SAFETY DATA SHEET

According to JIS Z 7253:2019
Revision Date 12-Mar-2021
Version 2.01

Section 1: PRODUCT AND COMPANY IDENTIFICATION

Product name	12 VOC Mixture Standard Solution(each 1mg/ml Methanol Solution)
Product code	228-01481

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

Flammable liquids	Category 2
Acute toxicity - Oral	Category 4
Serious eye damage/eye irritation	Category 2A
Carcinogenicity	Category 1A
Reproductive Toxicity	Category 1B
Specific target organ toxicity (single exposure)	Category 1, Category 3
Category 1 central nervous system, Visual organ, systemic toxicity	
Category 3 Narcotic effects	
Specific target organ toxicity (repeated exposure)	Category 1
Category 1 central nervous system, Visual organ	

Pictograms

Signal word Danger

Hazard statements
H225 - Highly flammable liquid and vapor
H319 - Causes serious eye irritation
H302 - Harmful if swallowed
H350 - May cause cancer
H360 - May damage fertility or the unborn child
H336 - May cause drowsiness or dizziness
H370 - Causes damage to the following organs: central nervous system, Visual organ, systemic toxicity

H372 - Causes damage to the following organs through prolonged or repeated exposure: central nervous system, Visual organ

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.
- Wash face, hands and any exposed skin thoroughly after handling
- Do not eat, drink or smoke when using this product
- Do not breathe dust/fume/gas/mist/vapors/spray
- Use only outdoors or in a well-ventilated area
- Keep away from heat/sparks/open flames/hot surfaces. — No smoking
- Keep container tightly closed
- Ground/bond container and receiving equipment
- Use explosion-proof electrical/ventilating/lighting/equipment
- Use only non-sparking tools
- Take precautionary measures against static discharge
- Keep cool

Precautionary statements-(Response)

- IF exposed: Call a POISON CENTER or doctor/physician
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- If eye irritation persists: Get medical advice/attention.
- IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
- 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: Call a POISON CENTER or doctor/physician if you feel unwell
- Rinse mouth.
- In case of fire: Use CO2, dry chemical, or foam for extinction

Precautionary statements-(Storage)

- Store locked up.
- Store in a well-ventilated place. Keep container tightly closed

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
Methanol	98.8	32.04	2-201	公表	67-56-1
Benzene	0.1	78.11	(3)-1	公表	71-43-2
1,1,1-Trichloroethane	0.1	133.40	(2)-55	公表	71-55-6
Dichloromethane	0.1	84.93	(2)-36	公表	75-09-2
1,1-Dichloroethylene	0.1	96.94	(2)-103	公表	75-35-4
1,1,2-Trichloroethane	0.1	133.40	(2)-55	公表	79-00-5
Trichloroethylene	0.1	131.39	2-105	公表	79-01-6
cis-1,3-Dichloropropene	0.1	110.97	(2)-125	2-(13)-29	10061-01-5
trans-1,3-Dichloropropene	0.1	110.97	(2)-125	2-(13)-29	10061-02-6
1,2-Dichloroethane	0.1	98.96	(2)-54	2-(13)-23	107-06-2
Tetrachloroethylene	0.1	165.83	(2)-114	公表	127-18-4
cis-1,2-Dichloroethylene	0.1	96.94	(2)-103	公表	156-59-2
Carbon Tetrachloride	0.1	153.82	(2)-38	2-(13)-47	56-23-5

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. Vapors may form explosive mixture with air
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 contaminent and methods and materials for cleaning up
Absorb dry sand, earth, sawdust and the waste. Collect empty container that can be sealed.
Recoverly, 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
Highly flammable. Avoid contact with high temperature objects, spark, and strong oxidizing agents. To cut with care and wear protective gloves and protective goggles to ampoule time of the opening (Cutting method to check the label). 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

Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use personal protective equipment as required. Avoid contact with skin, eyes or clothing.

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 Ampoule

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
Methanol 67-56-1	200ppm(260mg/m^3)	200ppm	TWA 200ppm(260mg/m^3) STEL 250ppm
Benzene 71-43-2	Skin ISHL/ACL: 1 ppm	ISHL/ACL: 1 ppm	STEL: 2.5 ppm TWA: 0.5 ppm Skin
1,1,1-Trichloroethane 71-55-6	TWA: 200 ppm OEL TWA: 1100 mg/m^3 OEL ISHL/ACL: 200 ppm	ISHL/ACL: 200 ppm	STEL: 450 ppm TWA: 350 ppm
Dichloromethane 75-09-2	50ppm,170mg/m^3	ISHL/ACL: 50 ppm	TWA: 50 ppm
1,1-Dichloroethylene 75-35-4	N/A	N/A	TWA: 5 ppm
1,1,2-Trichloroethane 79-00-5	TWA: 10 ppm OEL TWA: 55 mg/m^3 OEL Skin	N/A	TWA: 10 ppm Skin
Trichloroethylene 79-01-6	25ppm, 135mg/m^3	ISHL/ACL: 10 ppm	STEL: 25 ppm TWA: 10 ppm
trans-1,3-Dichloropropene 10061-02-6	N/A	N/A	TWA 1ppm(skin) 4.5mg/m^3
1,2-Dichloroethane 107-06-2	TWA: 10 ppm OEL TWA: 40 mg/m^3 OEL ISHL/ACL: 10 ppm	ISHL/ACL: 10 ppm	TWA: 10 ppm
Tetrachloroethylene 127-18-4	TWA: OEL Skin ISHL/ACL: 25 ppm	ISHL/ACL: 25 ppm	STEL: 100 ppm TWA: 25 ppm
cis-1,2-Dichloroethylene 156-59-2	ISHL/ACL: 150 ppm	ISHL/ACL: 150 ppm	TWA: 200 ppm
Carbon Tetrachloride 56-23-5	TWA: 5 ppm OEL TWA: 31 mg/m^3 OEL Skin ISHL/ACL: 5 ppm	ISHL/ACL: 5 ppm	STEL: 10 ppm TWA: 5 ppm Skin

Personal protective equipment

Respiratory protection gas mask for organic 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	colorless
Turbidity	clear
Appearance	liquid
Odor	characteristic odor
Melting point/freezing point	-98 °C
Boiling point, initial boiling point and boiling range	64 °C
Flammability	Highly flammable liquid and vapor
Evaporation rate:	No data available
Flammability (solid, gas):	No data available
Upper/lower flammability or explosive limits	
Upper：	36.5 v/v%
Lower：	6.0 v/v%
Flash point	11 °C
Auto-ignition temperature:	464 °C
Decomposition temperature:	No data available
pH	No data available
Viscosity (coefficient of viscosity)	No data available
Dynamic viscosity	No data available
Solubilities	water , Ethanol and acetone : miscible .
n-Octanol/water partition coefficient:(log Pow)	-0.74
Vapour pressure	12.3 kPa
Specific Gravity / Relative density	0.791-0.793
Vapour density	1.1 (air=1)
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, Heat, flames and sparks, static electricity, spark

Incompatible materials

Strong oxidizing agents

Hazardous decomposition products

Carbon monooxide (CO), Carbon dioxide (CO2), Halides

Section 11: TOXICOLOGICAL INFORMATION

Acute toxicity

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Methanol	1400 mg/kg (human)	15800 mg/kg (rabbit)	>22500 ppm (rat) 8 h (vapor)
Benzene	810 mg/kg (rat)	>8,200 mg/kg (rabbit)	14000 ppm (rat)
1,1,1-Trichloroethane	10300 mg/kg (Rat)	15800 mg/kg (Rabbit)	13000 ppm (Rat) 6 h
Dichloromethane	2,280 mg/kg (Rat)	N/A	18,371 ppm (Rat) 4 h
1,1-Dichloroethylene	1500 mg/kg (Rat) 200 mg/kg (Rat)	N/A	1.66 mg/L (Rat) 4 h 6350 ppm (Rat) 4 h
1,1,2-Trichloroethane	837 mg/kg (Rat)	5,380 mg/kg(Rabbit)	2000 ppm (Rat) 4 h
Trichloroethylene	4920 mg/kg (Rat) 4290 mg/kg (Rat)	> 20 g/kg (Rabbit) 29000 mg/kg (Rabbit)	26 mg/L (Rat) 4 h
trans-1,3-Dichloropropene	470mg/kg(Rat)	775mg/kg(Rat)	1000ppm/2h(Rat)
1,2-Dichloroethane	670 mg/kg(Rat)	2800 mg/kg(Rabbit)	1000 ppm(Rat) 4h

Tetrachloroethylene	2629 mg/kg (Rat)	N/A	27.8 mg/L (Rat) 4 h
Carbon Tetrachloride	2350 mg/kg (rat)	15000 mg/kg (rabbit)	8000 ppm (rat) 4 h

Chemical Name	Acute toxicity -oral- source information	Acute toxicity -dermal- source information	Acute toxicity -inhalation gas- source information
Methanol	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Benzene	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
1,1,1-Trichloroethane	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Dichloromethane	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
1,1-Dichloroethylene	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
1,1,2-Trichloroethane	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Trichloroethylene	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
1,2-Dichloroethane	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Tetrachloroethylene	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
cis-1,2-Dichloroethylene	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Carbon Tetrachloride	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
Methanol	Based on the NITE GHS Classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Benzene	Based on the NITE GHS Classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
1,1,1-Trichloroethane	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Dichloromethane	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
1,1-Dichloroethylene	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
1,1,2-Trichloroethane	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Trichloroethylene	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
1,2-Dichloroethane	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Tetrachloroethylene	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
cis-1,2-Dichloroethylene	Based on the NITE GHS Classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Carbon Tetrachloride	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
Methanol	Based on the NITE GHS classification results.
Benzene	Based on the NITE GHS classification results.
1,1,1-Trichloroethane	Based on the NITE GHS classification results.
Dichloromethane	Based on the NITE GHS classification results.
1,1-Dichloroethylene	Based on the NITE GHS classification results.
1,1,2-Trichloroethane	Based on the NITE GHS classification results.
Trichloroethylene	Based on the NITE GHS classification results.
trans-1,3-Dichloropropene	Based on the NITE GHS classification results.
1,2-Dichloroethane	Based on the NITE GHS classification results.
Tetrachloroethylene	Based on the NITE GHS classification results.
cis-1,2-Dichloroethylene	Based on the NITE GHS classification results.

Carbon Tetrachloride	Based on the NITE GHS classification results.

Serious eye damage/ irritation

Chemical Name	Serious eye damage/irritation source information
Methanol	Based on the NITE GHS classification results.
Benzene	Based on the NITE GHS classification results.
1,1,1-Trichloroethane	Based on the NITE GHS classification results.
Dichloromethane	Based on the NITE GHS classification results.
1,1-Dichloroethylene	Based on the NITE GHS classification results.
1,1,2-Trichloroethane	Based on the NITE GHS classification results.
Trichloroethylene	Based on the NITE GHS classification results.
trans-1,3-Dichloropropene	Based on the NITE GHS classification results.
1,2-Dichloroethane	Based on the NITE GHS classification results.
Tetrachloroethylene	Based on the NITE GHS classification results.
cis-1,2-Dichloroethylene	Based on the NITE GHS classification results.
Carbon Tetrachloride	Based on the NITE GHS classification results.

Respiratory or skin sensitization

Chemical Name	Respiratory or Skin sensitization source information
Methanol	Based on the NITE GHS classification results.
Benzene	Based on the NITE GHS classification results.
1,1,1-Trichloroethane	Based on the NITE GHS classification results.
Dichloromethane	Based on the NITE GHS classification results.
1,1-Dichloroethylene	Based on the NITE GHS classification results.
1,1,2-Trichloroethane	Based on the NITE GHS classification results.
Trichloroethylene	Based on the NITE GHS classification results.
trans-1,3-Dichloropropene	Based on the NITE GHS classification results.
1,2-Dichloroethane	Based on the NITE GHS classification results.
Tetrachloroethylene	Based on the NITE GHS classification results.
cis-1,2-Dichloroethylene	Based on the NITE GHS classification results.
Carbon Tetrachloride	Based on the NITE GHS classification results.

Reproductive cell mutagenicity

Chemical Name	germ cell mutagencity source information
Methanol	Based on the NITE GHS classification results.
Benzene	Based on the NITE GHS classification results.
1,1,1-Trichloroethane	Based on the NITE GHS classification results.
Dichloromethane	Based on the NITE GHS classification results.
1,1-Dichloroethylene	Based on the NITE GHS classification results.
1,1,2-Trichloroethane	Based on the NITE GHS classification results.
Trichloroethylene	Based on the NITE GHS classification results.
1,2-Dichloroethane	Based on the NITE GHS classification results.
Tetrachloroethylene	Based on the NITE GHS classification results.
cis-1,2-Dichloroethylene	Based on the NITE GHS classification results.
Carbon Tetrachloride	Based on the NITE GHS classification results.

Carcinogenicity

Chemical Name	Carcinogenicity source information
Methanol	Based on the NITE GHS classification results.
Benzene	Based on the NITE GHS classification results.
1,1,1-Trichloroethane	Based on the NITE GHS classification results.
Dichloromethane	Based on the NITE GHS classification results.
1,1-Dichloroethylene	Based on the NITE GHS classification results.
1,1,2-Trichloroethane	Based on the NITE GHS classification results.
Trichloroethylene	Based on the NITE GHS classification results.
1,2-Dichloroethane	Based on the NITE GHS classification results.
Tetrachloroethylene	Based on the NITE GHS classification results.
cis-1,2-Dichloroethylene	Based on the NITE GHS classification results.
Carbon Tetrachloride	Based on the NITE GHS classification results.

Chemical Name	NTP	IARC	ACGIH	JSOH (Japan)
Benzene 71-43-2	Known	Group 1	A1	Group 1

1,1,1-Trichloroethane 71-55-6		Group 2A Group 3		
Dichloromethane 75-09-2	Reasonably Anticipated	Group 2A	A3	Group 2A
1,1-Dichloroethylene 75-35-4		Group 2B		Group 2B
1,1,2-Trichloroethane 79-00-5	-	Group 3	A3	-
Trichloroethylene 79-01-6	Known Reasonably Anticipated	Group 1 Group 3	A2	Group 1
trans-1,3-Dichloropropene 10061-02-6	R(ヒトに対して発がん性がある)	グループ2B(ヒトに対して発がん性がある可能性がある)	A3(動物発がん性物質)	「第２群B」人間に対しておそらく発がん性があると考えられる物質(証拠が比較的十分でない物質)
1,2-Dichloroethane 107-06-2	Reasonably Anticipated	Group 2A Group 2B	-	Group 2B
Tetrachloroethylene 127-18-4	Reasonably Anticipated	Group 2A	A3	Group 2B
Carbon Tetrachloride 56-23-5	Reasonably Anticipated	Group 2A Group 2B	A2	Group 2B

Reproductive toxicity

Chemical Name	Reproductive toxicity source information
Methanol	Based on the NITE GHS classification results.
Benzene	Based on the NITE GHS classification results.
1,1,1-Trichloroethane	Based on the NITE GHS classification results.
Dichloromethane	Based on the NITE GHS classification results.
1,1-Dichloroethylene	Based on the NITE GHS classification results.
1,1,2-Trichloroethane	Based on the NITE GHS classification results.
Trichloroethylene	Based on the NITE GHS classification results.
1,2-Dichloroethane	Based on the NITE GHS classification results.
Tetrachloroethylene	Based on the NITE GHS classification results.
cis-1,2-Dichloroethylene	Based on the NITE GHS classification results.
Carbon Tetrachloride	Based on the NITE GHS classification results.

STOT-single exposure

Chemical Name	STOT -single exposure- source information
Methanol	Based on the NITE GHS classification results.
Benzene	Based on the NITE GHS classification results.
1,1,1-Trichloroethane	Based on the NITE GHS classification results.
Dichloromethane	Based on the NITE GHS classification results.
1,1-Dichloroethylene	Based on the NITE GHS classification results.
1,1,2-Trichloroethane	Based on the NITE GHS classification results.
Trichloroethylene	Based on the NITE GHS classification results.
trans-1,3-Dichloropropene	Based on the NITE GHS classification results.
1,2-Dichloroethane	Based on the NITE GHS classification results.
Tetrachloroethylene	Based on the NITE GHS classification results.
cis-1,2-Dichloroethylene	Based on the NITE GHS classification results.
Carbon Tetrachloride	Based on the NITE GHS classification results.

STOT-repeated exposure

Chemical Name	STOT -repeated exposure- source information
Methanol	Based on the NITE GHS classification results.
Benzene	Based on the NITE GHS classification results.
1,1,1-Trichloroethane	Based on the NITE GHS classification results.
Dichloromethane	Based on the NITE GHS classification results.
1,1-Dichloroethylene	Based on the NITE GHS classification results.
1,1,2-Trichloroethane	Based on the NITE GHS classification results.
Trichloroethylene	Based on the NITE GHS classification results.
trans-1,3-Dichloropropene	Based on the NITE GHS classification results.
1,2-Dichloroethane	Based on the NITE GHS classification results.

Tetrachloroethylene	Based on the NITE GHS classification results.
cis-1,2-Dichloroethylene	Based on the NITE GHS classification results.
Carbon Tetrachloride	Based on the NITE GHS classification results.

Aspiration hazard

Chemical Name	Aspiration Hazard source information
Methanol	Based on the NITE GHS classification results.
Benzene	Based on the NITE GHS classification results.
1,1,1-Trichloroethane	Based on the NITE GHS classification results.
Dichloromethane	Based on the NITE GHS classification results.
1,1-Dichloroethylene	Based on the NITE GHS classification results.
1,1,2-Trichloroethane	Based on the NITE GHS classification results.
Trichloroethylene	Based on the NITE GHS classification results.
1,2-Dichloroethane	Based on the NITE GHS classification results.
Tetrachloroethylene	Based on the NITE GHS classification results.
cis-1,2-Dichloroethylene	Based on the NITE GHS classification results.
Carbon Tetrachloride	Based on the NITE GHS classification results.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity

Chemical Name	Algae/aquatic plants	Fish	Crustacea
Benzene	*EC50 : Pseudokirchneriella subcapitata* 29 mg/L 72 h	*LC50 : Oncorhynchus mykiss* 5.3 mg/L 96 h EC50 : Fathead mino *0.8 mg/L 32 h*	*EC50 : Daphnia magna* 8.76 - 15.6 mg/L 48 h
1,1,1-Trichloroethane	*EbC50:Chlamydomonas 0.536 mg/L 72 h*	*LC50:Pimephales promelas 35.2 - 50.7 mg/L 96 h*	*LC50: Brine shrimp 8000 ug/L 24 h*
Dichloromethane	*N/A*	*NOEC(body weight) : Fathead minnow 82.5 mg/L 32 d*	*EC50:Daphnia magna 27 mg/L 48 h*
1,1-Dichloroethylene	*EbC50:Chlamydomonas reinhardi 9.12 mg/L EC10:Scenedesmus quadricauda 240 mg/L*	*LC50:Pimephales promelas 161 - 179 mg/L 96 h LC50:Lepomis macrochirus 57 - 91 mg/L 96 h LC50:Pimephales promelas 85 - 117 mg/L 96 h*	*LC50:Daphnia magna 62 - 110 mg/L 48 h LC50:Daphnia magna 9.0 - 14.0 mg/L 48 h*
1,1,2-Trichloroethane	*EC50:Pseudokirchneriella subcapitata 51.4 mg/L 72h*	*LC50:Pimephales promelas 81.6 mg/L 96 h*	*EC50:Daphnia magna 18 mg/L 48 h*
Trichloroethylene	*EC50:Pseudokirchneriella subcapitata 175 mg/L 96 h EC50:Desmodesmus subspicatus 450 mg/L 96 h*	*LC50:Pimephales promelas 31.4 - 71.8 mg/L 96 h LC50:Lepomis macrochirus 39 - 54 mg/L 96 h*	*EC50:Daphnia magna 2.2 mg/L 48 h*
1,2-Dichloroethane	*EC50:Desmodesmus subspicatus 166 mg/L 96 h static EC50:Pseudokirchneriella subcapitata 433 mg/L 96 h*	*LC50:Pimephales promelas 110 - 123 mg/L 96 h LC50:Lepomis macrochirus 230 - 710 mg/L 96 h LC50:Oncorhynchus mykiss 225 mg/L 96 h*	*LC50 : Artemia salina 12.8 mg/L 48 h*
Tetrachloroethylene	*EC50:Pseudokirchneriella subcapitata 500 mg/L 96 h*	*LC50:Lepomis macrochirus 11.0 - 15.0 mg/L 96 h LC50:Pimephales promelas 12.4 - 14.4 mg/L 96 h LC50:Oncorhynchus mykiss 4.73 - 5.27 mg/L 96 h LC50:Pimephales promelas*	*EC50:Daphnia magna 6.1 - 9.0 mg/L 48 h*

		8.6 - 13.5 mg/L 96 h	
Carbon Tetrachloride	*EC50:Pseudokirchneriella subcapitata 0.46 mg/L 72 h*	*LC50:Lepomis macrochirus 23 - 33 mg/L 96 h LC50:Pimephales promelas 36.3 - 47.3 mg/L 96 h LC50:Pimephales promelas 9.68 - 11.3 mg/L 96 h*	*EC50:Daphnia magna 28 mg/L 24 h EC50:Daphnia magna 29 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
Methanol	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Benzene	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
1,1,1-Trichloroethane	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Dichloromethane	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
1,1-Dichloroethylene	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
1,1,2-Trichloroethane	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Trichloroethylene	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
1,2-Dichloroethane	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Tetrachloroethylene	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
cis-1,2-Dichloroethylene	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Carbon Tetrachloride	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 UN1230
Proper shipping name: Methanol
UN classfication 3
Subsidiary hazard class 6.1
Packing group II
Marine pollutant Not applicable

IMDG
UN number UN1230
Proper shipping name: Methanol

UN classfication	3
Subsidiary hazard class	6.1
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	UN1230
Proper shipping name:	Methanol
UN classfication	3
Subsidiary hazard class	6.1
Packing group	II
Environmentally Hazardous Substance	Not applicable

Section 15: REGULATORY INFORMATION

International Inventories

EINECS/ELINCS	-
TSCA	-

Japanese regulations

Fire Service Act	Category IV, alcohols, dangerous grade 2 water-soluble
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) Notifiable Substances (Law Art.57-2, Enforcement Oder Art.18-2 Attached Table No.9)No.560,241,257,383,226,240,531,384,359,256 Class 2 Organic Solvents (Enforcement Order Attached Table No.6-2, Ordinance on Prevention of Organic Solvent Poisoning Art.1, Para.1, Item 5) Dangerous Substances - Flammable Substance (Enforcement Order Attached Table 1 Item 4) Working Environment Evaluation Standards, Administrative Control Levels (Law Art.65-2, Para.1) Group 2 Specified Chemical Substance, Special organic solvents.
Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc	Class II Specified Chemical Substances (Law Art.2, Para.3, Enforcement Order Art.1-2) Priority Assessment Chemical Substances (Law Article 2, Para.5)
Regulations for the carriage and storage of dangerous goods in ship	Flammable Liquids (Ordinance Art.3, Ministry of Transportation Ordinance Regarding Transport by Ship and Storage, Attached Table 1)
Civil Aeronautics Law	Flammable Liquids (Ordinance Art.194, MITL Nortification for Air Transportation of Explosives etc., Attached Table 1)
Marine Pollution Prevention Law	Enforcement ordinance Appendix No. 1 Noxious liquid substance Category Y Marine pollutants (P and PP substances)
Pollutant Release and Transfer Register Law	Specified Class 1 No.
Specified Class 1-No.	400
Water Pollution Control Act	Harmful Substances (Law Art.2, Enforcement Order Art.2, Ordinace Designating Wastewater Standards Art.1)
Export Trade Control Order	Appendix 2
Ozon protection act.(Japan)	
Air Pollution Control Law	Priority Chemical Substances, Specified Substances
Soil Contamination Control Law	Designated Hazardous Substances

Chemical Name	Poisonous and Deleterious Substances Control Law	Industrial Safety and Health Act Substances (Law Art.57-2)	Pollutant Release and Transfer Register Law

Chemical Name	Poisonous and Deleterious Substances Control Law	Industrial Safety and Health Act Substances (Law Art.57-2)	Pollutant Release and Transfer Register Law
Methanol 67-56-1 (98.8)	-	Applicable	-
Benzene 71-43-2 (0.1)	-	Applicable	Applicable
1,1,1-Trichloroethane 71-55-6 (0.1)	-	Applicable	-
Dichloromethane 75-09-2 (0.1)	-	Applicable	-
1,1-Dichloroethylene 75-35-4 (0.1)	-	Applicable	-
1,1,2-Trichloroethane 79-00-5 (0.1)	-	Applicable	-
Trichloroethylene 79-01-6 (0.1)	-	Applicable	-
cis-1,3-Dichloropropene 10061-01-5 (0.1)	Applicable	Applicable	-
trans-1,3-Dichloropropene 10061-02-6 (0.1)	Applicable	Applicable	-
1,2-Dichloroethane 107-06-2 (0.1)	-	Applicable	-
Tetrachloroethylene 127-18-4 (0.1)	-	Applicable	-
cis-1,2-Dichloroethylene 156-59-2 (0.1)	-	Applicable	-
Carbon Tetrachloride 56-23-5 (0.1)	Applicable	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 Oraganic 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