

## SAFETY DATA SHEET

According to JIS Z 7253:2019  
**Revision date** 28-Feb-2024  
 Revision Number 3.04

## Section 1: PRODUCT AND COMPANY IDENTIFICATION

<b>Product Name</b>	Morse Solution
<b>Product Code</b>	135-17071

<b>Supplier</b>	FUJIFILM Wako Pure Chemical Corporation 1-2 Doshomachi 3-Chome, Chuo-ku, Osaka 540-8605, Japan Phone: +81-6-6203-3741 Fax: +81-6-6203-2029
<b>Emergency telephone number</b>	+81-6-6203-3741 / +81-3-3270-8571
<b>Recommended uses</b>	For research use only
<b>Restrictions on use</b>	Seek expert judgment when using for purposes other than those recommended.

## Section 2: HAZARDS IDENTIFICATION

## GHS classification

## Classification of the substance or mixture

## Skin corrosion/irritation

Category 1

## Serious eye damage/eye irritation

Category 1

## Specific target organ toxicity (single exposure)

Category 1

**Category 1** central nervous system, respiratory system, blood system, kidneys

## Specific target organ toxicity (repeated exposure)

Category 2

**Category 2** respiratory system

## Pictograms



Signal word

Danger

## Hazard statements

H314 - Causes severe skin burns and eye damage

H318 - Causes serious eye damage

H370 - Causes damage to the following organs: central nervous system, respiratory system, blood system, kidneys

H373 - May cause damage to the following organs through prolonged or repeated exposure: respiratory system

## Precautionary statements-(Prevention)

- Do not breathe dust/fume/gas/mist/vapors/spray
- Wash face, hands and any exposed skin thoroughly after handling
- Wear protective gloves/protective clothing/eye protection/face protection
- Do not eat, drink or smoke when using this product

## Precautionary statements-(Response)

- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
- Immediately call a POISON CENTER or doctor/physician
- IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
- Wash contaminated clothing before reuse
- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

- IF SWALLOWED: Rinse mouth. Do NOT induce vomiting

**Precautionary statements-(Storage)**

- Store locked up

**Precautionary statements-(Disposal)**

- Dispose of contents/container to an approved waste disposal plant

**Others**

**Other hazards** Not available

### Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

**Single Substance or Mixture** Mixture

Chemical Name	Weight-%	Molecular weight	ENCS	ISHL No.	CAS RN
Water	<67.5	18.02	-	N/A	7732-18-5
Formic acid	22.5	46.03	(2)-670	*	64-18-6
Trisodium citrate dihydrate	10	294.10	(2)-1323	*	6132-04-3

**Note on ISHL No.:** \* in the table means announced chemical substances.

### Section 4: FIRST AID MEASURES

**Inhalation**

Remove to fresh air. If symptoms persist, call a physician.

**Skin contact**

Wash off immediately with soap and plenty of water. If symptoms persist, call a physician.

**Eye contact**

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediate medical attention is required.

**Ingestion**

Rinse mouth. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately. Do not induce vomiting without medical advice.

**Protection of first-aiders**

Use personal protective equipment as required.

### Section 5: FIRE FIGHTING MEASURES

**Suitable extinguishing media**

Water spray (fog), Carbon dioxide (CO<sub>2</sub>), Foam, Extinguishing powder, Sand

**Unsuitable extinguishing media**

No information available

**Specific hazards arising from the chemical product**

Thermal decomposition can lead to release of irritating and toxic gases and vapors.

**Special extinguishing method**

No information available

**Special protective actions for fire-fighters**

Use personal protective equipment as required. Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

### Section 6: ACCIDENTAL RELEASE MEASURES

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

For indoor, provide adequate ventilation process until the end of working. Deny unnecessary entry other than the people involved by, for example, using a rope. While working, wear appropriate protective equipments to avoid adhering it on skin,

or inhaling the gas. Work from windward, and retract the people downwind.

#### Environmental precautions

To be careful not discharged to the environment without being properly handled waste water contaminated.

#### Methods and materials for contaminant and methods and materials for cleaning up

Absorb dry sand, earth, sawdust and the waste. Collect empty container that can be sealed.

#### Recovery, neutralization

No information available

#### Secondary disaster prevention measures

Clean contaminated objects and areas thoroughly observing environmental regulations.

## Section 7: HANDLING AND STORAGE

### Handling

#### Technical measures

Avoid contact with strong oxidizing agents. Use with local exhaust ventilation.

#### Precautions

Do not rough handling containers, such as upsetting, falling, giving a shock, and dragging. Prevent leakage, overflow, and scattering. Not to generate steam and dust in vain. Seal the container after use. After handling, wash hands and face, and then gargle. In places other than those specified, should not be smoking or eating and drinking. Should not be brought contaminated protective equipment and gloves to rest stops. Deny unnecessary entry of non-emergency personnel to the handling area.

#### Safety handling precautions

Avoid contact with skin, eyes or clothing. Use personal protective equipment as required.

### Storage

#### Safe storage conditions

Keep container protect from light tightly closed. Store in a cool (2-10 °C) place.

#### Storage conditions

#### Safe packaging material

Glass

#### Incompatible substances

Strong oxidizing agents

## Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### Engineering controls

In case of indoor workplace, seal the source or use a local exhaust system. Provide the safety shower facility, and hand- and eye-wash facility. And display their position clearly.

### Exposure limits

Chemical Name	JSOH (Japan)	ISHL (Japan)	ACGIH
Formic acid 64-18-6	TWA: 5 ppm OEL TWA: 9.4 mg/m <sup>3</sup> OEL	N/A	STEL: 10 ppm TWA: 5 ppm

### Personal protective equipment

#### Respiratory protection

Protective mask

#### Hand protection

chemical protective gloves ( JIS T 8116 )

#### Eye protection

protective eyeglasses or chemical safety goggles (JIS T 8147)

#### Skin and body protection

Long-sleeved work clothes

### General hygiene considerations

Handle in accordance with good industrial hygiene and safety practice.

If this product is classified as "Chemical Substances Hazardous to Skin, etc.", use appropriate protective equipment to them.

## Section 9: PHYSICAL AND CHEMICAL PROPERTIES

### Form

#### Color

colorless

#### Turbidity

clear

#### Appearance

liquid

Odor	no data available
Melting point/freezing point	no data available
Boiling point, initial boiling point and boiling range	no data available
Flammability	no data available
Evaporation rate:	no data available
Flammability (solid, gas):	no data available
Upper/lower flammability or explosive limits	
Upper:	no data available
Lower:	no data available
Flash point	no data available
Auto-ignition temperature:	no data available
Decomposition temperature:	no data available
pH	Strongly acidic
Viscosity (coefficient of viscosity)	no data available
Dynamic viscosity	no data available
Solubilities	No data available
n-Octanol/water partition coefficient:(log Pow)	no data available
Vapour pressure	no data available
Specific Gravity / Relative density	1.12
Vapour density	no data available
Particle characteristics	no data available

## Section 10: STABILITY AND REACTIVITY

### Stability

Reactivity	no data available
Chemical stability	May be altered by light.
<b>Hazardous reactions</b>	
None under normal processing	
<b>Conditions to avoid</b>	
Extremes of temperature and direct sunlight	
<b>Incompatible materials</b>	
Strong oxidizing agents	
<b>Hazardous decomposition products</b>	
Carbon monoxide (CO), Carbon dioxide (CO <sub>2</sub> )	

## Section 11: TOXICOLOGICAL INFORMATION

### Acute toxicity

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Formic acid	700 mg/kg ( Rat )	N/A	7.4 mg/L ( Rat )

Chemical Name	Acute toxicity -oral- source information	Acute toxicity -dermal- source information	Acute toxicity -inhalation gas-source information
Formic acid	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.

Chemical Name	Acute toxicity -inhalation vapor- source information	Acute toxicity -inhalation dust-source information	Acute toxicity -inhalation mist-source information
Formic acid	Based on the NITE GHS classification results	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.

### Skin irritation/corrosion

Chemical Name	Skin corrosion/irritation source information
Formic acid	Based on the NITE GHS classification results.

### Serious eye damage/ irritation

Chemical Name	Serious eye damage/irritation source information
Formic acid	Based on the NITE GHS classification results.

**Respiratory or skin sensitization**

Chemical Name	Respiratory or Skin sensitization source information
Formic acid	Based on the NITE GHS classification results.

**Reproductive cell mutagenicity**

Chemical Name	germ cell mutagenicity source information
Formic acid	Based on the NITE GHS classification results.

**Carcinogenicity**

Chemical Name	Carcinogenicity source information
Formic acid	Based on the NITE GHS classification results.

**Reproductive toxicity**

Chemical Name	Reproductive toxicity source information
Formic acid	Based on the NITE GHS classification results.

**STOT-single exposure**

Chemical Name	STOT -single exposure- source information
Formic acid	Based on the NITE GHS classification results.

**STOT-repeated exposure**

Chemical Name	STOT -repeated exposure- source information
Formic acid	Based on the NITE GHS classification results.

**Aspiration hazard**

Chemical Name	Aspiration Hazard source information
Formic acid	Based on the NITE GHS classification results.

**Section 12: ECOLOGICAL INFORMATION****Ecotoxicity**

Chemical Name	Algae/aquatic plants	Fish	Crustacea
Formic acid	ErC50 : <i>Desmodesmus</i> 30.2 mg/L 72 h	LC50 : <i>Danio rerio</i> 1560 mg/L 96 h	EC50 : <i>Daphnia magna</i> 540 mg/L 48 h

**Other data**

Chemical Name	Short-term (acute) hazardous to the aquatic environment source information	Long-term (chronic) hazardous to the aquatic environment source information
Formic acid	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.

<b>Persistence and degradability</b>	No information available
<b>Bioaccumulative potential</b>	No information available
<b>Mobility in soil</b>	No information available
<b>Hazard to the ozone layer</b>	No information available

**Section 13: DISPOSAL CONSIDERATIONS****Waste from residues**

Disposal should be in accordance with applicable regional, national and local laws and regulations.

**Contaminated container and contaminated packaging**

Disposal should be in accordance with applicable regional, national and local laws and regulations.

**Section 14: TRANSPORT INFORMATION****ADR/RID**

<b>UN number</b>	UN3412
<b>Proper shipping name:</b>	Formic acid
<b>UN classification</b>	8
<b>Subsidiary hazard class</b>	

Packing group II  
Marine pollutant Not applicable

**IMDG**

UN number UN3412  
Proper shipping name: Formic acid  
UN classification 8  
Subsidiary hazard class  
Packing group II  
Marine pollutant (Sea) Not applicable  
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code No information available

**IATA**

UN number UN3412  
Proper shipping name: Formic acid  
UN classification 8  
Subsidiary hazard class  
Packing group II  
Environmentally Hazardous Substance Not applicable

## Section 15: REGULATORY INFORMATION

**Japanese regulations**

Fire Service Act Not applicable  
Poisonous and Deleterious Substances Control Law Not applicable  
Industrial Safety and Health Act Harmful Substances Whose Names Are to be Indicated on the Label (Law Art.57)  
Notifiable Substances (Law Art.57-2)  
Industrial Safety and Health Act (2024-) 【2024.4.1~】 Chemical Substances Hazardous to Skin, etc.(Regulations Article 594-2 Paragraph 1)  
Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc Priority Assessment Chemical Substances (Law Article 2, Para.5)  
Regulations for the carriage and storage of dangerous goods in ship Corrosive Substances (Ordinance Art.3, Ministry of Transportation Ordinance Regarding Transport by Ship and Storage, Attached Table 1)  
Civil Aeronautics Law Corrosive Substances (Ordinance Art.194, MITL Notification for Air Transportation of Explosives etc., Attached Table 1)  
Marine Pollution Prevention Law Enforcement ordinance Appendix No. 1 Noxious liquid substance Category Y  
Pollutant Release and Transfer Register Law (2023.4.1-) Not applicable  
Export Trade Control Order Not applicable

Chemical Name	Poisonous and Deleterious Substances Control Law	Industrial Safety and Health Act Substances (Law Art.57-2)	Pollutant Release and Transfer Register Law (2023.4.1-)
Formic acid 64-18-6 ( 22.5 )	-	Applicable	-

## Section 16: OTHER INFORMATION

**Key literature references and sources for data etc.**

NITE: National Institute of Technology and Evaluation (JAPAN)  
<http://www.safe.nite.go.jp/japan/db.html>

IATA dangerous Goods Regulations  
RTECS:Registry of Toxic Effects of Chemical Substances  
Japan Industrial Safety and Health Association GHS Model SDS  
Dictionary of Synthetic Organic Chemistry , SSOCJ, Koudansha Scientific Co.Ltd.  
Chemical Dictionary, Kyouritsu Publishing Co., Ltd.  
etc

**Record of SDS revisions**

The following contents were revised. Regulatory information.

**Disclaimer**

This SDS is according to JIS Z 7253: 2019. The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

GHS Classification is according to JIS Z 7252:2019. \*JIS: Japanese Industrial Standards

**End of Safety Data Sheet**