

Galden[®]



SOLVAY

asking more from chemistry[®]

Galden[®] LS/HS
Vapor Phase Soldering Fluids

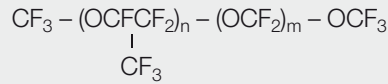
**SPECIALTY
POLYMERS**

Galden® LS and HS

Vapor Phase Soldering Fluids

Galden® LS/HS is a line of fully fluorinated fluids specifically designed for the Vapor Phase Soldering process. The narrow molecular weight distribution as well

as the very strong carbon-fluorine bond and the flexible ether link provide the properties which make Galden® LS/HS ideal for use in VPS.



Features

Wide choice of grades with different boiling point

Narrow molecular weight distribution

Low heat of vaporization
Vapor density greater than air

Excellent thermal and chemical stability
Good compatibility with materials

No flash or fire points
No auto ignition point
No explosion hazards

Benefits

Widest operating temperature range to optimize VPS process

Maximum process stability and repeatability
No boiling point drift

Rapid and residue free drying
Pre-heating and heating processes take place in an inert atmosphere

No corrosion or reaction with materials of construction
No formation of decomposition residues

Enhanced safety
Safe to use at high temperature

Lead Free and Vapor Phase Soldering

RoHS (Restriction of Hazardous Substances) is also known as "lead free" but this law deals with other five substances as well:

- Lead
- Mercury
- Cadmium
- Hexavalent Chromium
- Polybrominated biphenyls (PBBs)
- Polybrominated diphenyl ethers (PBDEs)

Particular emphasis is being placed on lead; lead is a concern when released to the environment as it can cause damage to the human body, it can also accumulate in the environment and has acute and chronic effects on plants,

animals and microorganism. Because of RoHS, manufacturers of electronic equipment will have to produce and deliver lead-free equipment; one of the first evidence of this has been the development of lead free printed circuit boards (PCBs). Solder traditionally used ~60% of tin (Sn) and ~40% of lead (Pb), now alternative solder materials have been studied, the most common replacements for lead are silver (Ag), Copper (Cu) and Bismuth (Bi). These alternative materials, however, bring a main challenge: higher melting temperature. Traditional tin/lead solders melt at ~180°C while lead free solder melts at ~227°C. Soldering temperatures, as well as heating issues, are ongoing concerns for PCBs assemblers.

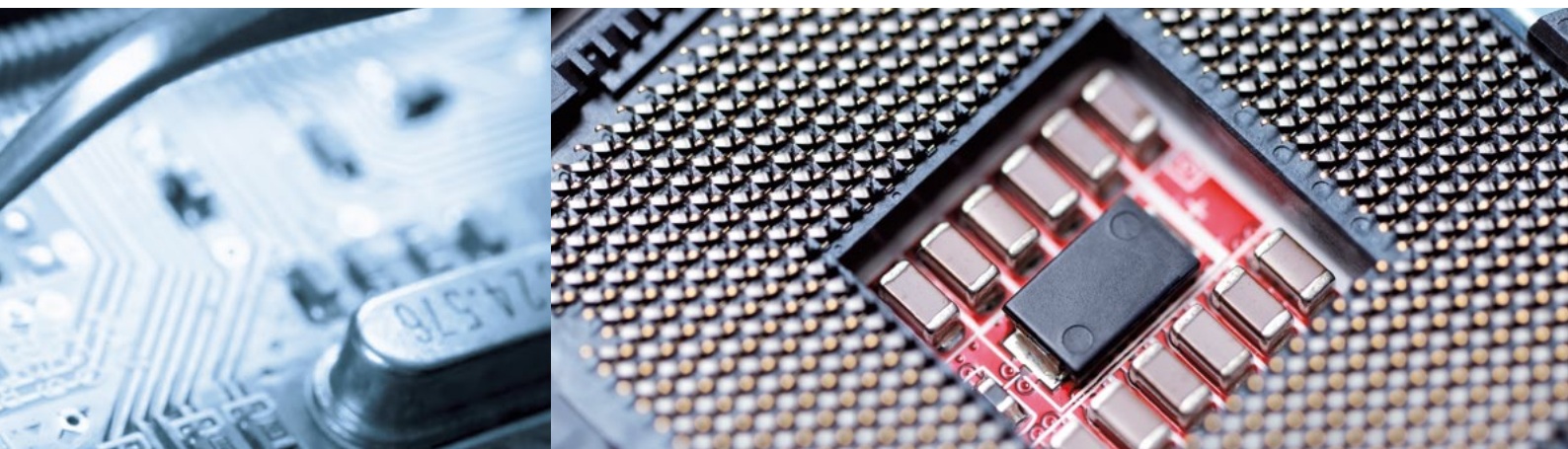


Galden® LS and HS grades for vapor phase soldering offer the right lead free process solution:

- Galden® LS and HS fluids are RoHS compliant and can be sold in Europe
- Galden® LS and HS fluids offer the widest temperature range for lead free solders up to 260 °C
- Galden® LS and HS fluids precise vapor temperatures eliminate overheating

Vapor phase soldering (Typical Properties at 25 °C)

Properties	Units	LS200	LS215	LS230	HS240	HS260
Boiling point	°C	200	215	230	240	260
Density	g/cm ³	1.79	1.80	1.82	1.82	1.83
Kinematic viscosity	cSt	2.50	3.80	4.40	5.30	7.00
Vapor pressure	Pa	21	12	3.4	1	1
Specific heat	J/Kg.°C	973	973	973	973	973
Heat of vap. at boiling point	J/g	63	63	63	63	63
Thermal conductivity	W/m.°C	0.07	0.07	0.07	0.07	0.07
Coefficient of expansion	cm ³ /cm ³ .°C	0.0011	0.0011	0.0011	0.0011	0.0011
Surface tension	dyne/cm	19	20	20	20	20
Dielectric strength	kV (2.54 mm gap)	40	40	40	40	40
Dielectric constant		2.1	2.1	2.1	2.1	2.1
Volume resistivity	Ohm·cm	1015	1015	1015	1015	1015
Average molecular weight	amu	870	950	1,020	1,085	1,210





Specialty Polymers

Worldwide Headquarters

SpecialtyPolymers.EMEA@solvay.com

Viale Lombardia, 20
20021 Bollate (MI), Italy

Americas Headquarters

SpecialtyPolymers.Americas@solvay.com

4500 McGinnis Ferry Road
Alpharetta, GA 30005, USA

Asia Headquarters

SpecialtyPolymers.Asia@solvay.com

Building 7, No. 899, Zuchongzhi Road
Zhangjiang Hi-Tech Park
Shanghai, 201203, China

www.solvay.com

Material Safety Data Sheets (MSDS) are available by emailing us or contacting your sales representative. Always consult the appropriate MSDS before using any of our products.

Neither Solvay Specialty Polymers nor any of its affiliates makes any warranty, express or implied, including merchantability or fitness for use, or accepts any liability in connection with this product, related information or its use. Some applications of which Solvay's products may be proposed to be used are regulated or restricted by applicable laws and regulations or by national or international standards and in some cases by Solvay's recommendation, including applications of food/feed, water treatment, medical, pharmaceuticals, and personal care. Only products designated as part of the Solviva® family of biomaterials may be considered as candidates for use in implantable medical devices. The user alone must finally determine suitability of any information or products for any contemplated use in compliance with applicable law, the manner of use and whether any patents are infringed. The information and the products are for use by technically skilled persons at their own discretion and risk and does not relate to the use of this product in combination with any other substance or any other process. This is not a license under any patent or other proprietary right.

All trademarks and registered trademarks are property of the companies that comprise the Solvay Group or their respective owners.
© 2013, Solvay Specialty Polymers. All rights reserved. R 09/2013 | Version 2.0 Brochure design by ahlersheinel.com