

Issue 2022.07.21

Revision 2025.11.13

## Safety Data Sheet (SDS)

### Section 1 – CHEMICALS AND COMPANY IDENTIFICATION

Chemical Identifier	Solvent-S4147
Product Code	S4147
Reference Number	1027
Name of Supplier	Hitachi Industrial Equipment Systems Co.,Ltd.
Address	1-1 Higashitaga-cho 1-chome,Hitachi-shi, Ibaraki-ken, 316-8502 Japan
Department in Charge	Ink Group, Marking Systems and Hoist Systems Division
Phone Number	+81-294-36-8682
Fax Number	+81-294-36-8975
Mail Address	aida-kohhei@hitachi-ies.co.jp
Emergency Phone Number	+81-294-36-8682
Recommended Use	Industrial ink jet printers
Restriction on Use	If the product is to be used for applications other than those recommended, seek the judgment of an expert/chemical substance specialist, etc.

### Section 2 – HAZARDS IDENTIFICATION

#### GHS Classification of the Chemical

Physicochemical	Flammable liquids Category 2
Health Hazards	Serious eye damage/eye irritation Category 2A Carcinogenicity Category 1A Reproductive toxicity Category 1A Specific target organ toxicity (single exposure) Category 2(systemic toxicity, central nervous system)  Specific target organ toxicity (single exposure) Category 3(narcotic effects, respiratory tract irritation)  Specific target organ toxicity (repeated exposure) Category 1 (liver) Specific target organ toxicity (repeated exposure) Category 2 (blood system, central nervous system)
	Other hazards than mentioned above are Not classified or Classification not possible.

#### GHS Label Elements

##### Pictograms



Signal Word	Danger
Hazard Statements	H225 Highly flammable liquid and vapour H319 Causes serious eye irritation H335 May cause respiratory irritation H336 May cause drowsiness or dizziness H350 May cause cancer H360 May damage fertility or the unborn child H371 May cause damage to systemic toxicity, central nervous system H372 Causes damage to liver through prolonged or repeated exposure H373 May cause damage to blood system, central nervous system through prolonged or repeated exposure

## Precautionary Statements

Prevention	<p>Obtain special instructions before use.(P201)</p> <p>Do not handle until all safety precautions have been read and understood.(P202)</p> <p>Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.(P210)</p> <p>Keep container tightly closed.(P233)</p> <p>Ground and bond container and receiving equipment.(P240)</p> <p>Use explosion-proof electrical, ventilating and lighting equipment.(P241)</p> <p>Use non-sparking tools.(P242)</p> <p>Take action to prevent static discharges.(P243)</p> <p>Do not breathe dust/fume/gas/mist/vapours/spray.(P260)</p> <p>Avoid breathing dust/fume/gas/mist/vapours/spray.(P261)</p> <p>Wash hands thoroughly after handling.(P264)</p> <p>Wash eyes thoroughly after handling.(P264)</p> <p>Do not eat, drink or smoke when using this product.(P270)</p> <p>Use only outdoors or in a well-ventilated area.(P271)</p> <p>Wear protective gloves/protective clothing/eye protection/face protection.(P280)</p>
Response	<p>IF ON SKIN or hair: Take off immediately all contaminated clothing. Rinse skin with water or shower.(P303+P361+P353)</p> <p>IF INHALED: Remove person to fresh air and keep comfortable for breathing.(P304+P340)</p> <p>IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.(P305+P351+P338)</p> <p>IF exposed or concerned: Call a doctor.(P308+P311)</p> <p>IF exposed or concerned: Get medical advice/attention.(P308+P313)</p> <p>Call a doctor if you feel unwell.(P312)</p> <p>Get medical advice and attention if you feel unwell.(P314)</p> <p>If eye irritation persists: Get medical advice/attention.(P337+P313)</p> <p>In case of fire: Use appropriate media to extinguish.(P370+P378)</p>
Storage	<p>Store in a well-ventilated place. Keep container tightly closed.(P403+P233)</p> <p>Store in a well-ventilated place. Keep cool.(P403+P235)</p>
Disposal	<p>Store locked up.(P405)</p> <p>Dispose of contents and container in accordance with local, regional and national regulations (to be specified).(P501)</p>

## Section 3 – COMPOSITION / INFORMATION ON INGREDIENTS

Distinction of Substance or Mixture Mixture

Chemical Name or Generic Name	Concentration or Its Ranges (wt%)	Formula	ENCS No./ISHL No.		CAS RN
			ENCS No.	ISHL No.	
dimethyl carbonate	70-75	CH3OCOO CH3	(2)-2853	Existing	616-38-6

As far as we know, the information that is listed here is accurate. However, the above-mentioned suppliers or their subsidiaries shall not be liable for the accuracy or completeness of the information described above.

Ethanol	20-30	CH <sub>3</sub> CH <sub>2</sub> OH	(2)-202	Existing	64-17-5
Isopropyl alcohol	1-3	CH <sub>3</sub> CH(OH) CH <sub>3</sub>	(2)-207	Existing	67-63-0
n-Propyl alcohol	1-3	CH <sub>3</sub> CH <sub>2</sub> CH 2OH	(2)-207	Existing	71-23-8

## Section 4 – FIRST AID MEASURES

## Inhalation

IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.

IF exposed or concerned: Call a doctor.

## Skin Contact

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

IF ON SKIN: Wash with plenty of soap and water.

If skin irritation occurs: Get medical advice and attention.

IF exposed or concerned: Call a doctor.

## Eye Contact

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.

## Ingestion

IF exposed or concerned: Call a doctor.

Rinse mouth.

IF SWALLOWED: Call a doctor if you feel unwell.

IF exposed or concerned: Call a doctor.

## Section 5 – FIRE FIGHTING MEASURES

## Suitable Extinguishing Media

Use extinguishing agent suitable for type of surrounding fire.

When dust occurs, use dry sand.

Cylindric water.

## Unsuitable Extinguishing Media

## Specific Hazards in Case of Fire

Risk of producing harmful gases such as carbon monoxide. Avoid inhalation of smoke or gases.

## Specific Fire Fighting

Fight fire from upwind position if possible

Keep away from sources of ignition and use appropriate extinguishing media.

Prohibit unauthorized staff from entering the area around the fire.

Keep unnecessary people away.

## Special Protective Equipment and Precautions for Fire Fighters

Use goggles in combination with dust mask, and another protections as appropriate to situation.

## Section 6 – ACCIDENTAL RELEASE MEASURES

## Personal Precautions, Protective Equipment and Emergency Procedures

Use goggles in combination with dust mask, and another protections as appropriate to situation.

## Environmental Precautions

Large spills :Evacuate area.

Ensure adequate ventilation.

Do not discharge into the drains, surface waters or ground water directly.

## Methods and Equipment for Containment and Cleaning Up

No information available

## Prevention Measures for Secondary Accidents

Keep away from sources of ignition and prepare extinguishing media.

## Section 7 – HANDLING AND STORAGE

Handling	Technical Measures	Provide ventilation system and use necessary personal protective equipment as described in "Section 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION".
		Ground/bond container and receiving equipment. Use only non-sparking tools. Use explosion-proof electrical/ventilating/lighting.
		Take precautionary measures against static discharge.  Use local exhaust ventilation in case of production of fume or mist. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
	Precautions for Safe Handling	Keep cool.  Do not breathe dust/fume/gas/mist/vapours/spray.  Do not eat, drink or smoke when using this product.  Wash hands thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.
	Prevents Handling of Incompatible Substances or Mixtures	Refer to "Section 10 – STABILITY AND REACTIVITY".
Storage	Conditions for Safe Storage	Refer to "Section 10 – STABILITY AND REACTIVITY".  Store locked up. Store container tightly closed in well-ventilated place.

Section 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION

	Japan Administration Level	Exposure Limits (Japan Society for Occupational Health)	TLVs (ACGIH)
dimethyl carbonate	Not listed	Not listed	Not listed
Ethanol	Not listed	Not listed	TWA -, STEL 1000 ppm
Isopropyl alcohol	200ppm	[ Maximum allowable concentration ] 400ppm (980mg/m3)	TWA 200 ppm, STEL 400 ppm
n-Propyl alcohol	Not listed	Not listed	TWA 100 ppm, STEL -

	Concentration standards specified by the Minister of Health, Labour and Welfare	
	Concentration standard value for 8-hours exposure	Concentration standard value for short-term exposure/ceiling
dimethyl carbonate	Not listed	Not listed
Ethanol	Not listed	Not listed
Isopropyl alcohol	Not listed	Not listed
n-Propyl alcohol	Not listed	Not listed

TLVs (ACGIH) can be referenced at: <https://www.acgih.org/>

Engineering Controls	Use local exhaust ventilation in case of production of fume or mist. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.  Use explosion-proof electrical equipment and prevent from static electricity.
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Personal Protective Equipment	Respiratory Protection	Select and wear appropriate respiratory protective equipment based on risk assessments and other measures.
	Hand Protection	Wear appropriate protective equipment, including impervious or impermeable safety gloves, as circumstances dictate.  Select and wear appropriate safety gloves based on risk assessments and other measures.
	Eye/Face Protection	Select and wear appropriate face and eye protection based on risk assessments and other measures.
	Skin and Body Protection	Wear appropriate protective equipment such as impervious and impermeable protective clothing and footwear, as circumstances dictate.  Select and wear appropriate protective clothing and footwear based on risk assessments and other measures.

## Section 9 – PHYSICAL AND CHEMICAL PROPERTIES

Physical State		Liquid
Form		Liquid
Colour		Clear
Odour		aromatic odor
Melting Point/Freezing Point		4.6 °C (as Dimethyl carbonate)
Boiling Point or Initial Boiling Point and Boiling Ranges		90.3 °C (as Dimethyl carbonate)
Flammability		Flammability
Lower and Upper Explosion Limit / Flammability Limit	Lower Limit	4.2vol% (as Dimethyl carbonate)
	Upper Limit	12.9vol% (as Dimethyl carbonate)
Flash Point		6°C (Tag Closed Cup)
Auto-Ignition Temperature		458°C (as Dimethyl carbonate)
Decomposition Temperature		No data available
pH		No data available
Kinematic Viscosity		0.5mm <sup>2</sup> /s
Solubility		water-solubility139g/L (20°C) (as Dimethyl carbonate)
Partition Coefficient : n-Octanol/Water		No data available
Vapour Pressure		7.38kPa (20°C)(as Dimethyl carbonate)
Density and/or Relative Density		0.95
Relative Gas Density		3.1 (air=1)(as Dimethyl carbonate)
Particle Characteristics		No data available

## Section 10 – STABILITY AND REACTIVITY

Reactivity	Does not react dangerously under normal conditions.
Chemical Stability	Stable under normal conditions of use.
Possibility of Hazardous Reaction	Flammable
Conditions to Avoid	There is a risk of explosion due to impacts, friction, flame and other source of ignition.
Incompatible Substances or Mixtures	No data available
Hazardous Decomposition Products	No data available
Other Data	No data available

## Section 11 – TOXICOLOGICAL INFORMATION

As far as we know, the information that is listed here is accurate. However, the above-mentioned suppliers or their subsidiaries shall not be liable for the accuracy or completeness of the information described above.

Acute Toxicity	Oral	Classified as Not classified since ATE is more than 2000(mg/kg).
	Dermal	Classified as Not classified since ATE is more than 2000(mg/kg).
	Inhalation	(gas) Does not fall under gas based on GHS definitions.  (vapour) Classification not possible since lots of the concentrations of unknown ingredients. (dust and mist) Unable to classify due to insufficient data.
Skin Corrosion/Irritation		Classified as Not classified since ingredients that has a hazard category are contained less than the concentration limit.
Serious Eye Damage/Eye Irritation		Classified as Category 2A since the sum of 10 × (Eye Category 1 + Skin Category 1) is more than 10%.
Respiratory Sensitization		Unable to classify due to insufficient data.
Skin Sensitization		Classification not possible since lots of the concentrations of unknown ingredients.
Germ Cell Mutagenicity		Classification not possible since lots of the concentrations of unknown ingredients.
Carcinogenicity		Classified as Category 1A since one of the Category 1A ingredients is more than 0.1%.
Reproductive Toxicity		(Reproductive toxicity) Classified as Category 1A since one of the Category 1A ingredients is more than 0.3%. (Reproductive toxicity, effects on or via lactation)  Classification not possible since lots of the concentrations of unknown ingredients.
Specific Target Organ Toxicity (Single Exposure)		Classified as Category 2(systemic toxicity) since one of the Category 1(systemic toxicity) ingredients is 1 to 10%.
		Classified as Category 2(central nervous system) since one of the Category 1(central nervous system) ingredients is 1 to 10%.
		Classified as Category 3(narcotic effects) since the sum of Category 3(narcotic effects) ingredients is more than 20%.
		Classified as Category 3(respiratory tract irritation) since the sum of Category 3(respiratory tract irritation) ingredients is more than 20%.
Specific Target Organ Toxicity (Repeated Exposure)		Classified as Category 1(liver) since one of the Category 1(liver) ingredients is more than 10%.
		Classified as Category 2(central nervous system) since one of the Category 2(central nervous system) ingredients is more than 10%.
		Classified as Category 2(blood system) since one of the Category 1(blood system) ingredients is 1 to 10%.
Aspiration Hazard		Classification not possible since lots of the concentrations of unknown ingredients.

As far as we know, the information that is listed here is accurate. However, the above-mentioned suppliers or their subsidiaries shall not be liable for the accuracy or completeness of the information described above.

## Section 12 – ECOLOGICAL INFORMATION

Hazardous to the Aquatic Environment, Short-Term (Acute)	Classified as Not classified since the sum of (M × 100 × Category 1) + (10 × Category 2) + Category 3 ingredients is less than 25%.
Hazardous to the Aquatic Environment, Long-Term (Chronic)	Classified as Not classified since the sum of (M × 100 × Category 1) + (10 × Category 2) + Category 3 ingredients is less than 25%.
Ecotoxicity	No data available
Persistence	No data available
Bioaccumulative Potential	No data available
Mobility in Soil	No data available
Hazardous to the Ozone Layer	Unable to classify due to insufficient data.

## Section 13 – DISPOSAL CONSIDERATIONS

Residual waste	<p>Because waste materials such as liquid waste, paper towels used to wipe it up, or empty containers are flammable combustible materials, the section on “specially controlled industrial waste(Flammable waste oil)” from the Waste Management and Public Cleaning Law (Waste Management Law) is applicable.</p> <p>Either appropriately process in accordance with Waste Management and Public Cleaning Law, or commission a contractor licensed for transport or disposal of industrial waste requiring special management.</p> <p>Do not let wastewater, etc. used for cleaning machinery or containers flow directly onto the ground or in to the culverts.</p> <p>For waste materials generated by wastewater treatment, incineration, etc. either carry out processing in accordance with the Waste Management and Public Cleaning Law and related laws and regulations, or commission a licensed vendor to do so.</p> <p>When incinerating of waste materials, etc., do not use an incinerator without cleaning equipment, as harmful gas will be generated.</p> <p>Clarify the contents of waste materials and entrust disposal to a waste disposal company.</p>
Contaminated containers and packaging	Empty containers should be treated as industrial wastes and not allowed to contain waste.

## Section 14 – TRANSPORT INFORMATION

International Regulations	Regulatory Information	Conform to the provisions of IMO.
	by Sea	
	UN No.	1210
	Proper Shipping Name	PRINTING INK RELATED MATERIAL
	Class	3
	Packing Group	II
	Marine Pollutant	Not applicable
	Liquid Substance	Not applicable
	Transported in Bulk	
	According to MARPOL 73/78, Annex II, the IBC Code	
	Regulatory Information	Conform to the provisions of ICAO/IATA.
	by Air	
	UN No.	1210
	Proper Shipping Name	PRINTING INK RELATED MATERIAL
	Class	3
	Packing Group	II
Regulations in Japan	Regulatory Information	Complies with the Fire Service Act.
	by Road or Rail	

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Regulatory Information Conform to the provisions of the Ship Safety Law.  
by Sea  
UN No. 1210  
Proper Shipping Name PRINTING INK RELATED MATERIAL  
Class 3  
Packing Group II  
Marine Pollutant Not applicable  
Liquid Substance Not applicable  
Transported in Bulk  
According to MARPOL  
73/78, Annex II, the  
IBC Code

Regulatory Information Conform to the provisions of the Civil Aeronautics Law.  
by Air  
UN No. 1210  
Proper Shipping Name PRINTING INK RELATED MATERIAL  
Class 3  
Packing Group II  
Emergency Response Guide Number 130

#### Section 15 – REGULATORY INFORMATION

Industrial Safety and Health  
Act

the standards for work environment monitoring Article 65 part 2-1

Dangerous goods and hazardous goods for which the name, etc. should be indicated (Article 57, Paragraph 1 of the Act, Article 18, Item 2 ~ Item 3 of the Enforcement Order, Appended Table 2 of Article 30 of the Safety and Health Regulations)

Ethanol  
Propyl alcohol

Dangerous Substances –Flammable substances(Order Article Appended Table 1 part 4)

Dangerous goods and hazardous goods whose names, etc. should be notified (Article 57-2, Paragraph 1 of the Act, Article 18-2, Item 2 ~ Item 3 of the Enforcement Order, Article 34-2 Appended Table 2 of the Safety and Health Regulations)

Ethanol(Ordinance on Industrial Safety and Health Number of Appended Tables 2:205) (Trade Secrets)

Propyl alcohol(Ordinance on Industrial Safety and Health Number of Appended Tables 2:1780) (Trade Secrets)

Materials for special medical examinations and current handling workers(Industrial Safety and Health Act66 2 and Order for Enforcement of Industrial Safety and Health Act Article 22 (i))

Chemical substances that damage the skin, etc. / Harmful substances that cause skin irritation (Article 594-2, Paragraph 1 of the Safety and Health Regulations, No. 0531 No. 9 issued on May 31, 2020, No. 0704 issued on July 4, 2020) List of substances applicable to No. 1 and 5)

n-Propyl alcohol

Chemical substances that damage the skin, etc., and harmful substances that absorb the skin (List of substances subject to Article 594-2, Paragraph 1 of the Safety and Health Regulations, 0531-9 issued on May 31, Reiwa 4, and 0704-1 and 5 of July 4, Reiwa 5)

Propyl alcohol

Dangerous goods and hazardous goods for which the name, etc. should be indicated (Article 57, Paragraph 1 of the Act, Article 18, Item 2 ~ Item 3 of the Enforcement Order, Appended Table 2 of Article 30 of the Safety and Health Regulations)

Industrial Safety and Health  
Act(Substances subject to  
labeling and notification  
,Carcinogenic substances)  
(Implementation in Reiwa  
8)

Ethanol

	<p>Propyl alcohol dimethyl carbonate</p> <p>Dangerous goods and hazardous goods whose names, etc. should be notified (Article 57-2, Paragraph 1 of the Act, Article 18-2, Item 2 ~ Item 3 of the Enforcement Order, Article 34-2 Appended Table 2 of the Safety and Health Regulations)</p> <p>Ethanol(Ordinance on Industrial Safety and Health Number of Appended Tables 2:205) (Trade Secrets) Propyl alcohol(Ordinance on Industrial Safety and Health Number of Appended Tables 2:1780) (Trade Secrets) dimethyl carbonate(Ordinance on Industrial Safety and Health Number of Appended Tables 2:1188) (Trade Secrets)</p>
Industrial Safety and Health Act(Substances subject to labeling and notification ,Carcinogenic substances) (Implementation in Reiwa 9)	<p>Dangerous goods and hazardous goods for which the name, etc. should be indicated (Article 57, Paragraph 1 of the Act, Article 18, Item 2 ~ Item 3 of the Enforcement Order, Appended Table 2 of Article 30 of the Safety and Health Regulations)</p> <p>Ethanol Propyl alcohol dimethyl carbonate</p> <p>Dangerous goods and hazardous goods whose names, etc. should be notified (Article 57-2, Paragraph 1 of the Act, Article 18-2, Item 2 ~ Item 3 of the Enforcement Order, Article 34-2 Appended Table 2 of the Safety and Health Regulations)</p> <p>Ethanol(Ordinance on Industrial Safety and Health Number of Appended Tables 2:205) (Trade Secrets) Propyl alcohol(Ordinance on Industrial Safety and Health Number of Appended Tables 2:1780) (Trade Secrets) dimethyl carbonate(Ordinance on Industrial Safety and Health Number of Appended Tables 2:1188) (Trade Secrets)</p>
Poisonous and Deleterious Substances Control Act	Organic Solvent Poisoning Prevention Regulations Article 1-2 (Class 2 Organic Solvents, etc.), Enforcement Ordinance Appendix 6-2 Not applicable
Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof	Not applicable
Act on the Regulation of Manufacture and Evaluation of Chemical Substances	Priority Assessment Chemical Substances(Article 2 part 5)
Fire Service Act	Hazardous Materials Category IV inflammable liquids Class I petroleum non water-soluble Packing Group II
Foreign Exchange and Foreign Trade Act	Import Trade Control Order Appended Table I part 16
Ship Safety Law	Export approved goods, specified hazardous waste, etc. (Article 48, Paragraph 3 of the Law, Article 2, Attached Table 2, Paragraph 35-2 of the Export Order)
Aviation Law	Flammable liquids(Order Article 3,Appended Table I) Flammable liquids(Order Article 194,Appended Table I)

## Section 16 – OTHER INFORMATION

Industrial Safety and Health Act	Second-class organic solvents, etc.contain more than 5% of Second-class organic solvents.
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	In the case where "composition and ingredient information" corresponds to the secret of the business, the description of the content is the conventional range display. However, it is possible to notify us separately by the method of information transmission agreed with the customer, such as a confidentiality agreement. For more information, please contact our sales representative.
	Isopropyl alcohol belongs to propyl alcohol. dimethyl carbonate, DMC and Carbonic Acid Dimethyl Ester is the same substance.
Act on the Regulation of Manufacture and Evaluation of Chemical Substances	We have a Priority Assessment Chemical Substance posting threshold of 0.1% or more.
	The posting of a Priority Assessment Chemical Substance in SDS is as of November 2019 as an effort.
Foreign Exchange and Foreign Trade Act	In law, printing inks are not approved for export
Fire Service Act	The flash point of Class I petroleum is less than 21 ° c.
Poisonous and Deleterious Substances Control Act	The deleterious substances is only applicable to the material, and the mixture is non-applicable.
RoHS Specified Substance Concentration	Substances treated as equipment are exempt from this law. Cd<100ppm Pb, Hg, Cr(VI), PBB, PBDE, DEHP, DBP, BBP, DIBP <1000ppm
Allowable concentration Standards	TLV-TWA: Threshold Limit Values-Time Weighted Average STEL (Short Term Exposure Limit JIS Z7253:2019
Cited Literature	1) International Chemical Safety Cards 2) National Institute of Technology and Evaluation (NITE), Japan  3) Site for Safe Workplace by Ministry of Health, Labour and Welfare, Japan 4) EZSDS(JCDB)
Additional Information about This Product:	To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.