

1. Identification

GHS product identifier	ASAHIKLIN AE-3000
SDS number	AGC-X-0230
Version No.	01
Issue date	08-April-2021
CAS #	406-78-0
Recommended use	Solvent, Reaction solvent. But use with aerosol products is strictly prohibited.
Recommended Restrictions	Not available.
Manufacturer	
Company name	AGC Inc. Chemicals Company Solvents Business Group
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2. Hazards identification

GHS classification

Physical hazards	Flammable liquids	Not classified
	Pyrophoric liquids	Not classified
Health hazards	Acute toxicity, oral	Not classified
	Acute toxicity, dermal	Not classified
	Acute toxicity, inhalation	Not classified
	Skin corrosion/irritation	Not classified
	Serious eye damage/eye irritation	Not classified
	Sensitization, skin	Not classified
	Specific target organ toxicity following single exposure	Category 3 narcotic effects
	Specific target organ toxicity following repeated exposure	Not classified
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Not classified
	Hazardous to the aquatic environment, long-term hazard	Not classified
	Hazardous to the ozone layer	Classification not possible

GHS label elements

Signal word Warning



Hazard statement

H336

The substance does not meet the criteria for classification.
May cause drowsiness or dizziness.

Precautionary statement

Prevention

P233
P260

Use personal protective equipment as required.
Keep container tightly closed.
Do not breathe dust/fume/gas/mist/vapours/spray.

P270 Do not eat, drink, or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves and eye/face protection.

Response

P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P308 + P313 IF exposed or concerned: Get medical advice/attention.

Storage

P403 + P233 Store in a cool, dry place out of direct sunlight.
P405 Store in a well-ventilated place. Keep container tightly closed.
Store locked up.

Disposal

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Other hazards which do not result in classification

<Human health hazard>
Inhalation of vapor may cause coughing, dizziness, dullness, drowsiness, and headache. Inhalation of higher concentrations of vapor is harmful and may cause heart irregularities, central nervous system depression, narcosis, unconsciousness, respiratory failure or death. Intentional misuse can be fatal. Vapor reduces oxygen available for breathing and is heavier than air.

Supplemental information None.

3. Composition/information on ingredients

Components	CAS #	Percent
1,1,2,2-tetrafluoroethyl-2,2,2-trifluoroethyl ether	406-78-0	>99.9

4. First aid measures

First aid procedures

Inhalation

If a worker inhales steam or gas and feels unwell, move to a location with fresh air, rest in a posture that facilitates breathing, and contact a doctor.
If breathing weakly or have stopped breathing, loosen your clothes and give artificial respiration. In some cases, administer oxygen and seek medical attention immediately.

Skin

Get medical advice/attention if you feel unwell.
Thoroughly flush with plenty of water and soap or skin cleanser.
Do not use solvents and thinner for wipe up.
Get medical attention if changes in appearance or pain occur.
Take off or remove contaminated clothing or shoes promptly.

Eye

Get medical attention immediately.
Immediately wash with plenty of clean running water for at least 15 minutes. Remove contact lenses, if present and easy to do. Wash thoroughly to the back of the eyelids.

Ingestion

If swallowed, keep warm and rest, seek medical attention immediately.
Do not induce vomiting without advice from poison control center.
Rinse mouth with water and seek medical attention promptly.

Most important symptoms and effects, both acute and delayed

Not available.

Notes to physician

Not available.

5. Fire-fighting measures

Suitable extinguishing media

The product itself does not burn.
When a surrounding fire occurs, extinguish with an appropriate extinguishing agent according to the situation.

Unsuitable extinguishing media

Not available.

Specific hazards arising from the chemical

During combustion, irritating and corrosive harmful gases (hydrogen fluoride, hydrogen chloride, carbon monoxide, carbon dioxide, Carbonyl halide, etc.) may be generated.

Protective equipment and precautions for firefighters

Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
When gas is ejected from the container due to overheating, be careful not to inhale toxic gas decomposed by flame. Use a gas mask.

Protection of fire-fighters Cool the container and surrounding equipment with water.
The substance is nonflammable and will not ignite, but if there is a fire around the container, move the container immediately to a safe place.

6. Accidental release measures

Personal precautions Keep unnecessary personnel away.
Keep people away from and upwind of spill/leak.
Avoid breathing mist/vapours.
Ensure adequate ventilation.
Wear appropriate protective equipment (gloves, protective mask, apron, goggles, boots, etc.) when working.
Do not try to wipe [mop] up recklessly.
In the case of indoor treatment work, wear a gas mask and provide adequate ventilation in the room because of the danger of inhalation of high concentration gas and lack of oxygen. In case of inadequate ventilation wear respiratory equipment.

Environmental precautions Prevent spillage of spilled material into sewers, drains and lowlands.
Do not discharge to rivers. Be careful not to cause environmental impact

Methods for containment Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible.

Methods for cleaning up Ventilate the contaminated area. Wear appropriate protective equipment and clothing during clean-up. This product is miscible in water.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

7. Handling and storage

Handling Provide adequate ventilation.
Wear appropriate protective equipment and work from the windward side as much as possible to prevent inhalation and contact with the eyes, skin and clothing.
The screw lid of the filling container gently opens and closes.
Do not perform transfer replenishment work where there is no ventilation.
Efforts should be made to keep the working environment below the permissible concentration (see Exposure Control Measures) by controlling vapor emission as much as possible and providing appropriate ventilation.

Avoid inhalation of vapours and spray mists.
Rubber gloves such as nitrile rubber gloves and natural rubber gloves may cause solvent permeation.
Avoid cleaning by hand washing directly.
Do not eat, drink and smoke when handling.
When exposed to an open flame or metal that is overheated to a high temperature, it may be thermally decomposed and generate toxic gas. Handle it in a place where these are not nearby.
Non-corrosive, non-flammable liquid. May vaporize in the atmosphere at room temperature.
Vaporized vapor is heavier than air and stays on the floor. When used in a closed room, there is a risk of suffocation due to a decrease in oxygen concentration.
Wash hands and face thoroughly after handling, and do not bring protective equipment such as gloves into rest areas.
Prohibit the use of fire, sparks, and hot objects in the vicinity
Use in aerosol applications is strictly prohibited.

Storage Store locked up.
Keep away from heat, sparks and open flame.
Store away from incompatible materials (see Section 10 of the SDS).
Avoid direct sunlight, keep container tightly closed, and store in a cool, dry and well-ventilated place.
Due to the low boiling point, the container may expand under the hot summer weather, and liquid may squirt out from the inside when opened.
Store in tightly closed original container.
Store the container in a dry place to prevent corrosion due to moisture and water drops.
It is necessary to take measures to prevent impact and damage due to invert.

8. Exposure controls / personal protection

Occupational exposure limits No exposure limits noted for ingredient(s).

Biological limit values No biological exposure limits noted for the ingredient(s).

Exposure guidelines	AEL*: 50ppm (8h-TWA) * AEL is the Acceptable Exposure Limit set by AGC Inc. EEL*:150 ppm (time limit 15 min.), 500ppm (Ceiling concentration.) * EEL is the Emergency Exposure Limit set by AGC Inc. (EPA recommended concentration) AEL: 75ppm (8h-TWA) Ceiling: 150ppm
Recommended monitoring procedures	Follow standard monitoring procedures.
Engineering controls	Attach emergency shower and eye washing equipment to work area and clearly display its position . When working indoors, use equipment that is not directly exposed to workers or equipment that can be protected from worker exposure using local exhaust ventilation.
Personal protective equipment	
Eye/face protection	When necessary. Wear safety glasses with side shields (or goggles).
Skin protection	Wear appropriate chemical resistant clothing.
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment. Wear a gas mask for organic gas.
Hand protection	Wear appropriate chemical resistant gloves. Be aware that the liquid may penetrate the gloves. Frequent change is advisable. In case of contamination replace immediately. Suitable material: Polyethylene

9. Physical and chemical properties

Appearance

Physical state	Liquid.
Colour	Colorless transparent
Form	Not available.
Odour	Ether odor
Odour threshold	Not available.
pH	Not available.
Melting point/freezing point	-94 °C (-137.2 °F)
Boiling point	56 °C (132.8 °F)
Flash point	Non-flammable
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Flammability limits in air, lower, % by volume	Not available.
Flammability limits in air, upper, % by volume	Not available.
Vapour pressure	0.03 mPa (25 °C (77 °F))
Vapour density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	0.09 g/100g(25°C)
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	590 °C (1094 °F)
Decomposition temperature	Not available.
Viscosity	0.65 mPa·s (25°C)
Specific gravity	1.47
Density	1.47

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Stable at normal temperature and pressure.

Possibility of hazardous reactions	When thermally decomposed, toxic gases such as highly corrosive hydrogen fluoride and a small amount of carbonyl fluoride may be generated.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Alkali metals. Alkali earth metals. Strong bases Strong oxidising agents.
Hazardous decomposition products	Hydrogen fluoride (HF) and carbonyl fluoride (COF 2).

11. Toxicological information

Toxicological data

Product	Species	Test Results
1,1,2,2-tetrafluoroethyl-2,2,2-trifluoroethyl ether (CAS 406-78-0)		
Acute		
Dermal		
<i>Liquid</i>		
LD50	Rat	> 2000 mg/kg
Inhalation		
<i>Vapour</i>		
LC50	Rat	> 3010 ppm
Oral		
<i>Liquid</i>		
LD50	Rat	> 2000 mg/kg
Routes of exposure	Inhalation.	
Skin contact		
none		
Species: Rabbit		
Acute toxicity	In high concentrations, vapours are anaesthetic and may cause headache, fatigue, dizziness and central nervous system effects.	
Skin corrosion/irritation	Based on available data, the classification criteria are not met. Not irritating.	
Serious eye damage/eye irritation	Based on available data, the classification criteria are not met. Mild irritant	
Irritation Corrosion - Eye		
Slightly irritating.		
Species: Rabbit		
Respiratory sensitiser	Due to partial or complete lack of data the classification is not possible.	
Skin sensitisation	Based on available data, the classification criteria are not met.	
Skin Sensitisation		
Non sensitising		
Species: Mouse		
Mutagenicity	Due to partial or complete lack of data the classification is not possible.	
Germ cell mutagenicity: Ames test		
OECD471		
Result: Negative		
Germ cell mutagenicity: Chromosome Aberration		
CHL Cell		
Result: Negative		
Carcinogenicity	Due to partial or complete lack of data the classification is not possible. None of the Japan Society for Occupational Health, ACGIH, NTP, IARC is mentioned	
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.	
Reproductivity		
Screening test(OECD421), 1500ppm=NOAEL		
Result: No reproductive toxicity		
Specific target organ toxicity - single exposure	May cause drowsiness and dizziness.	
Specific target organ toxicity - repeated exposure	Due to partial or complete lack of data the classification is not possible.	
28 day repeated inhalation, 1500ppm=NOAEL: 2000ppm with anesthetic		
Species: Rat		
5 day repeated inhalation, 1800ppm=NOEL: 2500ppm or more, anesthetic		
Species: Rat		

Specific target organ toxicity - repeated exposure

90 day repeated inhalation, 1000ppm=NOAEL
Species: Rat
Repeated dose (28 days) toxicity (oral)., 1000mg/kg/bw=NOEL
Species: Rat

Aspiration hazard Due to partial or complete lack of data the classification is not possible.

Symptoms May cause drowsiness and dizziness. Headache. Nausea, vomiting.

12. Ecological information

Ecotoxicological data

Product		Species	Test Results
1,1,2,2-tetrafluoroethyl-2,2,2-trifluoroethyl ether (CAS 406-78-0)			
Aquatic			
<i>Acute</i>			
Algae	EC50	Algae	> 213 mg/l, 96 hours (Algal growth inhibition test)
Crustacea	EC50	Daphnia	> 94 mg/l, 96 hours (Immobilization Test)
Fish	EC50	Fish	> 76 mg/l, 96 hours

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Environmental effects The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Persistence and degradability Not biodegraded.
Not easily decomposed by activated sludge.
Biodegradability BOD=2%

Bioaccumulation Not highly accumulative.

Bioaccumulative potential
Bioconcentration factor
2.18 LogPow

Aquatic toxicity Not classified.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal methods Not available.

Waste from residues / unused products The remaining products (residual waste) should be discarded according to the law concerning waste disposal and cleaning and the prefectural / municipal regulations.
Do not flush wastewater cleaned in containers, equipment, etc. to the ground or drain.
Waste generated by wastewater treatment, incineration, etc. shall be processed or consigned according to Waste Management and Public Cleansing Act. and the related laws.
When performing consignment processing, contract with a specialized industrial waste disposer authorized by the prefectural governor.
In the case of incineration, hydrogen fluoride, hydrogen chloride, carbon monoxide and the like are generated at the time of combustion, so a facility for removing combustion gas is required.
Do not landfill or dump.

Contaminated packaging When disposing of empty containers, completely remove the contents.
Dispose of the waste under a contract with a licensed industrial waste disposal contractor.

14. Transport information

ADR Not regulated as dangerous goods.

RID Not regulated as dangerous goods.

IATA Not regulated as dangerous goods.

IMDG Not regulated as dangerous goods.

Transport in bulk according to IMO instruments Not established.

General information In case of falling under the Fire Service Law, Occupational Safety and Health Law, Poisonous and Deleterious Substances Control Law, follow the transportation method prescribed by each applicable law.
Follow the aviation laws. To comply with the provisions of the ship safety law.

15. Regulatory information

Regulatory information Ensure this materials in compliance with federal requirements and ensure conformity to local regulation.

TSCA Status: This substance is listed in the TSCA Inventory Regulations.
Council Directive 92/32/EEC Status: This substance is listed in ELINCS.

16. Other information

Disclaimer This product is an industrial product, it is not the thing which developed / manufactured assuming the medical use.

AGC Chemicals Company Solvents Business Group
SDS is a document for business operators. Not all materials and literature have been investigated, so there may be information leaks. In addition, the content will change due to the announcement of new knowledge and correction of the existing theory. When used for important decisions, it is recommended to examine the sources carefully and to confirm by examination. No guarantee is made for the data or evaluation described. In addition, the items described are intended for normal handling. Therefore, when handling specially, be sure to implement safety measures suitable for new applications and usages before handling. Attach this SDS when transferring this product.

TSCA Inventory Status (USA): This substance is listed on the TSCA inventory. This substance is subject to Significant New Use Rule (SNUR), This rule is effective on December 4, 2012. The requirements are specified in 40 CFR 721.10549. An importer or processor wishing to engage in a designated significant new use must submit a Significant New Use Notice (or "SNUN") to EPA at least 90 days before engaging in the new use. (1) Manufacture of CAS 406-78-0 substance in the United States (importation is not a "significant new use"); (2) Any non-industrial use of CAS 406-78-0 substance; (3) Any use of CAS 406-78-0 substance that is not specified in the PMN (i.e., any use other than for (i) cleaning electronic components; (ii) precision cleaning; (iii) dewatering of electronic components and other parts following aqueous cleaning; and (iv) carrier/lubricant coating for hard disk drives and other precision parts) Once the SNUR is promulgated, anyone who intends to manufacture, import or process CAS 406-78-0 substance for a significant new use will be required to first submit a Significant New Use Notice (a SNUN) to EPA for review. In addition, EPA plans to include language in the SNUR preamble which will encourage anyone who intends to submit a SNUN to include monitoring or exposure data for the proposed new use. For additional information, contact AGC Chemicals.