

PURASOLV® superior solvency for the electronics industry



- ▶ Excellent solvency power
- ▶ High purity, low metal content
- ▶ Good wetting properties
- ▶ Global supply chain security
- ▶ 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.

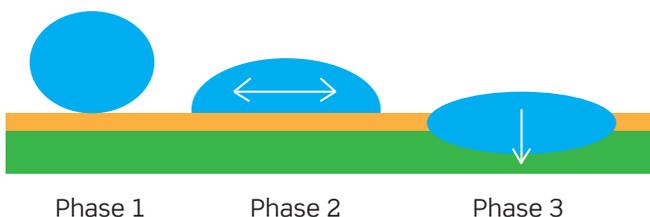


Figure 1: Wetting properties of PURASOLV®

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. PURASOLV® solvents are readily biodegradable and offer low toxicity and low VOC levels. As a result, they are easy to use and easy to dispose. 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			C ₅ H ₁₀ O ₃	C ₇ H ₁₄ O ₃	C ₁₁ H ₂₂ O ₃	C ₄ H ₈ O ₃
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
EC no.			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	188/370	246/475	144/291
Flash point (ISO 2719)		°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	29.2 at 20°C	29.5 at 20°C	33.9 at 20°C
Viscosity	at 20°C/68°F	cP	3.0	3.9	7.6	3.1
Vapor pressure	at 20°C/68°F	mBar	2.2	0.4	0.02	3.4
Vapor pressure	at 100°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	1.436	1.414
Partition coefficient (Log P)	octanol/water		0.03	1.08	3.12	-0.50
Solubility in/of water	at 20°C	%(w/w)	miscible	4.5/13.9	0.03/3.5	miscible
Hildebrand solubility parameter		(J/cm ³) ^{1/2}	21.7	19.9	18.4	23.2
Hansen solubility parameters						
- disperse		(J/cm ³) ^{1/2}	16.0	15.8	15.7	16.3
- polar		(J/cm ³) ^{1/2}	7.6	6.5	4.5	9.1
- hydrogen		(J/cm ³) ^{1/2}	12.5	10.2	8.5	13.7
Dielectric properties	at 100 kHz/20°C					
- ε'			13.5	10.1	7.7	16.1
- tanδ			0.19	0.59	-	0.11
- σ _{ac}		μS/m	15	33	-	10

* The freezing point (also called crystallization temperature) of PURASOLV® ELECT is generally lower than the melting point (T_m = -3 °C). This difference is due to the slow crystallization kinetics of very pure ethyl (S)-lactate. The crystallization temperature is not fixed and depends on the applied conditions and purity of the solvent. Increased solvent purity tends to hamper the crystallization process and results in lower freezing point. The phenomenon as described for ethyl (S)-lactate is also known as undercooling.



Request your free sample

Samples and detailed usage instructions, delivered right to your doorstep.

corbion.com/electronics



Sample Support

With R&D facilities on every continent, we are always close by to help you with your application development.

corbion.com/contact

Interested in solutions for biobased chemicals? Go to corbion.com/electronics



biobased@corbion.com

For chemical industry, Corbion offers Lactic Acid, Lactide and Lactic Acid derivatives, lactate esters, mineral- and metal salts. Corbion's products are highly cost-effective, safe and readily biodegradable, enabling manufacturers to develop environmentally safer and more sustainable formulations and processes. Our products are successfully used as solvents, intermediates, process aids and polymer additives within diverse markets, such as Agrochemicals, Plating, Textile, Oilfields and Packaging.

© Copyright Corbion. All rights reserved. No part of this publication may be copied, downloaded, reproduced, stored in a retrieval system or transmitted in any form by any means, electronic, mechanical, photocopied, recorded or otherwise, without permission of the publisher. No representation or warranty is made as to the truth or accuracy of any data, information or opinions contained herein or as to their suitability for any purpose, condition or application. None of the data, information or opinions herein may be relied upon for any purpose or reason. Corbion disclaims any liability, damages, losses or other consequences suffered or incurred in connection with the use of the data, information or opinions contained herein. In addition, nothing contained herein shall be construed as a recommendation to use any products in conflict with existing patents covering any material or its use.

