

SAFETY DATA SHEET

No. U-1320A-17

Identity (As Used on Label and List)

- **Date Prepared:** June 6, 1994
- **Date Revised:** January 1, 2008

ASAHIKLIN AK-225G

1. PRODUCT AND COMPANY INFORMATION

Product Name: ASAHIKLIN AK-225G

Synonym: HCFC-225cb

General Use: solvent

MSDS Number: U-1320A

Manufacturer

Company Name: ASAHI GLASS CO., LTD. Chemicals Company Gas & Solvent

Address: 1-12-1, Yurakucho, Chiyoda-ku, Tokyo, 100-8405, Japan

Telephone No.: +81-3-3218-5479

Facsimile No.: +81-3-3218-7854

Supplier

Company Name: AGC Chemicals Americas, Inc.

Address: 55 E. Uwchlan Ave. Suite 201, Exton, PA 19341, USA

Telephone No.: (704) 329-7614

24 HR. EMERGENCY TELEPHONE NUMBERS

CHEMTREC (US): 800-424-9300 24hours

MEDICAL EMERGENCY: (800) 420-8479

Transportation Phone: (800) 424-9300

Customer Service: (704) 329-7614

2. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS No.	%
1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb)	507-55-1	>99

Note: This product does not contain any CFCs.

OSHA Hazardous Components (29 CFR 1910.1200)

None

3. HAZARDS IDENTIFICATION

This product is not hazardous under OSHA.

Potential Health Effects

- **Inhalation:** Inhalation of high concentrations could cause unconsciousness, heart effects, liver effects, and death.
- **Skin Contact:** may cause skin irritation.
- **Eye Contact:** May cause eye irritation.

4. FIRST AID MEASURES

- **Inhalation:** If high concentrations are inhaled, immediately remove to fresh air. Keep person calm. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
- **Skin contact:** In case of skin contact, flush with plenty of water for at least 15 minutes. Get medical attention if irritation is present.
- **Eye contact:** In case of eye contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.
- **Ingestion:** No specific intervention is indicated as the compound is not likely to be hazardous by ingestion. Consult a physician if necessary. Do not induce vomiting because the hazard of aspirating the material into the lungs is considered greater than swallowing it.

5. FIRE-FIGHTING MEASURES

- **Suitable extinguishing media:** As appropriate for combustibles in area.
- **Unsuitable extinguish media/methods:** None
- **Hazardous combustion product or gases:** Containers may rupture under fire conditions. Decomposition of this product at temperature above 300deg.C (572deg.F) can form hydrogen fluoride (HF), but HF will only accumulate with continuous exposure to excess heat in a sealed vessel.
- **Special protective equipment for fire fighters:** Self-contained breathing apparatus (SCBA) is required if drums rupture and contents are spilled under fire conditions.
- **Additional information**
Use water spray to cool containers.
Move containers from fire areas if it can be done without risk.

6. ACCIDENTAL RELEASE MEASURES

In case of spill or other release:

NOTES: Review chapter 5, chapter 7 and chapter 8 before proceeding with clean up. Use appropriate Personal Protective Equipment during clean up.

Shut off flames in area to avoid forming dangerous decomposition products (see chapter 5).
Dike spill. Prevent liquid from entering sewers, waterways or low areas. Ventilate area. Collect on absorbent material and transfer to steel drums for recovery/disposal. Comply with Federal, State, and local regulations on reporting releases.

Additional information:

Information for safe handling is found in chapter 7.

Information for disposal is found in chapter 13.

7. HANDLING AND STORAGE

Handling

Use with sufficient ventilation to keep employee exposure below recommended limits. Provide adequate ventilation for storage, handling, and use, especially for enclosed or low spaces. Avoid contact of liquid with eyes and prolonged skin exposure. Do not allow product to contact open flame or electrical heating elements because dangerous decomposition products may form.

Storage

Store in clean, dry, well-ventilated area. Do not heat above 30deg.C. (86deg.F)

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Exposure guidelines:

- **ASAHIKLIN AK-225G**
AEL*: 400ppm (8h-TWA)
MAK-Values (Germany): Not established
TLV-TWA (ACGIH): Not established
* AEL is the Acceptable Exposure Limit set by Asahi Glass Co., Ltd.

EEL*: 1000ppm (time limit 15 min.), 2500ppm (time limit 1 min.)

* EEL is the Emergency Exposure Limit set by Asahi Glass Co., Ltd.

Emergency Exposure Limits (EELs) are to be used for short-term emergency exposure control. They are concentrations of short periods which should not result in permanent adverse health effects or interfere with escape. They should not be confused with ACGIH TLV-TWA or TLV STEL values that are designed for repeated exposure guidelines. For the use of AK-225G, daily exposure limits such as AEL as well as EEL are to be followed. The EEL for AK-225G is needed to avoid anesthetic effects which could prevent self-rescue. If an EEL is exceeded for specified duration, evacuation, sheltering in place or other mitigation steps should be taken.

Remarks

AELs (Asahi Glass Co., Ltd.) of HCFC-225cb is 400ppm. Though no ACGIH TLV or OSHA PEL are assigned, Asahi Glass temporarily recommends that workplace exposure level should be maintained at 400ppm or less for AK225G until the authorized control level such as ACGHI TLV or OSHA PEL are assigned.

Exposure controls.

Occupational exposure controls.

Engineering Controls:

Normal ventilation for standard manufacturing procedures is generally adequate. Local exhaust should be used when large amounts are released. Mechanical ventilation should be used in low places.

Personal protection:

- **Respiratory protection:** Use respiratory protection approved by NIOSH in USA or other equivalent in each country if exposure limits may be exceeded. Self-contained breathing apparatus (SCBA) is required if a large spill occurs.
- **Hand protection:** Impermeable gloves
- **Eye protection:** Chemical splash goggles

Other Precautionary Information:

NPCA - HMIS (National Paint and Coating Association - Hazardous Materials Identification System) Hazard Rating

HMIS codes are intended for use in everyday workplace setting to provide a rapid indication of the occupational hazards associated with chemicals used in the workplace.

a) Flammability - 1, b) Health - 1, c) Reactivity- 0

9. PHYSICAL AND CHEMICAL PROPERTIES

- **Appearance and Odor:** Clear, colorless liquid with slight ethereal odor.
- **Boiling point:** 56.1deg.C(133deg.F)
- **Flash point (method):** None (Tag Closed Cup & Cleveland Open Cup)
- **Lower explosive limit:** None
- **Upper explosive limit:** None
- **Autoignition temperature:** N/D
- **Freezing point:** -116deg.C(-177deg.F)
- **Vapor pressure (25deg.C):** 0.037 MPa
- **Specific Gravity (25deg.C):** 1.558
- **Solubility (25deg.C) in water:** 0.016g / 100g H₂O
- **pH value (20deg.C):** N/D
- **Partition coefficient: n-octanol / water:** 3.13
- **Vapor density:** 7.0
- **Evaporation rate (Diethyl ether=1):** 0.85

10. STABILITY AND REACTIVITY

Conditions to avoid: Material is stable. However, avoid open flames and high temperature.

Stability: Stable

Materials to avoid (Incompatibilities): Incompatible with alkali or alkaline earth metals-powdered Al, Zn, Be, etc.

Hazardous decomposition products:

Decomposition products are hazardous. This compound can be decomposed by high temperatures (open flames, glowing metal surfaces, etc.) forming hydrochloric and hydrofluoric acids and possibly carbonyl halides.

Hazardous Polymerization

Will Not Occur

11. TOXICOLOGICAL INFORMATION

Animal Data:

1,3-Dichloro-1, 1,2,2, 3-pentafluoropropane (HCFC-225cb)

Inhalation: 4-h LC50: 36,800ppm in rats

Oral: LD50: >5 g/kg in rats

Dermal: LD50: >2g/kg in rabbit.

Eye: Not irritant up to 0.1ml in rabbit.

Data from acute toxicity studies indicate that HCFC-225cb has very low acute toxicity. HCFC-225cb causes neither eye irritation nor dermal toxicity in standardized tests; skin application of this compound at high doses (2,000mg/kg body weight) produces no adverse effects. Therefore, the dermal LD50 is greater than 2,000mg/kg body weight. Oral administration of this compound at high doses (5,000mg/kg body weight) does not cause any mortality and the oral LD50s are greater than 5,000mg/kg body weight. This compound also has very low acute inhalation toxicity as measured by the concentration that cause 50% mortality in experimental animals, the LC50, listed above. Cardiac sensitization response in dogs is observed at approximately 20,000ppm for HCFC-225cb.

In 28-day inhalation studies with rat, the activity and responsiveness of the animals was reduced at 5,000ppm or greater. Toxicity was otherwise confined to the liver; liver enlargement and induction of peroxisomes was seen following treatment. In 28-day study with marmoset, exposure to HCFC-225cb at 5,000ppm caused somnolence during exposure and an increase of cytochrome P-450, indicative of an adaptive response to this compound. However, no liver enlargement was seen and virtually no peroxisome induction was observed.

This compound does not produce genetic damage in bacterial cell cultures (Ames Assay), CHL, and in-vivo unscheduled DNA syntheses assay. In one in-vitro study with mammalian cell cultures (human lymphocytes) genetic damage was produced but the response was only marginal. The overall evidence from these studies implies that this chemical is not genotoxic.

Carcinogenicity

HCFC-225cb is not listed by NTP, IARC or OSHA as a carcinogen.

12. ECOLOGICAL INFORMATION

Biodegradability: 7% by BOD

Bioaccumulation: N/D

Other information: N/D

13. DISPOSAL CONSIDERATIONS

Waste treatment: Recover by distillation or remove to permitted waste disposal facility.

Packaging treatment: Dispose of waste containers to authorized landfill, in accordance with local laws and regulations.

Comply with all federal, state and local regulations.

Do not dump this product into sewers, on the ground or into any body of water.

14. TRANSPORT INFORMATION

US DEPARTMENT OF TRANSPORTATION (DOT)

Hazardous Materials: N/A
Hazardous Materials Description and Proper Shipping Name: N/A
Hazardous Class or Division: Not classified
Identification Number: Not regulated
Packing Group: Not classified
Label(s) Required: Not classified

UN Number: N/A
IMDG Status: Not restricted
Marine Pollutant: No
ICAO/IATA Status: Not restricted

15. REGULATORY INFORMATION

For European Union

EEC Classification: Not classified
Hazard Symbol: Not established
Risk phrases: Not established
Safety phrases: Not established, but recommend 23 (Don't breathe gas/fumes/vapor/spray), 24/25 (Toxic in contact with skin and if swallowed), 36/37 (Irritation to eyes and respiratory system)
Council Directive 92/32/EEC Status: These chemicals are listed on the EINECS (HCFC-225cb: 208-076-9).

For United States of America

SNAP Acceptable: HCFC-225cb is listed as SNAP acceptable substitutes for CFCs in the Solvent Cleaning Sector of the Clean Air Act.
Non-VOC: HCFC-225cb is exempted from VOC regulations in the Clean Air Act.
TSCA Status: HCFC-225cb is listed on the TSCA Inventory.
SARA Section 302: HCFC-225cb is not Section 302 hazard.
SARA Section 311, 312: Acute = Yes
Chronic = Yes
Fire = No
Reactivity = No
Pressure = No
SARA Section 313 = Yes (HCFC-225cb)
User should ensure that this material is in compliance with federal requirements and ensure conformity to local regulations.

For Canada: WHMIS Classification

Note: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

16. OTHER INFORMATION

- **N/E:** Not Established
- **N/A:** Not Applicable
- **N/D:** No Data
- **ACGIH:** American Conference of Governmental Industrial Hygienists

NFPA Hazard Code

NFPA codes are designed for use by firefighters, sheriffs, or other emergency response teams who are concerned with the hazards of burning or exploding materials. These NFPA codes are not intended to address the hazards of this product other than in a fire situation.

Decomposition of this product at temperature above 300 deg. C can form hydrogen fluoride (HF), but HF will only accumulate with continuous exposure to excess heat in a sealed vessel.

Health	Fire	Reactivity
2	0	0

Revision Summary: Chapters 1, 2, 11, 15, 16 (2007.6)

The product is not designed for special applications such as pharmaceutical and medical uses.

The information given in this safety data sheet is for safety purposes only. It is given in good faith and based on the best knowledge and experience of the company at the date of issuing.

The company is not responsible for any loss or damage caused by the use of the product in applications for which it was not intended or for conditions of use contrary to the recommendations in this safety data sheet.

WARNINGS

This substance harms public health and environment by destroying ozone in the upper atmosphere.
