Material Safety Data Sheet

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Product Name:	Copic Aircan (HFC-134a, Chlorofluorocarbon<CFC>-134a)

Identification of substance:	Category of product	Mono substance
	Name of chemical(s)	Tetrafluoromethane
	Molecular count(weight)	102.03
	Content	more than 99.5%
	Chemical formula	CH2FCF3
	CAS No.	811-97-2
	TSCA No.	811-97-2
	EINECS No.	212-377-0
	UN Classification No.	Class 2
	UN No.	3159

This artitst drawing and marker ink is a proffessional artits's product that is not intended for use by children. Keep out of the reach of children.

Physical and Chemical Characteristics	
Classification:	Non-flammable liquid
Boiling Point:	-26.18 degrees C (-15 degrees F)
Vapor Pressure:	0.666Mpa (97 PSI) at 25 degrees C (77 degrees F)
Vapor Density:	3.52
Solubility in Water:	Moderate
Melting Point:	-101 degrees C (-150 degrees F)
Evaporation Rate:	Rapid
Apprearance:	Transparent liquid gas

Classification by hazard	
Designation of classification	High pressure gas Non-flammable liquid gas
Hazardousness:	The product is unerosive and non-flammable liquid gas in normal condition. There is a possibility that in the case where this product is dispensed into the air as liquid, if the product directly sticks on the skin, frostbite takes place on the skin. Because the product's evaporation accompanies taking its surrouding atmosphere of latent heat. In addition, when the product evaporates, it swells. For this reason, in the case of using the product within a closed room, take enough ventilation of the room because the swelling of the product reduce oxygen concentration in the room which may eventually suffocates a person in the room.
Toxicity:	Toxicity of this product through inhalation in very slight. In the normal use of it, suffocation, anesthesia, liver dysfunction, etc., rarely take place. Inhalation of high concentration of the gas causes a symptom which looks like general anesthesia. Further exposure to the product may cause a person a nausea, an ecstatic feeling (the weakening of thinking faculty), motor nerves' disorder for physically-joint movement, unconciousness, etc., all of which are generally anesthetic and caused by the tempoal functional weakening of nerve system. And the exposure to the product of high concentration also may invite disorderly heart beating and the suspension of heart beating.

Environmental effect: The product reacts with hydroxyle group and ends up resolving into carbon dioxide and water. Concerning about the effect of this product on ozone layers and global warming (greenhouse effect), please refer to the paragraph related to "Information on environment effect."

Fire extinguishing media: Since this product is inflammable, choose and use appropriate extinguishing agent around the fire having just occurred.

Special Fire Fighting Proced This product is inflammable and usually does not catch fire. In case of fire in the surrounding area of the product, transfer the container immediately including the product to safer place. If it is impossible to transfer the container, sprinkle water to the container as well as the area surrouding the container in order to cool the container, and prevent the fire from spreading. Be careful not to inhale toxic gas created by biodegration caused by the fire.

Information of Hazardousness

Ignition point: None

Flash point: No data available

Explosive limit: None

Stability/Reactivity: If the product is stable and dissolved 0.1% of the product through heating at the temperature of 897 degrees C (1,647 degrees F) and 46% at the temperature of 1,137 degrees C (2,079 degrees F).

Erosiveness: Aluminium alloy has no toxic effect as long as the magnesium content of the alloy is low.

Information of toxicity

Sensitivity: Cardiac sensitivity to adrenalin
dog NOEL 50,000ppm

Acute toxicity: Inhalation rat LC50 4 hours>500,000ppm
rat ALC 4 hours>467,000ppm

Chronical toxicity: Inhalation rat 2 years NOEL 10,000ppm

Carciogenecity: Inhalation rat 2 years NOEL 10,000ppm

Mutagenicity: Ames test negative

Genotoxicity: rabit 40,000ppm, None

Health Hazard Data

First Aid:

Eye contact: Flush with fresh running water immediately for more than 15 minutes, and soon after that, take a medical treatment.

Skin Contact: If the product sticks on the skin in gaseous form, it gives the skin no damage. However, if the product in gaseous form touches the moisture on the skin, the skin may take on frostbite. Because of this, divest the person immediately who touches the product of his clothes, shoes and socks. Flush enough with a large amount of water the skin part stuck with the product. If there remains irritation on the skin, take a medical treatment immediately.

Inhaled: If a person inhales high concentration of this product, carry him to the place immediately where he can take fresh air in, keep him warm and quiet by the use of blanket, etc., and soon after that, take him to a doctor for medical check. In the case of a breath suspension or the weakening of breathing power, secure enough breathing by means of loosening his clothes, and after that, provide an artificial respiration, or according to circumstances, provide oxgen inhalation, and immediately after that, take him to a doctor for medical treatment.

Swallowed: Since the product takes faseous form under ordinally temperature and pressure, it is unthinkable that a person drinks the product in the normal use of it.

Precaution for Safe Handling and Use

In Case of Spill: If it is possible to perform measures against leakage without accompanying danger, tighten the valve of container, or cover the leaking part of container to stop leakage. If the leakage of product from its container does not stop, transfer the container to an open space with no danger and dispense the product there.
If a large amout of product leaks, evacuate people from the surrounding place of the product, ban the people from entering the place by means of tightening a rope around the neighboring area of leakage taking place, etc.
If necessary, wear inhalation equipment.

Waste Disposal Method Dispose in accordance with State and Federal regulations for High Pressure Gas.

Precaution of transportatior Dispose in accordance with State and Federal regulations for High Pressure Gas. When this product is transported by vehicles, etc., it is desirable to issue warning paper on transportation to the transporter.
Upon confirmation that there is no leakage of product from the can and the damage of can, loads the product so that it is not effected by shock, tumbling down, falling or other damages, never fail to take preventive measures against the collapse of the loaded product, and shut the direct sunlight from the product during transporting. When filling up the product to tanker, etc., and unloading the product, make the tanker stop at flat place, apply a brake as well as a car stoppage, and then perform filling up and unloading practice.

Control Measures

Handling and Storage: **Handling:** Handle the product in accordance with the high pressure gas control law. Wear appropriate protective gears and handle the product from windward as far as possible so as not to inhale the product or to have the product splashed in the eye and stuck on the skin and cloth.
Try to keep working environment under less than allowable concentration of the product by means of controling the emission of product in gaseous form (refer to "Exposure prevention measure" paragraph and adequate ventilation.
Open and shut the valve of a filling can quietly.
When heating the filling can, use warmed wet cloth or warmed water of less than 40 degrees C (104 degrees F). Never heat the can directly by the use of heater. Never forget to tighten the valve of a wasted can with leaving some pressure in the wasted can in order to prevent air and moisture from entering the can.
Storage: Store in accordance with State and Federal regulation.
Keep the filling can away from the direct sunlight and store in the place with low temperature and good ventilation.
Store the filling can in dry place and prevent it from erosion cuased by moisture and water droplets, etc. Always keep the filling can under the temperature of less than 40 degrees C (104 degrees F).
Provide the container of product the measure to prevent valve's damage by the shock caused by turning upside down of the container and so on.
Keep the product away from spark, heat, flame, etc.

Exposure prevention measure

Control concentration: Not stipulated

Measure by facilities: When the product is used at an indoor workshop, seal up the generating source of product, or install local ventilation equipment.
In the near places where the product is handled, install safety shower, toilet, eye-washing equipmet, etc., and at the same time, put up signs indicating clearly the places where those facilities are installed.

Protective gears: Wear inhalation protection gears, protection glasses, protection gloves, protection suits, etc., as required.

Information of environmental effect	
Solubility:	According to the solubility test based on the 301D Closed Bottle Law of guideline of OECD chemical prducts test, no biogenerativity was recognized.
Accumlativity:	According to the coefficiency to distribution(octanol/water) POW measurement based on the 107 Guideline of OECD chemical products test, no accumlativity was recognized at 1.06.
Toxicity fish:	No data available
Coefficient to global warming	0.25(However, comparative evaluation on the basis that CFC-11 equals 1.0)