SOLVOKANE® E 1.5, an azeotropic, non-flammable mixture of SOLKANE® 365mfc (1,1,1,3,3-pentafluorobutane) and t-DCE (1,2-dichloroethylene), with a small portion of Ethanol added. SOLVOKANE® E 1.5 has increased solvency capabilities especially for contaminants common in the electronics industry such as solder fluxes. It was developed and patented by Solvay Fluor GmbH to meet present and future demands of the precision cleaning within the electronics industries.

The phase-out of conventional solutions (e.g., CFCs and HCFCs) has required alternative products.

SOLVOKANE® E 1.5 offers product characteristics which are very close to HCFC141b and CFC113, with a Kauri Butanol (Kb) Index of 22. The solvency power versus common contaminants is stronger than the Kb value (22) would suggest.

- Fast drying with no-residue
- Low temperature with a boiling point 35°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

SOLVOKANE® E 1.5 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

EPA/SNAP approved, SOLVOKANE® E 1.5 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 547, as well as other properties which make it a superior replacement for CFCs and HCFCs.
**Molecular weight MW**  [kg/kmol]  124.5

**Density**  [kg/dm³] at 20 °C  1.25

**Boiling point**  [°C/1013 mbar]  35

**Freezing point**  [°C]  –43

**Flashpoint**  None

**Heat of vaporisation ΔH**  [kJ/kg] at 25 °C  228

**Specific heat capacity C_p**  [kJ/kgK] at 25 °C  1.36

**Solubility of water**  [%] at 20 °C  0.095

**Solubility in water**  [%] at 20 °C  S365mfc = 0.095 t-DCE = 0.239

**Surface tension**  [mN/m] at 20 °C  17.9

**Viscosity liquid**  [mPas] at 25 °C  0.46

**Refractive index**  [20 °C]  1.325

**Autoignition temperature**  [DIN EN 14522]  > 600 °C (T1)

**Kauri Butanol index**  22

**Vapor pressure**

- 0 °C  [bar]  0.226
- 25 °C  [bar]  0.701
- 50 °C  [bar]  1.689

**EX-limits**

- LFL (Vol%) 20  3.8
- UFL (Vol%) 70  13.7

**Safety/Flammability**

SOLVOKANE® E 1.5 shows no flash point according to DIN 13736 and AS® D93. Despite the absence of flashpoint, vapor from SOLVOKANE® E 1.5, 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, Trichloroethylene (TCE) or Methylene chloride (MC) show identical flammability. But as seen in the chart below, the explosive range of SOLVOKANE® E 1.5 between lower and upper explosive limits is much narrower.

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

For complete toxicity information, refer to the SOLVOKANE® E 1.5 MSDS.
Consideration should be given to potential issues with flammability. Users should test for flammability in their particular application and test the spent SOLVOKANE® E 1.5 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.

The following table shows the typical composition of the azeotropic SOLVOKANE® E 1.5 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.

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOLKANE® 365mfc (C$_4$H$_5$F$_5$)</td>
<td>≥ 50 % wt.</td>
</tr>
<tr>
<td>t-DCE (C$_2$H$_2$Cl$_2$)</td>
<td>&lt; 50 % wt.</td>
</tr>
<tr>
<td>Purity</td>
<td>≥ 99.7 % wt.</td>
</tr>
<tr>
<td>Acidity</td>
<td>&lt; 1 ppm</td>
</tr>
<tr>
<td>Water</td>
<td>&lt; 100 ppm</td>
</tr>
<tr>
<td>Residue</td>
<td>&lt; 10 ppm</td>
</tr>
<tr>
<td>Ethanol</td>
<td>1.3 – 1.7 % wt.</td>
</tr>
</tbody>
</table>

**SOLVOKANE® E 1.5 standard packaging**

- 235 kg net metal returnable drums

**Also possible in sampling dimensions or on special request**

- 1 kg net metal returnable cans

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**Disclaimer:**

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