

PURASOLV® superior solvency for the electronics industry



- ▶ Excellent solvency power
- ▶ High purity, low metal content
- ▶ Good wetting properties
- ▶ Global security of supply
- ▶ Low toxicity

PURASOLV® is a range of safe solvents based on lactate esters. PURASOLV® solvents offer high performance and a good EHS profile, which make them an excellent alternative to conventional solvents, such as xylene, toluene, isophorone and N-Methyl-2-pyrrolidone (NMP).

With several properties, they can also enhance the performance of formulations to create outstanding and unique additional qualities, such as wetting properties. PURASOLV® solvents offer other benefits, including low evaporation rate and low COD/BOD (Chemical Oxygen Demand/Biological Oxygen Demand).

PURASOLV® solvents combine readily biodegradability and low toxicity. Registered under REACH and by EPA, they are among the safest solvents currently available on the market.

High solvency power, good wetting properties and low evaporation rate

PURASOLV® ELECT has a long track record with formulators, as it offers high solvency for many of the polymers used in the electronics industry, for a broad range of applications, including photoresist and LCD cleaning. Additionally, PURASOLV® solvents demonstrate good wetting properties combined with low evaporation rates.

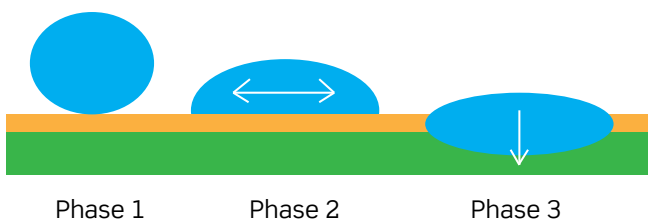


Figure 1: Wetting properties of PURASOLV®

PURASOLV® solvents range

PURASOLV® Elect/ Elect Ultra	Ethyl Lactate
PURASOLV® BL	Butyl Lactate
PURASOLV® EHL	2-Ethylhexyl Lactate
PURASOLV® ML	Methyl L-Lactate

High purity and consistent high quality

PURASOLV® ELECT and ELECT Ultra have been specifically developed for electronics applications. They offer consistent high quality supported by equally outstanding service - at microelectronics standards.

PURASOLV® ELECT and ELECT Ultra combine low metal specifications with strict Statistical Process Control (SPC) to deliver consistency across all product parameters.

PURASOLV® ELECT: Trusted by the electronics industry

- Consistent low metal levels at max 3 ppb.
- 13 metals measured.
- SPC analysis on main parameters.
- Improved analytics (ICP MS).

PURASOLV® ELECT Ultra : Next generation solvent for lithography

This innovative solution reduces metal contamination levels to ultra low levels, in line with increasing industry needs.

- Consistent low metal levels at max 500 ppt.
- 26 metals measured.
- SPC analysis on main parameters.
- Improved analytics (ICP MS, others).

PURASOLV® superior solvency for the electronics industry

Your partner for optimum quality and design flexibility

Thanks to our integrated supply chain in lactic acid, we can offer consistent quality and security of supply, with lactic acid facilities on four continents. We employ multiple sourcing strategies - supporting Business Continuity Planning (BCP). In practice, this means that we offer reliability, when the unexpected happens and customers need it most.

Safe solvents with low toxicity profile

The EHS profile of PURASOLV® solvents is one of the best in the industry. They are readily biodegradable and offer low toxicity and low VOC levels. As a result, they are easy to use and easy to dispose. PURASOLV® solvents are registered both under REACH and by the EPA.

Typical Properties

Properties	Condition	Unit	PURASOLV® ELECT	PURASOLV® BL	PURASOLV® EHL	PURASOLV® ML
	INCI name		ethyl (S)-lactate	n-butyl (S)-lactate	2-ethylhexyl (S)-lactate	methyl (S)-lactate
Formula			C5H10O3	C7H14O3	C11H22O3	C4H8O3
Molecular weight		g/mol	118.13	146.19	202.29	104.10
CAS no.			687-47-8	34451-19-9	186817-80-1	27871-49-4
REACH			yes	yes	yes	yes
TSCA registration			yes	yes	yes	yes
USA/FDA: GRAS (as flavor)			yes	yes	no	no
Boiling point		°C/°F	154/309	187/369	246/475	144/291
Flash point, ISO 2719, closed cup		°C/°F	56/133	79/174	113/235	58/136
Melting point		°C/°F	-3/27	-20/-4	-23/-9	-44/-47
Density	at 20°C/68°F	g/ml	1.03	0.98	0.94	1.09
Surface tension	at 25°C/77°F	mN/m	30.4	29.5	29.8	34.2
Viscosity	at 20°C/68°F	cP	3	3.9	7.6	3
Vapor pressure	at 20°C/68°F	mBar	2.2	0.4	0.02	3.4
Vapor pressure	at 1000°C/212°F	mBar	172	50	6	240
Relative evaporation rate	n-BuAc=1		0.22	0.03	0.003	0.26
Refractive index	at 20°C/68°F		1.413	1.422	1.435	1.414
Including coefficient (Log P)	octanol/water		0.03	1.08	3.12	-0.50
Solubility in/of water			miscible	4.5/13.9	0.03/3.5	miscible
Hansen solubility parameters total Hildebrand		(J/cm ³) ^{1/2}	22.6	21.2	19	24.1
- disperse		(J/cm ³) ^{1/2}	16.7	16.6	16.3	17.1
- polar		(J/cm ³) ^{1/2}	7.7	6.2	4.6	8.6
- hydrogen		(J/cm ³) ^{1/2}	13.1	11.6	8.6	14.6
Dielectric properties	100 kHz at 20°C					
- e'			13.5	10.1	7.7	16.3
- tan d			0.19	0.59	-	0.11
- sAC		mS/m	15	3.3	-	10



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