

Tanyun

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## Material SAFETY DATA SHEET

Version: 1.0

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### 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Ferrocene

Brand : Tanyun

Supplier :

Tanyun Aerospace Materials (Yingkou) Technology Co., Ltd.

NO.75 . NO.75 .Xinhu Street Xishi District ,Free Trade Zone ,Yingkou ,Liaoning China

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### 2. HAZARDS IDENTIFICATION

#### Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Flammable solids (Category 1)

Acute toxicity, Oral (Category 4)

Classification according to EU Directives 67/548/EEC or 1999/45/EC

Highly flammable. Harmful if swallowed.

#### Label elements

Labelling according Regulation (EC) No 1272/2008 [CLP]



#### Pictogram

Signal word Danger

Hazard statement(s)

H228 Flammable solid.

H302 Harmful if swallowed.

Precautionary statement(s)

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.

Supplemental Hazard

Statements

none

According to European Directive 67/548/EEC as amended.



Hazard symbol(s)

R-phrase(s)

R11 Highly flammable.

R22 Harmful if swallowed.

S-phrase(s) none

Other hazards - none

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : Bis(cyclopentadienyl) iron Di(cyclopentadienyl) iron

Formula : C10H10Fe

Molecular weight : 186.03 g/mol

CAS-No	EC-No.	Index-No.	Concentration
Ferrocene			
102-54-5	203-039-3		<=100%

### 4. FIRST AID MEASURES

General advice Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician. In case of eye contact Flush eyes with water as a precaution.

If swallowed Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

### 5. FIREFIGHTING MEASURES

**Suitable extinguishing media**

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

**Special protective equipment for firefighters**

Wear self-contained breathing apparatus for firefighting if necessary.

**Hazardous combustion products**

**Explosion data - sensitivity to mechanical impact**

No data available

**Explosion data - sensitivity to static discharge**

No data available

**Further information**

Use water spray to cool unopened containers.

### 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions**



Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. 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. Discharge into the environment must be avoided.

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

Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wetbrushing and place in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal. Contain spillage, pick up with an electrically protected vacuum cleaner or by wet-brushing and transfer to a container for disposal according to local regulations (see section 13).

**7. HANDLING AND STORAGE**

**Precautions for safe handling**

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. Keep away from sources of ignition – No smoking. Take measures to prevent the build up of electrostatic charge.

**Conditions for safe storage**

Keep container tightly closed in a dry and well-ventilated place. Heat sensitive.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Components with workplace control parameters**

Components	CAS-No.	Value	Control parameters	Basis
Ferrocene	102-54-5	TWA	10.000000 mg/m <sup>3</sup>	USA. ACGIH Threshold Limit Values (TLV)
		TWA	10.000000 mg/m <sup>3</sup>	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
		TWA	10.000000 mg/m <sup>3</sup>	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
		TWAEV	10.000000 mg/m <sup>3</sup>	Canada, Ontario OELs
		TWA	10.000000 mg/m <sup>3</sup>	Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants



		TWA	10.000000 mg/m3	Canada. British Columbia OEL
		TWA	3.000000 mg/m3	Canada. British Columbia OEL
		TWA	10 mg/m3	USA. ACGIH Threshold Limit Values (TLV)

## Personal protective equipment

### Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

### Hand protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested: Dermatril®

Splash contact Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested: Dermatril®

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an Industrial Hygienist familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

### Eye protection

Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

### Skin and body protection

Complete suit protecting against chemicals, Flame retardant antistatic protective clothing., The type of protective equipment must be selected



according to the concentration and amount of the dangerous substance at the specific workplace.

#### **Hygiene measures**

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

#### **Specific engineering controls**

Use mechanical exhaust or laboratory fumehood to avoid exposure.

### **9. PHYSICAL AND CHEMICAL PROPERTIES**

#### **Appearance**

Form crystalline  
Colour No data available

#### **Safety data**

PH No data available

Melting point/freezing point Melting point/range: 172 - 174 ° C (342 - 345 ° F) - lit.

Boiling point 249 ° C (480 ° F) - lit.

Flash point No data available

Flammability (solid, gas) The substance or mixture is a flammable solid with the category 1

Ignition temperature No data available

Auto-ignition temperature No data available

Lower explosion limit No data available

Upper explosion limit No data available

Vapour pressure No data available

Density No data available

Water solubility 0.0001 g/l - slightly soluble

Partition coefficient: log Pow: 2.66 - The preceding data, or interpretation of data, was determined n-octanol/water using Quantitative Structure Activity Relationship (QSAR) modeling

Relative vapour density No data available

Odour No data available

Odour Threshold No data available

Evaporation rate No data available

### **10. STABILITY AND REACTIVITY**

#### **Chemical stability**

Stable under recommended storage conditions.

#### **Possibility of hazardous reactions**

No data available

#### **Conditions to avoid**

Heat, flames and sparks.

#### **Materials to avoid**



Strong oxidizing agents

**Hazardous decomposition products**

Hazardous decomposition products formed under fire conditions. - Carbon oxides, Iron oxides Other decomposition products - No data available

**11. TOXICOLOGICAL INFORMATION**

**Acute toxicity**

**Oral LD50**

LD50 Oral - Rat - 1,320 mg/kg

**Inhalation LC50**

Harmful by inhalation.

**Dermal LD50**

LD50 Dermal - Rat - > 3,000 mg/kg

**Other information on acute toxicity**

No data available

**Skin corrosion/irritation**

Skin - Rabbit - No skin irritation - OECD Test Guideline 404

**Serious eye damage/eye irritation**

Eyes - Rabbit - No eye irritation - OECD Test Guideline 405

**Respiratory or skin sensitisation**

Maximisation Test - Guinea pig - Does not cause skin sensitisation. - OECD Test Guideline 406

**Germ cell mutagenicity**

Genotoxicity in vitro - Hamster - ovary Sister chromatid exchange

**Carcinogenicity**

Carcinogenicity - Rat - Intramuscular

Tumorigenic: Equivocal tumorigenic agent by RTECS criteria.

Tumorigenic: Tumors at site of application.

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**Reproductive toxicity**

Suspected of damaging fertility or the unborn child. Suspected human reproductive toxicant

**Teratogenicity**

**Specific target organ toxicity - single exposure (Globally Harmonized System)**

No data available

**Specific target organ toxicity - repeated exposure (Globally Harmonized System)**

Inhalation - May cause damage to organs through prolonged or repeated exposure. - Liver

**Aspiration hazard**



No data available

Potential health effects

Inhalation Toxic if inhaled. May cause respiratory tract irritation.

Ingestion Harmful if swallowed.

Skin Harmful if absorbed through skin. May cause skin irritation.

Eyes May cause eye irritation.

#### **Signs and Symptoms of Exposure**

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

#### **Synergistic effects**

No data available

#### **Additional Information**

RTECS: LK0700000

## **12. ECOLOGICAL INFORMATION**

### **Toxicity**

Toxicity to fish - *Leuciscus idus melanotus* - 12.3 mg/l - 96 h Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates

EC50 - *Daphnia magna* (Water flea) - 1.17 mg/l - 48 h Method: OECD Test Guideline 202

NOEC - *Daphnia magna* (Water flea) - 0.0015 mg/l

Toxicity to algae

EC50 - *Desmodesmus subspicatus* (*Scenedesmus subspicatus*) - 1.03 mg/l - 72 h Method: OECD Test Guideline 201

### **Persistence and degradability**

Biodegradability

Result: 73 % - Inherently biodegradable. Method: OECD Test Guideline 301B

### **Bioaccumulative potential**

No bioaccumulation is to be expected ( $\log P_{ow} \leq 4$ ).

### **Mobility in soil**

No data available

### **PBT and vPvB assessment**

No data available

### **Other adverse effects**

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal

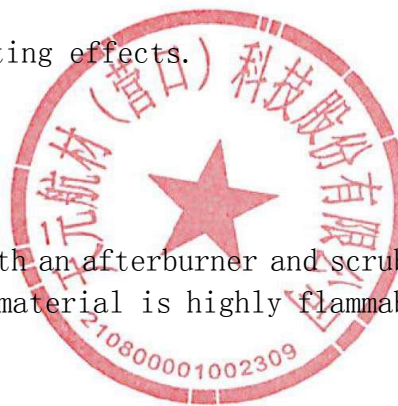
Very toxic to aquatic life with long lasting effects.

No data available

## **13. DISPOSAL CONSIDERATIONS**

### **Product**

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable.



Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

**Contaminated packaging**

Dispose of as unused product.

**14. TRANSPORT INFORMATION**

**DOT (US)**

UN number: 1325 Class: 4.1 Packing group: II  
Proper shipping name: Flammable solids, organic, n.o.s. (Ferrocene)  
Reportable Quantity (RQ):  
Marine pollutant: No  
Poison Inhalation Hazard: No

**IMDG**

UN number: 1325 Class: 4.1 Packing group: II EMS-No: F-A, S-G  
Proper shipping name: FLAMMABLE SOLID, ORGANIC, N.O.S. (Ferrocene)  
Marine pollutant: No

**IATA**

UN number: 1325 Class: 4.1 Packing group: II  
Proper shipping name: Flammable solid, organic, n.o.s. (Ferrocene)

**15. REGULATORY INFORMATION**

**WHMIS Classification**

D1B Toxic Material Causing Immediate and Serious Toxic Effects  
Toxic by inhalation.  
D2A Very Toxic Material Causing Other Toxic Effects  
Chronic toxicity  
D2B Toxic Material Causing Other Toxic Effects  
Reproductive hazard

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

**16. OTHER INFORMATION**

**Further information**

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Tanyun Aerospace Materials (Yingkou) Technology Co., Ltd. and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product.

