

德肯思化工（山东）有限公司

Dakings Chemical (Shandong) Co., Ltd.

Material Safety Data Sheet (MSDS)

SECTION 1: Chemical basic information/enterprise information

Chinese name: 柠檬酸三乙酯
English name: Triethyl citrate ,TEC
CAS No. : 77-93-0
Molecular formula: C₁₂H₂₀O₇ Molecular weight: 276.28
Company Name: Dakings Chemical (Shandong) Co., Ltd
Company Address: Qingdao Qianwan Bonded Port Area, Shandong Pilot Free Trade Zone, China
Emergency phone: 86-17685872921
Website: <http://www.dakingschem.com>

SECTION 2: Composition Information

2.1 Composition: pure product, triethyl citrate \geq 99%

SECTION 3: HAZARD OVERVIEW

3.1 Hazard category: No information

3.2 Ways of intrusion: No information

3.3 Health hazards:

Irritating to eyes, skin and mucous membranes. There have been no reports of occupational poisoning.

3.4 Environmental hazards:

It may be harmful to the environment and cause pollution to water bodies.

3.5 Explosion hazard: This product is combustible.

SECTION 4: FIRST AID MEASURES

4.1 Skin contact: Take off the contaminated clothing and wash with running water.

4.2 Eye contact: Lift the eyelids and rinse with flowing water or saline. Seek medical attention.

4.3 Inhalation:

Leave the site to a place with fresh air. If breathing is difficult, give oxygen. Seek medical attention.

4.4 Ingestion: Drink enough warm water and induce vomiting. Seek medical attention.

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Hazardous characteristics: Combustible in case of open flame and high heat.

5.2 Hazardous combustion products: Carbon monoxide, carbon dioxide.

5.3 Fire extinguishing method:

Move the container from the fire site to an open place as much as possible. Spray water to keep the

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fire container cool until the fire is over. Containers exposed to fire must be evacuated immediately if they become discolored or sound from safety relief devices.

5.4 Fire extinguishing agent: Mist water, foam, dry powder, carbon dioxide, sand.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Emergency treatment:

Quickly evacuate personnel from the leaking contaminated area to a safe area, and isolate them, strictly restricting access.

Cut off the fire source. It is recommended that emergency personnel wear self-contained positive pressure breathing apparatus and wear protective clothing. Cut off the source of the leak as much as possible. Prevent flowing into restricted spaces such as sewers and flood drains.

6.2 Small amount of leakage:

Absorb or absorb with sand or other non-combustible materials.

6.3 Large amount of leakage:

Construct dikes or dig pits for containment. Use a pump to transfer it to a tank truck or a special collector, and recycle it or transport it to a waste treatment site for disposal.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for operation:

Closed operation, pay attention to ventilation. Operators must undergo special training and strictly abide by the operating procedures. It is recommended that operators wear self-priming filter gas masks (half masks), anti-poison infiltration overalls, chemical safety goggles, and chemical-resistant gloves. Keep away from fire and heat sources, and smoking is strictly prohibited in the workplace. Use explosion-proof ventilation systems and equipment. Prevent vapors from escaping into workplace air. Avoid contact with oxidants, acids, and alkalis. When handling, load and unload lightly to prevent damage to packaging and containers.

Equipped with corresponding types and quantities of fire-fighting equipment and leakage emergency treatment equipment. Empty containers may be harmful residues.

7.2 Precautions for storage:

Store in a cool, ventilated warehouse. Keep away from fire and heat sources. It should be stored separately from oxidants, acids, and alkalis, and should not be mixed. Equipped with the appropriate variety and quantity of fire equipment. The storage area should be equipped with leakage emergency treatment equipment and suitable containment materials.

SECTION 8: Exposure controls/personal protection

8.1 Occupational exposure limits

China MAC(mg/m³): No standard established

Former Soviet Union MAC(mg/m³): No standard established

TLVTN: No standard established

TLVWN: Not Standardized

8.2 Monitoring methods: No information

8.3 Engineering control: Closed operation, pay attention to ventilation.

8.4 Respiratory system protection: When the concentration in the air exceeds the standard, it is recommended to wear a self-priming filter gas mask (half mask).

8.5 Eye Protection: Wear chemical safety goggles.

8.6 Body protection: Wear anti-poison penetration overalls.

8.7 Hand Protection: Wear chemical resistant gloves.

8.8 Other protection:

Smoking is strictly prohibited at the work site. After work, take a shower. Practice good hygiene.

SECTION 9: Physical and Chemical Properties

9.1 Main ingredients: Triethyl citrate

9.2 Appearance and properties: Colorless transparent liquid with fruity aroma and bitter taste.

9.3 Melting point (°C): -55

9.4 Boiling point (°C): 294

9.5 Relative density (water=1): 1.1369 (20°C)

9.6 Relative vapor density (air=1): No information available

9.7 Saturated vapor pressure (kPa): 0.133 (107°C)

9.8 Heat of Combustion (kJ/mol): No information available

9.9 Critical temperature (°C): No information available

9.10 Critical pressure (MPa): No information

9.11 Log value of partition coefficient, octanol/water: No information available

9.12 Flash point (°C): 150.6

9.13 Ignition temperature (°C): No information available

9.14 Upper explosion limit % (V/V): No information available

9.15 Lower explosion limit % (V/V): No information available

9.16 Solubility: Slightly soluble in water, soluble in ethanol, ether, and ester.

9.17 Main uses: Used as pharmaceuticals, flavors and fragrances, plasticizers for resins and intermediates in organic synthesis.

9.18: Refractive index: 1.4420

SECTION 10: Stability and reactivity

10.1 Stability:

10.2 Incompatibilities: Strong oxidizing agents, strong acids, strong bases.

10.3 Conditions to avoid:

10.4 Polymerization Hazards:

10.5 Decomposition products:

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Acute toxicity: LD50: 7000 mg/kg (rat oral)

LC50: no information

11.2 Subacute and Chronic Toxicity:

11.3 Irritation:

11.4 Sensitization:

11.5 Mutagenicity:

11.6 Teratogenicity:

11.7 Carcinogenicity:

SECTION 12: Ecological Information

12.1 Ecotoxicity Toxicity:

12.2 Biodegradability:

12.3 Non-biodegradability:

12.4 Bioaccumulation or bioaccumulation:

12.5 Other harmful effects: This substance may be harmful to the environment, and special attention should be paid to the pollution of water bodies.

Section 13: Disposal considerations

13.1 Nature of waste: No information available

13.2 Disposal methods: Refer to relevant national and local regulations before disposal. Disposal by incineration is recommended.

13.3 Disposal considerations: No information available

SECTION 14: TRANSPORTATION INFORMATION

14.1 Dangerous goods number:

14.2 UN number:

14.3 Packaging mark:

14.4 Packing group:

14.5 Packaging method:

14.6 Transportation precautions: Before transportation, check whether the packaging container is complete and sealed. During transportation, ensure that the container does not leak, collapse, fall, or be damaged. It is strictly forbidden to mix and transport with oxidants, acids, alkalis, etc. When shipping, it should be isolated from the engine room, power supply, fire source and other parts. When transporting by road, follow the prescribed route.

SECTION 15: Regulatory Information

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Regulatory Information:

- 15.1 Regulations on the Safety Management of Hazardous Chemicals (promulgated by the State Council on February 17, 1987)
- 15.2 Detailed Rules for the Implementation of Regulations on the Safety Management of Hazardous Chemicals (Hua Lao Fa [1992] No. 677)
- 15.3 Regulations on the Safe Use of Chemicals in the Workplace ([1996] Ministry of Labor No. 423) and other laws and regulations have made corresponding regulations on the safe use, production, storage, transportation, loading and unloading of dangerous chemicals.

SECTION 16: OTHER INFORMATION

References:

Form filling department: Dakings Chemical (Shandong) Co., Ltd.

Filling time: 2023/03/16

OTHER INFORMATION:

The information given in this brochure is not intended to be a product specification, nor is it guaranteed to be of a specific nature. The information contained is based on general guidance for health and safety based on our knowledge in the handling, storage and use of the product. It does not apply to special or non-standard use of this product and use other than as directed and recommended.

The technical information referenced in this information is currently believed to be reliable. It should be revised as additional knowledge and experience is acquired.