

Safety Data Sheet of JHT-270

Date: April 10th, 2022

1. Chemicals and Company Identification

Product Name: Heat transfer fluid JHT-270
English name of chemical: Perfluoropolyethers
Chemical formula: $\text{CF}_3\text{O}[\text{CF}(\text{CF}_3)\text{CF}_2\text{O}]_m(\text{CF}_2\text{O})_n\text{CF}_3$
Distributor: Scanwel Ltd
Tel: +44 (0)1678 530 281 Email: sales@scanwel.com
Label elements: Regulation (EC) No 1272/2008 SDS code: SDS/CF 15-2022 Not labelled as hazardous product under the above regulation.

2. Hazards overview

Emergency overview:
At the high temperature of 290°C decomposes carbon oxides and fluorocarbon compounds, causing skin irritation, eye irritation and respiratory tract irritation.
GHS hazard category:
Not a hazardous substance or mixture

Hazard identification: Pictogram:**Warning word:** warning**Hazard description:** causes slight skin irritation**Precautions:**

Preventive measures: clean thoroughly after operation. Wear protective gloves/clothing/goggles/masks. Avoid inhaling dust/smoke/gas/smoke/vapor/ spray. Use only outdoors or with good ventilation.

Accident response: use fire extinguishing agent suitable for the environment in case of fire. Such as skin contact: take off contaminated clothes and wash the skin thoroughly with soapy water and clear water. If you feel unwell, see a doctor. In case of eye contact: lift the eyelids and rinse with flowing water or normal saline. If you feel unwell, see a doctor. If inhaled: quickly leave the site to a place with fresh air. Keep the respiratory tract unobstructed. If breathing is difficult, give oxygen. If breathing stops, perform artificial respiration immediately. See a doctor. If ingested: rinse the water. See a doctor. Do not feed anything to unconscious people and do not induce vomiting without the guidance of a doctor.

Safe storage: store in a well ventilated place. Keep the container closed.

Waste disposal: dispose in accordance with national and local regulations.

Physical and chemical hazards: no data available**Health hazards:** cause skin irritation. Cause serious eye irritation. May cause respiratory tract irritation.**Environmental hazards:** no data available

Other hazards:

The thermal decomposition of fluoropolymers produces smoke hot steam, which may cause flu like symptoms, especially for smokers.

3. Composition and component information



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Material name	Molecular weight	GC content	CAS NO.
Perfluoropolyether	1600	>99.99%	69991-67-9

4. First aid

Inhalation: when inhaled in hot steam, transfer to fresh air immediately.

Skin contact: wash with plenty of water and soap.

Eye contact: in case of contact, rinse with plenty of water for at least 15 minutes. See a doctor.

Ingestion: do not feed anything to unconscious people and do not induce vomiting without the guidance of a doctor.

Most important symptoms and health effects: no data available

Advice to protect the rescuer: transfer the patient to a safe place. Consult a doctor. Show this chemical safety technical manual to the doctor on site.

Special tips for doctors: no information available.

5. Fire fighting measures

Suitable extinguishing agents: water mist, alcohol resistant foam extinguisher, dry powder extinguisher or carbon dioxide extinguisher.

Inapplicable extinguishing agent: avoid using direct current water to extinguish the fire. Direct current water may cause splash of combustible liquid and spread the fire.

Special hazard: The product is not flammable and not explosive. Under fire conditions, carbon oxides and hydrogen fluoride may be decomposed.

Precautions and protective measures for fire fighting:

1. Firefighters must wear air breathing apparatus and full body fire fighting clothes to extinguish the fire in the upwind direction.
2. Move the container from the fire site to an open place as far as possible.
3. If the container in the fire site has changed color or made a sound from the safety pressure relief device, it must be evacuated immediately.
4. Isolate the accident site and prohibit irrelevant personnel from entering.
5. Receive and treat fire water to prevent environmental pollution.

6. Accident evacuation measures

Protective measures, protective equipment and emergency disposal procedures for operators:

1. It is recommended that emergency treatment personnel wear air breathing apparatus, anti-static clothes and rubber oil resistant gloves.
2. Do not touch or cross leakage.
3. All equipment used in operation shall be grounded.
4. Cut off the source of leakage as much as possible. Eliminate all ignition sources.
5. The warning area shall be delimited according to the influence area of liquid flow, steam or dust diffusion and irrelevant personnel shall be evacuated from crosswind and upwind to the safety area.

Environmental protection measures: contain leakage to avoid environmental pollution; Prevent leakage from entering sewers, surface water and groundwater.

Storage and removal methods of leaked chemicals and disposal materials used:

Small amount of leakage: collect the leaked liquid in airtight containers as much as possible; Absorb with sand, activated carbon or other inert materials and transfer to a safe place; Do not flush into the sewer.

Massive leakage: build a dike or dig a pit to receive; Closed drainage pipes; Cover with foam to suppress evaporation; Transfer to tank car or special collector with explosion-proof pump, recycle or transport to waste treatment site for disposal.

Preventive measures to prevent secondary hazards:

Prevent materials from entering sewers, waterways or low areas.

7. Handling and Storage

Precautions for operation and disposal:

Operation(personal): avoid inhaling overheated substances; Do not eat, drink or smoke in the storage area. Such products may be contained in food.

Storage precautions:

There are no special storage conditions. Keep containers closed to prevent contamination. If the storage and use comply with regulations, the product will not decompose.

8. Exposure control and personal protection

Monitoring method:

Maximum allowable concentration.

There are no known national exposure limits.

GBZ/T 160.1~GBZ/T 160.81-2004 determination of toxic substances in workplace air
(Series Standards), en 14042 procedure guide for evaluating exposure to chemical or biological reagents in workplace air.

Biological limit: no data available.

Engineering control method:

When the polymer is heated to 290°C (563K), local ventilation should be used to avoid exposure to smoke.

Personal protective equipment:

Respiratory protection: personal respiratory protection equipment is not required under normal conditions. In case of overheating and dangerous smoke, wear self-contained breathing apparatus.

Hand protection: additional protection: there is no special glove type recommendation, but nitrile gloves can be used;

Eye protection: wear goggles;

Skin and body protection: appliances are not specified, however, avoid contact with skin, eyes and clothing.

Preventive skin protection.

Other protection: none.

9. Physical and chemical properties

Appearance: colorless transparent liquid

Color: colorless

Smell: tasteless

PH: neutral

Boiling point (°C) : 270

Pour point (°C) : -66

Dielectric strength (kV, 2.54mm): 40

Dielectric loss (1Khz): $2 \cdot 10^{-4}$

Thermal conductivity coefficient (W/ (m·K)) : 0.065

Thermal decomposition temperature (°C) : >290

Kinematic viscosity (cSt@25°C) : 16

Specific heat capacity (cal/g·°C) : 0.23

Flash point: None

Dielectric constant: <2

Volume resistivity (Ohm·cm) : $> 1.0 \cdot 10^{15}$

Density (g/cm³ @25°C): 1.72

Water solubility: insoluble

Moisture content (PPM): <10

10. Stability and reactivity

Stability: stable under normal conditions.

Hazard: no data available

Conditions to avoid: decomposition above 290°C. Electrostatic discharge, heat, humidity, etc.

Dangerous decomposition products (harmful decomposition products): fluorine-containing compounds.

11. Toxicity information

Acute toxicity:

Oral ALD>11000mg/kg, rat

Skin corrosion or irritation: test animal: rabbit, skin irritation test: no irritation

Eye corrosion or irritation: test animal: rabbit, skin irritation test: mild irritation

Respiratory or skin allergy: test animal: guinea pig, animal test did not cause skin allergy

Carcinogenicity: no component in the material is listed as carcinogen by IARC, NTP, OSHA or ACGIH when the concentration is equal to or more than 0.1%.

Inhalation hazard: inhalation of smoke heat vapor from thermal decomposition may cause flu like symptoms, especially for smokers.

12. Ecological information

Ecotoxicity:

Low solubility: low toxicity to aquatic organisms

Fish toxicity: 96hr-LC50>1000mg/L (rainbow trout)

Others: daphnia swimming inhibition test: 48hr-EC50>1000mg/L

Persistence and degradability: no data available.

Potential bioaccumulation: no data available.

Mobility in soil: —

13. Discard precautions

Waste chemicals: refer to relevant national and local regulations before disposal.

Contaminated packaging: discard as unused products.

Precautions for disposal: refer to relevant national and local regulations before disposal.



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14. Transportation information

United Nations Dangerous Goods Number (UN): not applicable.
United Nations Shipping Name: not applicable.
United Nations Hazard Classification: not classified as dangerous goods.
Packaging category: not applicable.
Marine pollutants(yes/no): No.
Precautions for transportation: 1. Transport vehicles shall be equipped with corresponding varieties and quantities of fire-fighting equipment and leakage emergency treatment equipment; 2. Mixed loading and transportation with oxidants and edible chemicals are strictly prohibited; 3. The exhaust pipe of the vehicle carrying this item must be equipped with a fire stop device; 4. When using the tank car for transportation, there should be a grounding chain, and a hole diaphragm can be set in the tank to reduce the static electricity caused by vibration; 5. It is forbidden to use mechanical equipment and tools that are easy to produce sparks for loading and unloading; 6. It's best to transport in the morning and evening in summer.
7. During transportation, it shall be protected from sun exposure, rain and high temperature; 8. During stopover, keep away from kindling, heat source and high temperature area; 9. During highway transportation, drive according to the specified route and do not stay in residential areas or densely populated areas; 10. It's forbidden to slip away during railway transportation; 11. It is strictly prohibited to transport in bulk with wooden ships or cement ships; 12. Danger signs and announcements shall be posted on the means of transport according to relevant transportation requirements.



12. Regulatory information

The following laws, regulations and standards have made corresponding provisions on the safe use, storage, transportation, loading and unloading, classification and marking of chemicals: code series standards for chemical classification, warning labels and warning instructions(gb30000.2-30000.29).

Please note that waste disposal should also meet the requirements of local regulations.

If applicable, the chemical meets the requirements of the regulations on the safety management of hazardous chemicals(adopted by the State Council on January 9,2002).

12. Other information

Legal statement: It shall not be used for drugs, daily life and other purposes. The above information is based on our current cognitive ability and relevant experience of the product, and is not limited to this. It is used to standardize the limited products. Once the mixing operation is carried out, it must be determined that no new dangerous goods will be produced. Users need to review all laws, administrative and legal procedures related to the products, personal hygiene and working environment. Unless different opinions are indicted, this technical information is only used for pure products.

To the best of our knowledge, the accuracy of the information contained herein is consistent with the date of this document. But our company does not guarantee its content. This information is only for reference and use by technicians, and its correctness and risk shall be borne by technicians themselves. This information is irrelevant when the product is mixed with other substances or other processes are used.

This material is not a license restricted by a patent or other proprietary right. The user must ultimately determine any information, materials for any intended use and the practicability of use, and whether it violates the patent right. This document only gives the typical characteristics of the product and cannot be used as a product manual.



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