

Solvokane™ S

Technical Information



Solvay
Fluor



Introduction

Solvokane™ S is Solvokane™, an azeotropic, non-flammable mixture of Solkane® 365mfc (1,1,1,3,3-pentafluorobutane) and t-DCE (1,2-dichloroethylene), with an added specialty surfactant. It was designed for drying applications and typically operates in a 3 stage vapor degreasing/drying unit together with Solvokane™ in the final rinse.

The phase-out of conventional solutions (e.g., CFCs and HCFCs) has required alternative products. Solvokane™ S offers product characteristics which are very close to HCFC 141b and CFC 113, with a Kauri Butanol (Kb) Index of 25. The solvency power versus common contaminants is stronger than the Kb value (21.7) would suggest.

EPA/SNAP approved, Solvokane™ S is a new generation, environmentally-compatible solvent. A volatile, colorless liquid without ozone depletion potential (ODP=0), it has a relatively low global warming potential (GWP), as well as other properties which make it a superior replacement for CFCs and HCFCs.

Features and Benefits

- Fast drying with no-residue
- Low temperature with a boiling point 36°C
- Non-flammable azeotrope
- Excellent toxicity characteristics
- Drop in replacement for high cost HFC/HFE solvents

- Cleaning similar to R 141b and R 113
- Can be used as a starting point or component for more complex/customized solvent formulations

Typical Applications

Solvokane™ S was designed to serve numerous applications and it is applicable as formulated. It can, however, be used as a starting point or component for more complex or customized solvent formulations which can be adjusted for the needs of the industry.

- Precision Cleaning
- Defluxing Electronics
- Cleaning of Optical Parts and Assemblies
- Degreasing
- Fluid Carrier

Environmental Aspects

SNAP approved, Solvokane™ S is a new generation, environmentally-compatible solvent. A volatile, colorless liquid without ozone depletion potential (ODP=0), it has a relatively low global warming potential (GWP) of 550, as well as other properties which make it a superior replacement for CFCs and HCFCs.

Physical Properties – Solvokane™ S

Molecular weight MG	[kg/kmol]	127.85
Density	[kg/dm³] at 25°C	1.225
Boiling point	[°C/1013 mbar]	36.0
Freezing point	[°C]	-42.6
Flashpoint		no
Heat of vaporisation ΔH	[kJ/kg] at 25°C	209
Specific heatcapacity C_{pl}	[kJ/kgK] at 25°C	1.315
Solubility of water	[%] at 20°C	0.173
Solubility in water	[%] at 20°C	S365mfc = 0.095 t-DCE = 0.239
Surface tension	[mN/m] at 20°C	18.8
Viscosity liquid	[mPa*s] at 25°C	0.47
Refractive index	[20°C]	1.326
Autoignition temperature	[DIN EN 14522]	> 600°C (T1)
Kauri Butanol index		21.7
Vapor pressure		
0°C	[K Pa]	24.3
25°C	[K Pa]	70.6
50°C	[K Pa]	167.8
EX-limits		
LFL (Vol%) 20		4.0
UFL (Vol%) 70		12.5

Safety/Flammability

Solvokane™ S shows no flash point according to DIN 13736 and ASTM D93. Despite the absence of flash-point, vapor from Solvokane™ S, when diluted in air, can form explosive mixtures when an energy source is present. Lower and upper limits are noted in the table below. A number of conventional solvents such as HCFC 141b, Trichlorethylene (TCE) or Methylene chloride (MC) show identical flammability. But as seen in the chart below, the explosive range of Solvokane™ between lower and upper explosive limits is much narrower, further reducing the risk so handling with Solvokane™ is safer.

Prior to use, testing should be performed under conditions expected during normal operations. Standard precautions should be applied in form of good ventilation, grounding of equipment filling/refilling and pumping and avoiding contact with open fire or electrical sparks. For more information, please refer to the Solvay Solkane® Information Service: www.solvay-fluor.com

	Solvokane™	HCFC 141b	TCE	MC
Flashpoint	None	None	None	None
Lower explosive limit (LEL, Vol%)	5.4	5.6	8.0	13.0
Upper explosive limit (UEL, Vol%)	9.4	17.7	10.5	22.0
Explosive range (Vol%)	4.0	12.1	2.5	9.0

For complete toxicity information, refer to the Solvokane™ S MSDS.

Disposal/Recovery Considerations

Consideration should be given to potential issues with flammability. Users should test for flammability in their particular application and test the spent Solvokane™ S to ensure proper classification for waste disposal. Please read the MSDS prior to disposal/recovery and contact your local Solvay representative for more information if needed.

Product Description/Packaging/Sampling

The following table shows the typical composition of the azeotropic Solvokane™ S mixture, which leads to the non-flammable properties. The stabilizer is an especially volatile substance, which is highly effective but will not affect cleaning properties or lead to residues.

Ingredients	Concentration
Solkane® 365mfc (C ₄ H ₅ F ₅)	≥ 50 % wt.
t-DCE (C ₂ H ₂ Cl ₂)	≤ 50 % wt.
Purity	≥ 99.7 % wt
Acidity	≤ 1 ppm
Water	≤ 100 ppm
Residue	≤ 10 ppm

Solvokane™ S standard packaging

- 235 kg net metal returnable drums
- 22 kg net metal returnable drums

Also possible in sampling dimensions or on special request:

- 12 kg net metal returnable drums
- 6 kg net metal returnable drums
- 1 kg net metal returnable drums