

ULTRAPURE® Carbonates

HUNTSMAN

Enriching lives through innovation

Huntsman is the only North American producer of alkylene carbonates, including **ULTRAPURE® Ethylene Carbonate (EC)** and **ULTRAPURE® Propylene Carbonate (PC)**. Huntsman offers a range of high purity **ULTRAPURE®** aprotic solvents for lithium-ion batteries, supercapacitors, dynamic glazing, and polymer photoresist removal in microelectronics.

PRODUCT OVERVIEW

High purity carbonates play a critical role as solvents for semiconductor cleans and as electrolytes in lithium-ion batteries. Impurities can reduce battery performance and lifetime. **ULTRAPURE® Ethylene** and **Propylene Carbonate** offer low levels of water, glycol, trace metals, and anions that are strictly controlled from production to delivery to promote optimal operation.

ULTRAPURE® Carbonates are offered in three different grades with the highest purity, **ULTRAPURE® EV**, specifically tailored to ensure the best performance in electric vehicle batteries.



BENEFITS & APPLICATIONS

- >99.9% purity
- Low water
- Industry proven
- Low VOC
- Electrolyte solvent for lithium-ion batteries
- Electro and photochromatic dynamic glazing
- Semiconductor formulated cleans and polymer removal
- Solvent for pharmaceuticals and cosmetics

SOLUBILITY TABLE

Ethylene Carbonates	Color	Purity	Water	Glycols	Anions	Cation
ULTRAPURE EV	+++	+++	+++	+++	+++	+++
ULTRAPURE HP	++	++	++	++	N/A	N/A
ULTRAPURE BG	++	+	+	+	N/A	N/A
Propylene Carbonate					Halides	UV Absorbance
ULTRAPURE EV	+++	+++	+++	+++	+++	+++
ULTRAPURE HP	++	++	++	++	N/A	++
ULTRAPURE BG	+	+	+	+	N/A	+

KEY

+++ Best
Quality

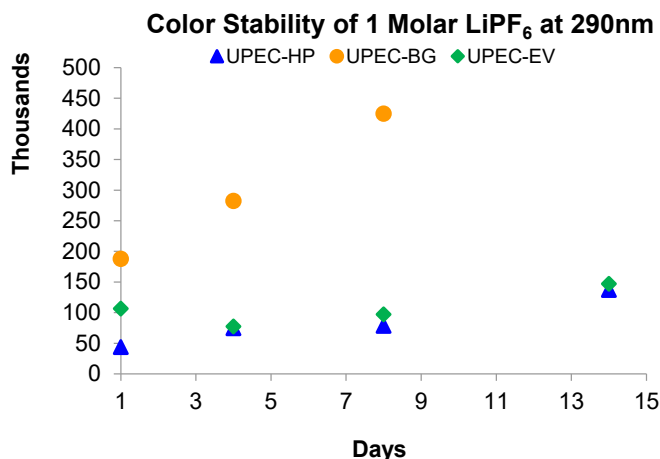
++ High
Quality

+ Good
Quality

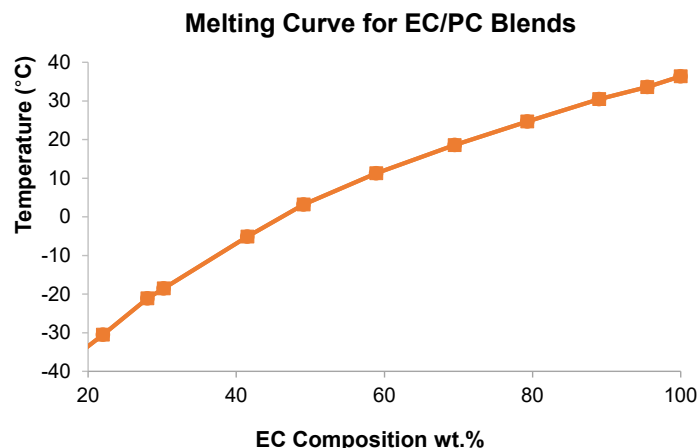
TYPICAL PROPERTIES

	Ethylene Carbonate	Propylene Carbonate
Viscosity (cp)	1.50 (20°C)	2.47 (25°C)
Flash point (°C, cc)	152	135
Boiling point (°C)	248	242
Melting point (°C)	36	-49
Dipole moment	4.90	4.98
Dielectric constant	89 (40°C)	64.9 (20°C)
Solubility parameter		
dD		
dP		
dH		

ULTRAPURE® EC and **ULTRAPURE® PC** offer a combination of good solubility of Li salts, high voltage stability, and maintain stable dielectric constant during extended cycle life, making these products excellent for demanding electrolyte applications.



In 1M LiPF₆ in **ULTRAPURE® EC:EMC** (1:2 v/v), **ULTRAPURE® EC-EV** and **ULTRAPURE® EC-HP** demonstrated the best color stability and performance.



The freezing point of **ULTRAPURE® EC** can be depressed by blending with **ULTRAPURE® PC**, which improves product handling. The melting curve above illustrates the melting point changes in **ULTRAPURE® EC/PC** based on the composition of the blend.

For more information, contact your local Huntsman representative. www.huntsman.com / AdTech@huntsman.com

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