

HUNTSMAN

JEFFSOL® ALKYLENE CARBONATES IN POLYESTER SYNTHESIS & APPLICATIONS

JEFFSOL® alkylene carbonates such as JEFFSOL® Ethylene Carbonate (EC) and JEFFSOL® Propylene Carbonate (PC) offer many advantages in polyester synthesis and applications. Below are highlighted several benefits as reactants, chain extenders/crosslinkers, solvents and viscosity reducing agents.

JEFFSOL® alkylene carbonates may also be used as reactive intermediates in other chemistries.

JEFFSOL® EC and PC in reactions with carboxylic acids

- As partial glycol replacement in polyester resin synthesis
 - provides an improved process for making copolyesters
 - affords important savings in cycle time and energy
 - improves resin properties
- As possible way to “mop-up” acids
- As possible way to “scavenge” water
- For synthesis of particular polyester-polyols, which are then used as reactive components in polyester and polyurethane synthesis

JEFFSOL® EC and PC in reactions with alcohols

- In transesterification reactions to produce hydroxyalkyl-extended polycarbonates, which

are then used as reactive component in polyester and polyurethane synthesis

- In alkoxylation reactions with controlled adduction, yielding products with a narrow MW distribution

JEFFSOL® EC and PC as chain extenders/crosslinkers

- To reduce acid number of polyester
- To increase molecular weight and strength of polyesters and polycarbonates

JEFFSOL® EC and PC as solvents in polyester processing and treatment applications

- To improve the processing of polyester
- To improve dye-ability of polyester fibers or parts
- To improve textile finishing: pilling resistance, anti-wrinkling, permanent press
- May also be used as solvent for dye

JEFFSOL® EC and PC as solvents in polyester (fiberglass resin) clean-up

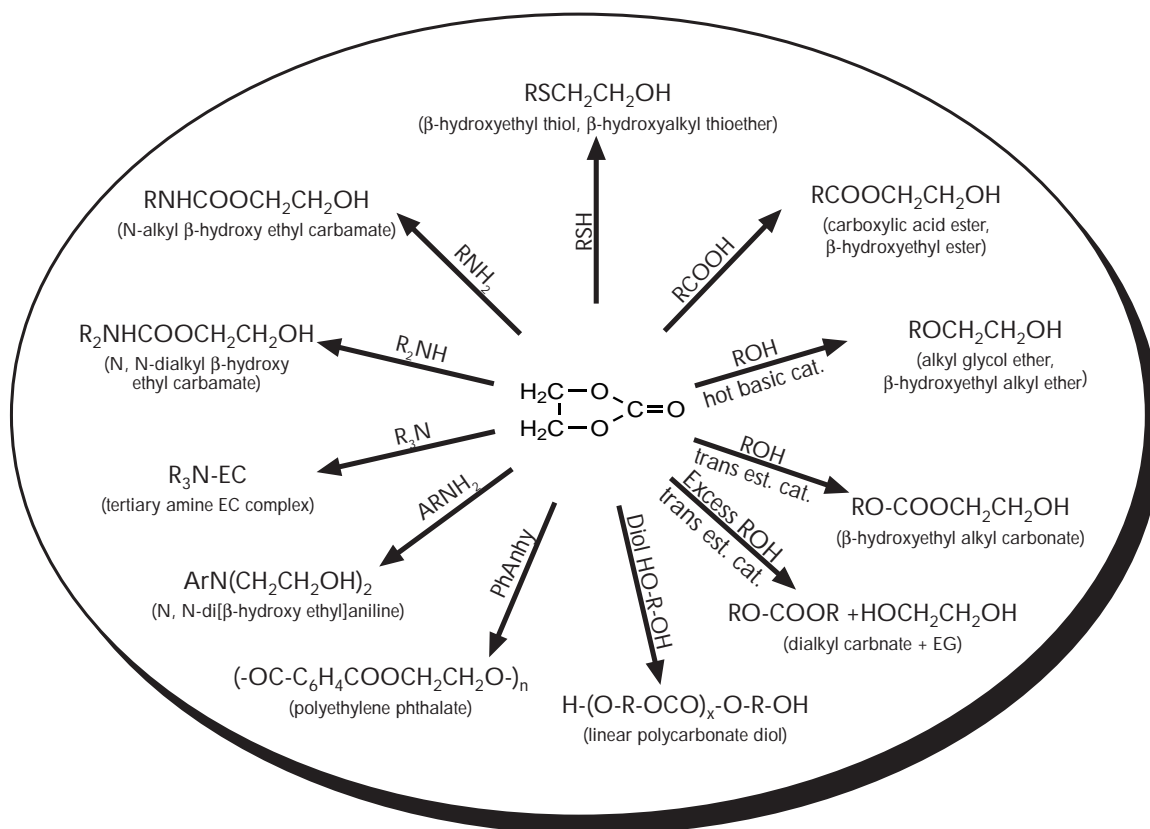
- As replacement for acetone, MEK, diacetone alcohol, NMP, methylene chloride, and 1,1,1-trichloroethane

JEFFSOL® EC and PC as viscosity reducing agents for polyester polyols and polyether polyols

Chemical Intermediates

In addition to polyester chemistry, JEFFSOL® alkylene carbonates can also be used as reactive intermediates in other chemistries. Examples include carbamate formation through reaction with amines, as well as reactions with thiophenols, mercaptans and urea. The resulting materials are used as such or further reacted to produce numerous valuable chemicals.

For further information regarding the unique versatility of JEFFSOL® alkylene carbonates as chemical intermediates, please refer to the JEFFSOL® Alkylene Carbonate brochure, 1112-899. You may also contact your sales representative for a detailed list of the reactions of JEFFSOL® alkylene carbonates as chemical intermediates.



For each application mentioned in this bulletin, detailed information is available through your local application development or technical support group, or your sales representative.

References

- U.S. Patent 2,870,124 to Chemstrand Corp., January 20, 1959.
- Paper by Ishido et al., J. Chem. Soc. PT (1), Vol. 12, 1977, p. 1266.
- U.S. Patent 4,171,422, to Allied Chem. Corp., October 16, 1979.
- U.S. Patent 4,289,871, to Allied Chem. Corp., September 15, 1981.
- U.S. Patent 4,348,314 to Allied Corp., September 7, 1982.
- U.S. Patent 5,563,209, to Zimmer AG, October 8, 1996.
- U.S. Patent 5,703,196 to Asahi Kasei Kogyo Kabushiki, December 30, 1997.
- U.S. Patent 5,714,568, to Reichhold Chem., Inc., February 3, 1998.
- U.S. Patent 5,969,056, to Reichhold Chem., Inc., October 19, 1999.