

K-FLEX 188 is a highly reactive, aliphatic polyester diol which is recommended for aminoplast or isocyanate crosslinked coatings, inks, sealants, elastomers, and adhesives. Its uniform, narrow molecular weight distribution and unique chemical structure provide exceptional and consistent performance and broad compatibility. K-FLEX 188's primary hydroxyl groups also provide reactivity with epoxies in cationic thermal cure systems.

ADVANTAGES:

- 100% Active
- Low VOC
- Improved flexibility while maintaining hardness
- Excellent cured film properties
- Low temperature cure
- Excellent adhesion to plastics
- High resistivity
- Light color

TYPICAL PROPERTIES:	Appearance	Clear, Light Straw Liquid
	% Active	100
	Viscosity, cPs, 25° C	9,800
	Hydroxyl number	230
	Hydroxyl equiv. weight	244
	Specific Gravity, 25°C	1.11

APPLICATIONS:

- Aerospace coatings
- Appliance and metal decorating
- Automotive OEM & refinish
- Agricultural & construction equipment
- Plastic substrates
- Overprint varnishes
- Marine/maintenance
- Glass laminates/Optical coatings

SOLUBILITY: Soluble in alcohols, esters, ketones, xylene, Aromatic 100 and Aromatic 150. Partially soluble in mineral spirits. Partially soluble in water.

TYPICAL USAGE LEVELS: Typically, 5 -10% by weight on total resin solids (TRS) for melamine baking systems or 5 - 25% on TRS for 2-component urethanes.

SHELF LIFE: 24 months from the date of manufacture when stored at room temperature in the original container.

HANDLING & STORAGE: K-FLEX 188 should be stored in a cool dry location at temperatures of 15 - 35°C. For additional information, refer to the Material Safety Data Sheet.

REGULATORY: Please refer to Section 15 of the Safety Data Sheet for information.

Formulating Guidelines

K-FLEX® 188 polyester diol has a hydroxyl number of 230 with an equivalent weight of 244 g/eq. **Care should be taken to adjust your crosslinker level up or down to assure proper crosslinking of all polyol present.**

With Isocyanates in 2-component polyurethane systems:

For modifying your formulation with K-FLEX 188, be sure to adjust the NCO level accordingly in order to maintain your target of NCO:OH ratio.

With Hexamethoxymethyl melamine baking systems

For modifying your formulation with K-FLEX 188 at a level higher than 5% by weight on TRS, be sure to increase the level of melamine crosslinker in order to account for the higher hydroxyl number of K-FLEX 188.

Additives Recommended:

- Flow and leveling - 0.1-0.2% of DISPARLON¹ L-1980N or L-1984N may be required to overcome the high surface tension of the polyol.
- UV Absorber – A triazine (eg./ Tinuvin² 400 or Chiguard³ 5400) type UVA is recommended over a benzotriazole type to avoid discoloration in clearcoats. Triazines could be used at much lower levels than benzotriazoles. In pigmented systems, both UVA types can be used.
- Dispersant - K-SPERSE⁴ 152 to achieve a high solids grind.

Incorporation Procedure:

- Solvent based systems – add K-Flex 188 anywhere in the manufacturing process.
- Waterborne systems – best hydrolytic stability at pH of 7-8.
 - Although K-FLEX 188 is only partially water soluble, in most cases it will mix right into a waterborne system.
 - Precut 50-80% active with co-solvent. Add to the resin system with good agitation before adding any additional water.
 - Or work with K-FLEX 188BC supplied at 90% solids in 2-butoxyethanol for easier incorporation
 - Or Emulsify in your resin system with surfactants

King Industries Recommended Starting Point Formulations:

- SB 2K PU: API-17, API-20 (General industrial, industrial maintenance, refinish, ACE)
- 2K PU exempt solvents: API-18 (General industrial, industrial maintenance, refinish, ACE)
- 100% Non-Volatile: PI-13 (floor coating)
- WB 2K PU: WR-10 (General industrial, industrial maintenance, refinish, ACE)
- SB melamine bake: HS-19, PM-8 (gen. industrial, plastics adhesion, HS pigment grind)
- WB melamine bake: WR-7, WR-9 (Acrylic/HMMM, Polyester/HMMM General industrial)

¹ Trademark of Kusumoto Chemical Co. Ltd. (Polyacrylate flow and leveling agent)

² Trademark of BASF Chemical (Triazine UV absorber)

³ Trademark of Chitec (Triazine UV absorber)

⁴ Trademark of King Industries, Inc. (Metal sulfonate monomeric dispersant)