, °C, extrapolated)	>330	>330	>350	>350	>350	>300	>350
Density, ASTM D1475, 25°C, g/ml)	1.14	1.14	1.14	1.15	1.15	1.14	1.11
Density, ASTM D1475, 25°C, lbs/gal)	9.6	9.6	9.5	9.6	9.6	9.5	9.3
Freeze point, °C	14	12	6	6	4	-50**	-51**
Moisture Content, %	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Viscosity, Brookfield RVT, 20 RPMs at 25°C, cps & mPaS	72	76	80	107	73	81	99
Viscosity, Kinematic, 25°C, cSt	63	66	70	93	63	71	89
VOC%, ASTM, D-2369	2.2	1.7	2.9	0.9	2	5.8	3.2
FDA COVERAGE							
21 CFR 175.105	Yes	Yes	Yes	Yes	Yes	Yes	Yes
21 CFR 176.170	Yes	Yes	Yes	Yes	Yes*	No	Yes
21 CFR 176.180	Yes	Yes	Yes	Yes	Yes*	No	Yes

* K-Flex 975P may be used as a plasticizer at a level not to exceed 20% in an adhesive under 21 CFR 176.170 and 21 CFR 176.180, provided the adhesive is separated from the food by a functional barrier, or is limited to contact with food so as not to exceed trace amounts at seams and edges.

** Glass Point by DSC

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August 2013

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