

SAFETY DATA SHEET

According to JIS Z 7253:2019
Revision date 18-Mar-2022
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Section 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name	Bouin Solution
Product Code	023-17361

Manufacturer FUJIFILM Wako Pure Chemical Corporation
 1-2 Doshomachi 3-Chome
 Chuo-ku, Osaka 540-8605, Japan
 Phone: +81-6-6203-3741
 Fax: +81-6-6203-5964

Supplier 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

Emergency telephone number +81-6-6203-3741 / +81-3-3270-8571

Recommended uses and restrictions on use For research use only

Section 2: HAZARDS IDENTIFICATION

GHS classification

Classification of the substance or mixture

Acute toxicity - Inhalation (Vapors)	Category 4
Skin corrosion/irritation	Category 1
Serious eye damage/eye irritation	Category 1
Respiratory sensitization	Category 1
Skin sensitization	Category 1
Germ cell mutagenicity	Category 2
Carcinogenicity	Category 1A
Reproductive Toxicity	Category 1B
Specific target organ toxicity (single exposure)	Category 2
Category 2 central nervous system, respiratory system, blood	
Specific target organ toxicity (repeated exposure)	Category 2
Category 2 central nervous system, respiratory system	
Acute aquatic toxicity	Category 3

Pictograms



Signal word

Danger

Hazard statements

- H314 - Causes severe skin burns and eye damage
- H318 - Causes serious eye damage
- H332 - Harmful if inhaled
- H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled
- H341 - Suspected of causing genetic defects
- H350 - May cause cancer

H360 - May damage fertility or the unborn child
 H317 - May cause an allergic skin reaction
 H402 - Harmful to aquatic life
 H371 - May cause damage to the following organs: central nervous system, respiratory system, blood
 H373 - May cause damage to the following organs through prolonged or repeated exposure: central nervous system, respiratory system

Precautionary statements-(Prevention)

- Obtain special instructions before use
- Do not handle until all safety precautions have been read and understood
- Use personal protective equipment as required
- Use only outdoors or in a well-ventilated area
- Do not breathe dust/fume/gas/mist/vapors/spray
- Wash face, hands and any exposed skin thoroughly after handling
- In case of inadequate ventilation wear respiratory protection
- Contaminated work clothing should not be allowed out of the workplace
- Wear protective gloves
- Do not eat, drink or smoke when using this product
- Avoid release to the environment

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 skin irritation or rash occurs: Get medical advice/attention
- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
- Call a POISON CENTER or doctor/physician if you feel unwell
- 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	<83	18.02	N/A	N/A	7732-18-5
Formaldehyde	<9.1	30.03	(2)-482	*	50-00-0
Acetic Acid	<5.0	60.05	(2)-688	*	64-19-7
Methanol	<3.0	32.04	2-201	*	67-56-1
2,4,6-Trinitrophenol	<1.0	229.11	(3)-823	公表	88-89-1

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

Impurities and/or Additives: Not applicable

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 (CO₂), 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. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity)

Storage**Safe storage conditions****Storage conditions**

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

Safe packaging material

Glass

Incompatible substances

Strong oxidizing agents, alkaline substances

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
Formaldehyde 50-00-0	Ceiling: 0.2 ppm Ceiling: 0.24 mg/m ³ TWA: 0.1 ppm OEL TWA: 0.12 mg/m ³ OEL ISHL/ACL: 0.1 ppm	ISHL/ACL: 0.1 ppm	STEL: 0.3 ppm TWA: 0.1 ppm
Acetic Acid 64-19-7	TWA: 10 ppm OEL TWA: 25 mg/m ³ OEL	N/A	STEL: 15 ppm TWA: 10 ppm
Methanol 67-56-1	200ppm(260mg/m ³)	200ppm	TWA 200ppm(260mg/m ³) STEL 250ppm
2,4,6-Trinitrophenol 88-89-1	N/A	N/A	TWA: 0.1 mg/m ³

Personal protective equipment

Respiratory protection	Gas mask for acidic gas
Hand protection	Impermeable protective gloves
Eye protection	protective eyeglasses or chemical safety goggles
Skin and body protection	Long-sleeved work clothes

General hygiene considerations

Handle in accordance with good industrial hygiene and safety practice.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Form

Color	yellow
Turbidity	clear
Appearance	liquid
Odor	characteristic odor
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	1.2 - 1.6 (25°C)
Viscosity (coefficient of viscosity)	no data available
Dynamic viscosity	no data available
Solubilities	water : miscible .
n-Octanol/water partition coefficient:(log Pow)	no data available
Vapour pressure	no data available
Specific Gravity / Relative density	1.033 - 1.037 g/mL
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.
Hazardous reactions	None under normal processing
Conditions to avoid	Extremes of temperature and direct sunlight
Incompatible materials	Strong oxidizing agents, alkaline substances
Hazardous decomposition products	Carbon monoxide (CO), Carbon dioxide (CO ₂), Nitrogen oxides (NO _x)

Section 11: TOXICOLOGICAL INFORMATION

Acute toxicity

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Formaldehyde	600 - 800 mg/kg(Rat)	270 mg/kg(Rabbit)	0.578 mg/L (Rat) 4 h
Acetic Acid	3310 mg/kg (rat)	1060 mg/kg (rabbit)	N/A
Methanol	1400 mg/kg (Human)	15800 mg/kg (Rabbit)	>22500 ppm (Rat) 8 h (vapor)
2,4,6-Trinitrophenol	200 mg/kg (rat)	N/A	N/A

Chemical Name	Acute toxicity -oral- source information	Acute toxicity -dermal- source information	Acute toxicity -inhalation gas- source information
Formaldehyde	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Acetic Acid	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Methanol	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
2,4,6-Trinitrophenol	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
Formaldehyde	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Acetic Acid	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Methanol	Based on the NITE GHS Classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
2,4,6-Trinitrophenol	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
Formaldehyde	Based on the NITE GHS classification results.
Acetic Acid	Based on the NITE GHS classification results.
Methanol	Based on the NITE GHS classification results.
2,4,6-Trinitrophenol	Based on the NITE GHS classification results.

Serious eye damage/ irritation

Chemical Name	Serious eye damage/irritation source information
Formaldehyde	Based on the NITE GHS classification results.
Acetic Acid	Based on the NITE GHS classification results.
Methanol	Based on the NITE GHS classification results.
2,4,6-Trinitrophenol	Based on the NITE GHS classification results.

Respiratory or skin sensitization

Chemical Name	Respiratory or Skin sensitization source information
Formaldehyde	Based on the NITE GHS classification results.
Acetic Acid	Based on the NITE GHS classification results.
Methanol	Based on the NITE GHS classification results.
2,4,6-Trinitrophenol	Based on the NITE GHS classification results.

Reproductive cell mutagenicity

Chemical Name	germ cell mutagenicity source information
Formaldehyde	Based on the NITE GHS classification results.
Acetic Acid	Based on the NITE GHS classification results.
Methanol	Based on the NITE GHS classification results.
2,4,6-Trinitrophenol	Based on the NITE GHS classification results.

Carcinogenicity

Chemical Name	Carcinogenicity source information
Formaldehyde	Based on the NITE GHS classification results.
Acetic Acid	Based on the NITE GHS classification results.
Methanol	Based on the NITE GHS classification results.
2,4,6-Trinitrophenol	Based on the NITE GHS classification results.

Chemical Name	NTP	IARC	ACGIH	JSOH (Japan)
Formaldehyde 50-00-0	Known	Group 1	A1	Group 2A

Reproductive toxicity

Chemical Name	Reproductive toxicity source information
Formaldehyde	Based on the NITE GHS classification results.
Acetic Acid	Based on the NITE GHS classification results.
Methanol	Based on the NITE GHS classification results.
2,4,6-Trinitrophenol	Based on the NITE GHS classification results.

STOT-single exposure

Chemical Name	STOT -single exposure- source information
Formaldehyde	Based on the NITE GHS classification results.
Acetic Acid	Based on the NITE GHS classification results.
Methanol	Based on the NITE GHS classification results.
2,4,6-Trinitrophenol	Based on the NITE GHS classification results.

STOT-repeated exposure

Chemical Name	STOT -repeated exposure- source information
Formaldehyde	Based on the NITE GHS classification results.
Acetic Acid	Based on the NITE GHS classification results.
Methanol	Based on the NITE GHS classification results.
2,4,6-Trinitrophenol	Based on the NITE GHS classification results.

Aspiration hazard

Chemical Name	Aspiration Hazard source information
Formaldehyde	Based on the NITE GHS classification results.
Acetic Acid	Based on the NITE GHS classification results.
Methanol	Based on the NITE GHS classification results.
2,4,6-Trinitrophenol	Based on the NITE GHS classification results.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity

Chemical Name	Algae/aquatic plants	Fish	Crustacea
Formaldehyde	N/A	LC50:Pimephales promelas 22.6 - 25.7 mg/L 96 h	LC50 : Cypridopsis sp. 0.00094 mg/L 24 h
Acetic Acid	N/A	LC50 : Pimephales promelas 79 mg/L 96 h	EC50 : Daphnia magna 65000 ug/L 48 h
2,4,6-Trinitrophenol	N/A	N/A	LC50:Daphnia magna 85 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
Formaldehyde	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Acetic Acid	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.

Methanol	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
2,4,6-Trinitrophenol	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.

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

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

UN number	UN3265
Proper shipping name:	Corrosive liquid, acidic, organic, n.o.s. (Mixture of Formaldehyde and Acetic Acid)
UN classification	8
Subsidiary hazard class	
Packing group	III
Marine pollutant	Not applicable

IMDG

UN number	UN3265
Proper shipping name:	Corrosive liquid, acidic, organic, n.o.s. (Mixture of Formaldehyde and Acetic Acid)
UN classification	8
Subsidiary hazard class	
Packing group	III
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	UN3265
Proper shipping name:	Corrosive liquid, acidic, organic, n.o.s. (Mixture of Formaldehyde and Acetic Acid)
UN classification	8
Subsidiary hazard class	
Packing group	III
Environmentally Hazardous Substance	Not applicable

Section 15: REGULATORY INFORMATION

International Inventories

EINECS/ELINCS	-
TSCA	-

Japanese regulations

Fire Service Act	Not applicable
Poisonous and Deleterious Substances Control Law	Deleterious Substances 3rd. Grade
Industrial Safety and Health Act	Harmful Substances Whose Names Are to be Indicated on the Label (Law Art.57, Para.1, Enforcement Order Art.18) Group 2 Specified Chemical Substance

<p>Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc</p> <p>Regulations for the carriage and storage of dangerous goods in ship</p> <p>Civil Aeronautics Law</p> <p>Marine Pollution Prevention Law</p> <p>Pollutant Release and Transfer Register Law (~2023.3.31)</p> <p>Specified Class 1-No. Pollutant Release and Transfer Register Law (2023/4/1~)</p> <p>Specified Class 1-No. Water Pollution Control Act</p> <p>Export Trade Control Order</p> <p>Air Pollution Control Law</p>	<p>Notifiable Substances (Law Art.57-2, Enforcement Order Art.18-2 Attached Table No.9)No.176,450,548</p> <p>Working Environment Evaluation Standards, Administrative Control Levels (Law Art.65-2, Para.1)</p> <p>Priority Assessment Chemical Substances (Law Article 2, Para.5)</p> <p>Corrosive Substances (Ordinance Art.3, Ministry of Transportation Ordinance Regarding Transport by Ship and Storage, Attached Table 1)</p> <p>Corrosive Substances (Ordinance Art.194, MITL Notification for Air Transportation of Explosives etc., Attached Table 1)</p> <p>Enforcement ordinance Appendix No. 1 Noxious liquid substance Category Y</p> <p>Specified Class 1 No. 411</p> <p><u>Specified Class 1 No.</u></p> <p>411</p> <p>Specified substances(Law Art.2 Para.4, Enforcement Order Art.3-3)</p> <p>Not applicable</p> <p>Priority Chemical Substances, Specified Substances</p>
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Chemical Name	Poisonous and Deleterious Substances Control Law	Industrial Safety and Health Act Substances (Law Art.57-2) (~2024.3.31)	Pollutant Release and Transfer Register Law (~2023.3.31)
Formaldehyde 50-00-0 (<9.1)	Applicable	Applicable	Applicable
Acetic Acid 64-19-7 (<5.0)	-	Applicable	-
Methanol 67-56-1 (<3.0)	-	Applicable	-
2,4,6-Trinitrophenol 88-89-1 (<1.0)	-	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

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 Z7252(2019). *JIS: Japanese Industrial Standards

End of Safety Data Sheet