



# SAFETY DATA SHEETS

According to the UN GHS revision 9

Version: 1.0  
Creation Date: July 15, 2019  
Revision Date: July 15, 2019

## SECTION 1: Identification

### 1.1 GHS Product identifier

**Product name** Pentadecafluorooctanoic acid

### 1.2 Other means of identification

**Product number** -  
**Other names** A 5717; [14C]-Perfluorooctanoic acid; Eftop EF 201

### 1.3 Recommended use of the chemical and restrictions on use

**Identified uses** Industrial and scientific research use.  
**Uses advised against** no data available

### 1.4 Supplier's details

**Company** Shanghai Yien Chemical Technology Co., Ltd  
**Address** Building 6, 28 Yingong Road, Fengxian District, Shanghai  
Chemical Industry Zone, Shanghai, 201400, China  
**Telephone** +86-400-133-2688

### 1.5 Emergency phone number

**Emergency phone number** +86-400-133-2688  
**Service hours** Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

## SECTION 2: Hazard identification

### 2.1 Classification of the substance or mixture

Acute toxicity - Category 4, Oral  
Serious eye damage, Category 1  
Acute toxicity - Category 4, Inhalation  
Carcinogenicity, Category 2  
Reproductive toxicity, Additional category for effects on or via lactation  
Specific target organ toxicity – repeated exposure, Category 1  
Reproductive toxicity, Category 1B

### 2.2 GHS label elements, including precautionary statements

**Pictogram(s)**



**Signal word** Danger

<b>Hazard statement(s)</b>	H302 Harmful if swallowed H318 Causes serious eye damage H332 Harmful if inhaled H351 Suspected of causing cancer H362 May cause harm to breast-fed children H372 Causes damage to organs through prolonged or repeated exposure
<b>Precautionary statement(s)</b>	
<b>Prevention</b>	P264 Wash ... thoroughly after handling. P270 Do not eat, drink or smoke when using this product. P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/... P261 Avoid breathing dust/fume/gas/mist/vapours/spray. P271 Use only outdoors or in a well-ventilated area. P203 Obtain, read and follow all safety instructions before use. P260 Do not breathe dust/fume/gas/mist/vapours/spray. P263 Avoid contact during pregnancy and while nursing.
<b>Response</b>	P301+P317 IF SWALLOWED: Get medical help. P330 Rinse mouth. P305+P354+P338 IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P317 Get medical help. P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. P318 IF exposed or concerned, get medical advice. P319 Get medical help if you feel unwell.
<b>Storage</b>	P405 Store locked up.
<b>Disposal</b>	P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

## 2.3 Other hazards which do not result in classification

no data available

# SECTION 3: Composition/information on ingredients

## 3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
Pentadecafluorooctanoic acid	Pentadecafluorooctanoic acid	335-67-1	206-397-9	100%

# SECTION 4: First-aid measures

## 4.1 Description of necessary first-aid measures

### If inhaled

Fresh air, rest. Refer for medical attention.

### Following skin contact

Remove contaminated clothes. Rinse and then wash skin with water and soap.

### Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

### Following ingestion

Rinse mouth. Give one or two glasses of water to drink. Refer for medical attention .

## 4.2 Most important symptoms/effects, acute and delayed

no data available

### **4.3 Indication of immediate medical attention and special treatment needed, if necessary**

Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR if necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on the left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. Poisons A and B

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## **SECTION 5: Fire-fighting measures**

### **5.1 Suitable extinguishing media**

Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

### **5.2 Specific hazards arising from the chemical**

Not combustible. Gives off irritating or toxic fumes (or gases) in a fire. Risk of fire and explosion on contact with bases, oxidants or reducing agents.

### **5.3 Special protective actions for fire-fighters**

Use water spray, carbon dioxide, dry powder, foam.

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## **SECTION 6: Accidental release measures**

### **6.1 Personal precautions, protective equipment and emergency procedures**

Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Sweep spilled substance into covered non-metallic containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

### **6.2 Environmental precautions**

Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Sweep spilled substance into covered non-metallic containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

### **6.3 Methods and materials for containment and cleaning up**

ACCIDENTAL RELEASE MEASURES: Personal precautions, protective equipment and emergency procedures: Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust; Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not let product enter drains; Methods and materials for containment and cleaning up: Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

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## **SECTION 7: Handling and storage**

### **7.1 Precautions for safe handling**

NO contact with incompatible substances. See Chemical Dangers. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

### **7.2 Conditions for safe storage, including any incompatibilities**

Separated from strong oxidants, strong bases, strong acids, strong reducing agents and food and feedstuffs. Keep container tightly closed in a dry and well-ventilated place.

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## **SECTION 8: Exposure controls/personal protection**

## 8.1 Control parameters

### Occupational Exposure limit values

MAK: (inhalable fraction): 0.005 mg/m<sup>3</sup>; peak limitation category: II(8); skin absorption (H); carcinogen category: 4; pregnancy risk group: C

### Biological limit values

no data available

## 8.2 Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

## 8.3 Individual protection measures, such as personal protective equipment (PPE)

### Eye/face protection

Wear safety goggles or eye protection in combination with breathing protection if powder.

### Skin protection

Protective gloves. Protective clothing.

### Respiratory protection

Use local exhaust or breathing protection.

### Thermal hazards

no data available

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## SECTION 9: Physical and chemical properties and safety characteristics

Physical state	OtherSolid
Colour	White to off-white powder
Odour	no data available
Melting point/freezing point	56°C(lit.)
Boiling point or initial boiling point and boiling range	189°C/736mmHg(lit.)
Flammability	Not combustible. Gives off irritating or toxic fumes (or gases) in a fire.
Lower and upper explosion limit/flammability limit	no data available
Flash point	122°C(lit.)
Auto-ignition temperature	no data available
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	no data available
Solubility	In water, 2290 mg/L at 24 deg C
Partition coefficient n-octanol/water	log Kow = 4.81 (est)
Vapour pressure	3.16X10 <sup>-2</sup> mm Hg at 25 deg C
Density and/or relative density	1.7
Relative vapour density	no data available
Particle characteristics	no data available

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## SECTION 10: Stability and reactivity

## 10.1 Reactivity

Decomposes on heating above 300°C . Decomposes on burning. This produces toxic gases including hydrogen fluoride. The solution is a weak acid. Reacts with bases, oxidants and reducing agents. Attacks many metals. This produces flammable/explosive gas (hydrogen - see ICSC 0001).

## 10.2 Chemical stability

Stable under recommended storage conditions.

## 10.3 Possibility of hazardous reactions

No data. Decomposes on heating above 300°C . This produces toxic and corrosive gases including hydrogen fluoride (See ICSC 0283). The solution is a weak acid. Reacts with bases, oxidants and reducing agents. This produces flammable/explosive gas (hydrogen - see ICSC 0001). Attacks many metals.

## 10.4 Conditions to avoid

no data available

## 10.5 Incompatible materials

Incompatible materials: Bases, Oxidizing agents, Reducing agents

## 10.6 Hazardous decomposition products

When heated to decomposition it emits toxic vapors of /fluorine/.

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# SECTION 11: Toxicological information

### Acute toxicity

- Oral: no data available
- Inhalation: no data available
- Dermal: no data available

### Skin corrosion/irritation

no data available

### Serious eye damage/irritation

no data available

### Respiratory or skin sensitization

no data available

### Germ cell mutagenicity

no data available

### Carcinogenicity

no data available

### Reproductive toxicity

no data available

### STOT-single exposure

The substance is irritating to the eyes, skin and respiratory tract.

### STOT-repeated exposure

The substance may have effects on the liver and immune system. This substance is possibly carcinogenic to humans. May cause toxicity to human reproduction or development.

### Aspiration hazard

A harmful concentration of airborne particles can be reached quickly when dispersed.

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## SECTION 12: Ecological information

### 12.1 Toxicity

- Toxicity to fish: no data available
- Toxicity to daphnia and other aquatic invertebrates: EC50; Species: *Daphnia magna* (Water Flea) age <24 hr neonate; Conditions: freshwater, static, 20 deg C; Concentration: 0.531 mM for 24 hr (95% confidence interval: 0.506-0.555 mM); Effect: intoxication, immobilization /96% purity
- Toxicity to algae: EC50; Species: *Pseudokirchneriella subcapitata* (Green Algae) 3000000 cells/mL; Conditions: freshwater, static; Concentration: 1.807 mM for 4.5 hr (95% confidence interval: 1.76-1.86 mM); Effect: population, decreased photosynthesis /96% purity
- Toxicity to microorganisms: no data available

### 12.2 Persistence and degradability

AEROBIC: Perfluorooctanoic acid, present at 100 mg/L, reached 5% of its theoretical BOD in 4 weeks using an activated sludge inoculum at 30 mg/L in the Japanese MITI test(1). Organic fluorochemical compounds, such as perfluorooctanoic acid, are expected to be resistant to biodegradation(2). A related compound, perfluorooctane sulfonic acid, was found to not degrade under aerobic or anaerobic conditions(3).

### 12.3 Bioaccumulative potential

BCF values of 3.1 and 9.4 were measured in fish using carp (*Cyprinus carpio*) which were exposed to 5 and 50 ug/L, respectively, perfluorooctanoic acid over a 4-week period(1). According to a classification scheme(2), these BCF values suggest that bioconcentration in aquatic organisms is low(SRC). Perfluorinated carboxylates with seven carbons or less may have low biomagnification potential in the food chain(3). The bioconcentration factors of perfluorooctanoic acid in wild turtles (*Trachemys scriptaelegans* and *Chinemys reevesii*) from the Ai River, Japan ranged from 0.8 to 15.8 (serum/water concentrations)(4).

### 12.4 Mobility in soil

The log Koc of perfluorooctanoic acid was reported as 1.92-2.59 measured in three soils(1). According to a classification scheme(2), these log Koc values suggest that perfluorooctanoic acid is expected to have high to moderate mobility in soil. Based on a variety of conditions, pKa values of perfluorooctanoic acid have been reported as -0.5 to 4.2(3), indicating that this compound will exist entirely in anion form and anions generally do not adsorb more strongly to soils containing organic carbon and clay than their neutral counterparts(4). The log Koc and log Kd is 10 and 21 in sediment samples collected from Etobicoke Creek, Canada were reported as 0.88-1.85 and 0.16-1.44, respectively(5). The log Kd in 19 sediment samples collected from major rivers, lakes and canals in The Netherlands, May to Aug 2007 was 1.19-2.85(6). The log Koc and log Kd were reported as 2.6-4.2 and 1.3-2.8, respectively, in 32 sediment samples collected along the Haihe River, China; samples were collected April to May 2010(7). The average and median values for log Koc in 17 sediments were both 2.1(8).

### 12.5 Other adverse effects

no data available

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## SECTION 13: Disposal considerations

### 13.1 Disposal methods

#### Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

#### Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

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## SECTION 14: Transport information

### 14.1 UN Number

ADR/RID: UN3261 (For reference only, please check.)    IMDG: UN3261 (For reference only, please check.)    IATA: UN3261 (For reference only, please check.)

### 14.2 UN Proper Shipping Name

ADR/RID: CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (For reference only, please check.)    IMDG: CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (For reference only, please check.)    IATA: CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (For reference only, please check.)

### 14.3 Transport hazard class(es)

ADR/RID: 8 (For reference only, please check.)    IMDG: 8 (For reference only, please check.)    IATA: 8 (For reference only, please check.)

### 14.4 Packing group, if applicable

ADR/RID: I (For reference only, please check.)    IMDG: I (For reference only, please check.)    IATA: I (For reference only, please check.)

### 14.5 Environmental hazards

ADR/RID: No    IMDG: No    IATA: No

### 14.6 Special precautions for user

no data available

### 14.7 Transport in bulk according to IMO instruments

no data available

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## SECTION 15: Regulatory information

### 15.1 Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number
Pentadecafluorooctanoic acid	Pentadecafluorooctanoic acid	335-67-1	206-397-9
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
EC Inventory			Listed.
United States Toxic Substances Control Act (TSCA) Inventory			Listed.
China Catalog of Hazardous chemicals 2015			Not Listed.
New Zealand Inventory of Chemicals (NZIoC)			Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Listed.
Vietnam National Chemical Inventory			Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)			Listed.
Korea Existing Chemicals List (KECL)			Listed.

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## SECTION 16: Other information

#### Information on revision

Creation Date                      July 15, 2019  
Revision Date                      July 15, 2019

#### Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

## References

- IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>
- HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
- IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: [http://www.echemportal.org/echemportal/index?pageID=0&request\\_locale=en](http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en)
- CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>
- ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>
- Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>
- ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

**Any questions regarding this SDS, Please send your inquiry to [sds@xixisys.com](mailto:sds@xixisys.com)**

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