



## 1 Identification

- **Product identifier**
- **Trade name:** Solvokleen X CP-E & AR-E
- **Article number:** 1894
- **Relevant identified uses of the substance or mixture and uses advised against**  
No further relevant information available.
- **Application of the substance / the mixture** Chemical for research, development, manufacturing and analysis
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**  
Biosolve Chimie  
20 Rue Roger Husson, 57260 Dieuze, France  
Tel: +33 3 878 675 80/81/82/83/84/85  
Email: [info@biosolvechimie.com](mailto:info@biosolvechimie.com)
- **Biosolve B.V.**  
Leenderweg 78, 5555 CE Valkenswaard, the Netherlands.  
Tel: +31-(0)40-2071300  
Fax: +31-(0)40-2048537  
Email: [info@biosolve-chemicals.com](mailto:info@biosolve-chemicals.com)
- **Information department:** Product safety department
- **Emergency telephone number:**  
American Association of Poison Control Centers 1-800-222-1222.  
For emergency telephone numbers of the poisons centers in USA please use this link: <http://www.eapcct.org/>

## 2 Hazard(s) identification

- **Classification of the substance or mixture**
- **Classification according to Directive 67/548/EEC or Directive 1999/45/EC**  
 Harmful  
Harmful by inhalation.  
In use, may form flammable/explosive vapour-air mixture. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
- **Information concerning particular hazards for human and environment:**  
The product has to be labeled due to the calculation procedure of international guidelines.
- **Classification system:**  
The classification was made according to the latest editions of international substances lists, and expanded upon from company and literature data.
- **Label elements**
- **Labelling according to EU guidelines:**  
The product has been classified and marked in accordance with directives on hazardous materials.
- **Code letter and hazard designation of product:**  
 Harmful
- **Hazard-determining components of labeling:**  
*trans*-dichloroethylene
- **Risk phrases:**  
In use, may form flammable/explosive vapour-air mixture.  
Harmful by inhalation.  
Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
- **Safety phrases:**  
Keep away from sources of ignition - No smoking.  
Do not empty into drains.

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*Wear suitable protective clothing, gloves and eye/face protection.  
Avoid release to the environment. Refer to special instructions/safety data sheets.*

- **Classification system:**
- **NFPA ratings (scale 0 - 4)**



- **HMIS-ratings (scale 0 - 4)**



- **Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

### 3 Composition/information on ingredients

- **Chemical characterization: Mixtures**
- **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components:**

156-60-5	trans-dichloroethylene	50-75%
406-58-6	1,1,1,3,3-pentafluorobutane	25-50%

### 4 First-aid measures

- **Description of first aid measures**
- **General information:**  
*Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.*
- **After inhalation:**  
*Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.  
In case of unconsciousness place patient stably in side position for transportation.*
- **After skin contact:**
  - Wash off with soap and water.
  - Remove and wash contaminated clothing before re-use.
  - If symptoms persist, call a physician.
- **After eye contact:** *Rinse opened eye for several minutes under running water.*
- **After swallowing:** *If symptoms persist consult doctor.*
- **Most important symptoms and effects, both acute and delayed** *No further relevant information available.*
- **Indication of any immediate medical attention and special treatment needed**  
*No further relevant information available.*

### 5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:**  
*CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.*
- **Special hazards arising from the substance or mixture** *Can form explosive gas-air mixtures.*
- **Advice for firefighters**
  - The product is not flammable.
  - Vapours are heavier than air and may spread along floors.

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- Risk of ignition.
- Vapours may form explosive mixtures with air.
- Hazardous decomposition products formed under fire conditions
- **Protective equipment:**
  - Wear self-contained breathing apparatus and protective suit.
  - Fire fighters must wear fire resistant personnel protective equipment.
  - Wear chemical resistant oversuit
  - Clean contaminated surface thoroughly.
  - Mouth respiratory protective device.

## 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
  - Refer to protective measures listed in sections 7 and 8.
  - Approach from upwind.
  - Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.
  - Suppress (knock down) gases/vapours/mists with a water spray jet.
  - Avoid spraying the leak source.
  - Cover the spreading liquid with foam in order to slow down the evaporation.
  - Prevent further leakage or spillage if safe to do so.
  - Keep away from open flames, hot surfaces and sources of ignition.
  - Ventilate the area.
- Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:**
  - Do not allow product to reach sewage system or any water course.
  - Inform respective authorities in case of seepage into water course or sewage system.
  - Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:**
  - Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  - Dispose contaminated material as waste according to item 13.
  - Ensure adequate ventilation.
- **Reference to other sections**
  - See Section 7 for information on safe handling.
  - See Section 8 for information on personal protection equipment.
  - See Section 13 for disposal information.

## 7 Handling and storage

- **Precautions for safe handling**
  - Avoid contact with skin and eyes.
  - Avoid inhalation of vapour or mist.
  - Keep away from sources of ignition - No smoking.
  - Use solvent-proof equipment.
  - Ensure good ventilation/exhaustion at the workplace.
- **Information about protection against explosions and fires:** Keep ignition sources away - Do not smoke.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
  - **Requirements to be met by storerooms and receptacles:** Store only in the original receptacle.
  - **Information about storage in one common storage facility:** Not required.
  - **Further information about storage conditions:** Keep receptacle tightly sealed.
  - **Specific end use(s)** No further relevant information available.

## 8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.

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- **Control parameters**
- **Components with limit values that require monitoring at the workplace:**

- 1,1,1,3,3-pentafluorobutane
- Acceptable Exposure Limit  
TWA = 1,000 ppm
- trans-Dichloro ethylene
- UK. EH40 Workplace Exposure Limits (WELs) 2007  
time weighted average = 200 ppm  
time weighted average = 806 mg/m<sup>3</sup>
- UK. EH40 Workplace Exposure Limits (WELs) 2007  
Short term exposure limit = 250 ppm  
Short term exposure limit = 1,010 mg/m<sup>3</sup>
- US. ACGIH Threshold Limit Values 2009  
time weighted average = 200 ppm

**156-60-5 trans-dichloroethylene**

PEL	Long-term value: 790 mg/m <sup>3</sup> , 200 ppm
REL	Long-term value: 790 mg/m <sup>3</sup> , 200 ppm
TLV	Long-term value: 793 mg/m <sup>3</sup> , 200 ppm

- **Additional information:** The lists that were valid during the creation were used as basis.

- **Exposure controls**

- Provide appropriate exhaust ventilation at machinery.
- Apply technical measures to comply with the occupational exposure limits.

- **Personal protective equipment:**

- **General protective and hygienic measures:**

- Keep away from foodstuffs, beverages and feed.
- Wash hands before breaks and at the end of work.

- **Breathing equipment:**

- In case of emissions, face mask with type AX cartridge.
  - Self-contained breathing apparatus in medium confinement/insufficient oxygen/in case of large uncontrolled emissions/in all circumstances when the mask and cartridge do not give adequate protection.
  - Use only respiratory protection that conforms to international/ national standards.
- In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

- **Protection of hands:**

- Protective gloves - impervious chemical resistant - Neoprene and/or Neoprene over natural rubber
- To avoid skin problems reduce the wearing of gloves to the required minimum.



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

- **Material of gloves**

- Protective gloves - impervious chemical resistant: Neoprene or/and Neoprene over natural rubber

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

- **Penetration time of glove material**

The determined penetration times according to EN 374 part III are not performed under practical conditions. Therefore a maximum wearing time, which corresponds to 50% of the penetration time, is recommended.

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The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye protection:** Safety glasses

## 9 Physical and chemical properties

· **Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

· <b>Form:</b>	Liquid
· <b>Color:</b>	Colorless
· <b>Odor:</b>	Ether-like
· <b>Odour threshold:</b>	Not determined.

· **pH-value at 20 °C (68 °F):** 6

· **Change in condition**

· <b>Melting point/Melting range:</b>	-43 °C
· <b>Boiling point/Boiling range:</b>	36 °C (97 °F)

· **Flash point:** Remarks: does not flash, The product is not flammable.  
Method: closed cup

· **Flammability (solid, gaseous):** Not applicable.

· **Ignition temperature:** 440 °C (824 °F)

· **Decomposition temperature:** Not determined.

· **Auto igniting:** Product is not selfigniting.

· **Danger of explosion:** Product does not present an explosion hazard.  
In use, may form flammable/explosive vapour-air mixture.

· **Explosion limits:**

· <b>Lower:</b>	3.6 Vol %
· <b>Upper:</b>	13.3 Vol %

· **Vapor pressure at 20 °C (68 °F):** 433 hPa (325 mm Hg)

· **Density at 20 °C (68 °F):** 1.225 g/cm<sup>3</sup> (10.223 lbs/gal)

· **Relative density** Not determined.

· **Vapour density** > 1  
Method: calculated value

· **Evaporation rate** Not determined.

· **Solubility in / Miscibility with**

· **Water:** 3.34 g/l

· **Partition coefficient (n-octanol/water):** log Pow: < 3  
Method: calculated value

· **Viscosity:**

· <b>Dynamic:</b>	0.53 mPa.s	Temperature: 25 °C
· <b>Kinematic:</b>	Not determined.	

· **Solvent content:**

· <b>Organic solvents:</b>	65.0 %
· <b>VOC content:</b>	65.0 %
	796.3 g/l / 6.65 lb/gl

· **Other information** No further relevant information available.

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### 10 Stability and reactivity

- **Reactivity**
- **Chemical stability**
  - Stable under recommended storage conditions.
  - Strong oxidizers, alkali metals and alkaline earth metals may cause fires or explosions.
  - Vapours are heavier than air and may spread along floors.
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid**
  - Direct sources of heat.
  - Keep away from direct sunlight.
  - Do not freeze.
- **Incompatible materials:** - Oxidizing agents, Powdered metals, Reducing agents, Alkali metals
- **Hazardous decomposition products:**
  - Gaseous hydrogen fluoride (HF), Fluorophosgene, Gaseous hydrogen chloride (HCl), Phosgene, Carbon monoxide, The release of other hazardous decomposition products is possible.

### 11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**

· **LD/LC50 values that are relevant for classification:**

**156-60-5 trans-dichloroethylene**

Oral	LD50	770 mg/kg (rat)
Inhalative	LC50/4 h	95.5 mg/l (rat)

- **Primary irritant effect:**
- **on the skin:** May cause skin irritation
- **on the eye:** Mild eye irritation
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**  
Chronic toxicity
  - Inhalation, after a single exposure, dog, NOEL:  $\geq 7,5\%$ , cardiac sensitization following adrenergic stimulation, (1,1,1,3,3-pentafluorobutane)
  - Inhalation, Repeated exposure, rat, NOEL: 30000 ppm, (1,1,1,3,3-pentafluorobutane)
  - Inhalation, 90-day, rat, NOEL:  $> 4000$  ppm, (trans-Dichloro ethylene)
  - Oral, rat, NOEL: 190 mg/kg, (trans-Dichloro ethylene)
 The product shows the following dangers according to internally approved calculation methods for preparations:  
Harmful

- **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**

None of the ingredients is listed.

· **NTP (National Toxicology Program)**

None of the ingredients is listed.

· **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

### 12 Ecological information

- **Toxicity**
- **Aquatic toxicity:**  
Acute toxicity
  - Fishes, Brachydanio rerio, LC50, 96 h,  $> 200$  mg/l

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- Crustaceans, *Daphnia magna*, NOEC, 48 h, > 200 mg/l  
Chronic toxicity
- Algae, *Selenastrum capricornutum*, NOEC, 72 h, = 113 mg/l
- **Persistence and degradability**
- Abiotic degradation*
- Air, indirect photo-oxidation,  $t_{1/2}$  ca. 7.04 y  
*Biodegradation*
- aerobic, Tested according to: Closed Bottle test  
*Remarks: Not readily biodegradable.*
- **Behavior in environmental systems:**
- **Components:**
- Ozone Depletion Potential :  
*Ozone depletion potential; ODP; (R-11 = 1) = 0*  
*Result: no effect on stratospheric ozone*
- Global Warming Potential :  
*Global warming potential (GWP) = 890*  
*Remarks: Reference value for carbon dioxide: GWP = 1*
- **Bioaccumulative potential**
- Bioaccumulative potential: log Pow ca. 1.61  
*Result: Bioaccumulation is unlikely.*  
*Remarks: measured value*
- **Mobility in soil**
- Air, Henry's law constant (H) ca. 38 hPa.m<sup>3</sup>/mol  
*Conditions: 20 °C / calculated value*  
*Remarks: considerable volatility*
- Soil/sediments, adsorption, log KOC:ca. 1.8  
*Conditions: calculated value*
- **Ecotoxicological effects:**
- **Remark:** Harmful to fish
- **Additional ecological information:**
- **General notes:**  
*Water hazard class 1 (Self-assessment): slightly hazardous for water*  
*Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.*  
*Harmful to aquatic organisms*
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects** No further relevant information available.

**13 Disposal considerations**

- **Waste treatment methods**
- **Recommendation:**  
*Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. For used, contaminated and residual materials additional evaluations may be required. Do not dump into any sewers, on the ground, or into any body of water. Must not be disposed of together with household garbage. Do not allow product to reach sewage system.*
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.

**14 Transport information**

- **UN-Number**
- **DOT, ADR, ADN, IMDG, IATA**                      *Void*

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- |   |                 |
|---|-----------------|
| · <b>UN proper shipping name</b><br>· <b>DOT, ADR, ADN, IMDG, IATA</b>                      | Void            |
| · <b>Transport hazard class(es)</b><br>· <b>DOT, ADR, ADN, IMDG, IATA</b><br>· <b>Class</b> | Void            |
| · <b>Packing group</b><br>· <b>DOT, ADR, IMDG, IATA</b>                                     | Void            |
| · <b>Environmental hazards:</b><br>· <b>Marine pollutant:</b>                               | No              |
| · <b>Special precautions for user</b>   | Not applicable. |
| · <b>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b>            | Not applicable. |
| · <b>UN "Model Regulation":</b>   | -               |

### 15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Sara**

· **Section 355 (extremely hazardous substances):**

None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**

None of the ingredients is listed.

· **TSCA (Toxic Substances Control Act):**

All ingredients are listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**

None of the ingredients is listed.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

156-60-5 | trans-dichloroethylene

II

· **TLV (Threshold Limit Value established by ACGIH)**

None of the ingredients is listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients is listed.

· **Product related hazard informations:**

The product has been classified and marked in accordance with directives on hazardous materials.

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· **Hazard symbols:**



*Harmful*

· **Hazard-determining components of labeling:**

*trans-dichloroethylene*

· **Risk phrases:**

*In use, may form flammable/explosive vapour-air mixture.*

*Harmful by inhalation.*

*Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.*

· **Safety phrases:**

*Keep away from sources of ignition - No smoking.*

*Do not empty into drains.*

*Wear suitable protective clothing, gloves and eye/face protection.*

*Avoid release to the environment. Refer to special instructions/safety data sheets.*

· **Chemical safety assessment:** *A Chemical Safety Assessment has not been carried out.*

**16 Other information**

*This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.*

· **Classification of the substance or mixture**



*GHS07*

*Acute Tox. 4 H302 Harmful if swallowed.*

· **Department issuing SDS:** *Product safety department*

· **Contact:** *Product safety department*

· **Date of preparation / last revision** *12/14/2014 / -*

· **Abbreviations and acronyms:**

*RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)*

*ICAO: International Civil Aviation Organisation*

*ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)*

*IMDG: International Maritime Code for Dangerous Goods*

*DOT: US Department of Transportation*

*IATA: International Air Transport Association*

*ACGIH: American Conference of Governmental Industrial Hygienists*

*EINECS: European Inventory of Existing Commercial Chemical Substances*

*ELINCS: European List of Notified Chemical Substances*

*CAS: Chemical Abstracts Service (division of the American Chemical Society)*

*NFPA: National Fire Protection Association (USA)*

*HMIS: Hazardous Materials Identification System (USA)*

*VOC: Volatile Organic Compounds (USA, EU)*

*LC50: Lethal concentration, 50 percent*

*LD50: Lethal dose, 50 percent*

*Acute Tox. 4: Acute toxicity, Hazard Category 4*