

Issue 2023.12.11

Revision 2025.11.13

## Safety Data Sheet (SDS)

### Section 1 – CHEMICALS AND COMPANY IDENTIFICATION

Chemical Identifier	Solvent-S4151
Product Code	S4151
Reference Number	1030
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 2B Carcinogenicity Category 1A Reproductive toxicity Category 1A 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 (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 H320 Causes 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 H372 Causes damage to liver through prolonged or repeated exposure H373 May cause damage to central nervous system through prolonged or repeated exposure
Precautionary Statements	
Prevention	Obtain special instructions before use.(P201) Do not handle until all safety precautions have been read and understood.(P202) Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.(P210)

	<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>
Response	<p>Wear protective gloves/protective clothing/eye protection/face protection.(P280)</p> <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: 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	60-70	CH <sub>3</sub> OCOO CH <sub>3</sub>	(2)-2853	Existing	616-38-6
Ethanol	40-50	CH <sub>3</sub> CH <sub>2</sub> OH	(2)-202	Existing	64-17-5

## 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: Get medical advice and attention.

Skin Contact	<p>IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.</p> <p>IF ON SKIN: Wash with plenty of soap and water.</p> <p>If skin irritation occurs: Get medical advice and attention.</p> <p>IF exposed or concerned: Get medical advice and attention.</p>
Eye Contact	<p>IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</p> <p>If eye irritation persists: Get medical advice/attention.</p> <p>IF exposed or concerned: Get medical advice and attention.</p>
Ingestion	<p>Rinse mouth.</p> <p>IF SWALLOWED: Call a doctor if you feel unwell.</p> <p>IF exposed or concerned: Get medical advice and attention.</p>
<b>Section 5 – FIRE FIGHTING MEASURES</b>	
Suitable Extinguishing Media  Unsuitable Extinguishing Media Specific Hazards in Case of Fire Specific Fire Fighting  Special Protective Equipment and Precautions for Fire Fighters	<p>Use extinguishing agent suitable for type of surrounding fire.</p> <p>When dust occurs, use dry sand. Cylindric water.</p> <p>Risk of producing harmful gases such as carbon monoxide. Avoid inhalation of smoke or gases.</p> <p>Fight fire from upwind position if possible</p> <p>Keep away from sources of ignition and use appropriate extinguishing media.</p> <p>Prohibit unauthorized staff from entering the area around the fire.</p> <p>Keep unnecessary people away.</p> <p>Use goggles in combination with dust mask, and another protections as appropriate to situation.</p>
<b>Section 6 – ACCIDENTAL RELEASE MEASURES</b>	
Personal Precautions, Protective Equipment and Emergency Procedures  Environmental Precautions  Methods and Equipment for Containment and Cleaning Up Prevention Measures for Secondary Accidents	<p>Use goggles in combination with dust mask, and another protections as appropriate to situation.</p> <p>Large spills :Evacuate area. Ensure adequate ventilation.</p> <p>Do not discharge into the drains, surface waters or ground water directly.</p> <p>No information available</p> <p>Keep away from sources of ignition and prepare extinguishing media.</p>
<b>Section 7 – HANDLING AND STORAGE</b>	
Handling Technical Measures	<p>Provide ventilation system and use necessary personal protective equipment as described in "Section 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION".</p> <p>Ground/bond container and receiving equipment. Use only non-sparking tools. Use explosion-proof electrical/ventilating/lighting.</p> <p>Take precautionary measures against static discharge.</p>

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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.

		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

	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

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.
Personal Protective Equipment	Respiratory Protection	Select and wear appropriate respiratory protective equipment based on risk assessments and other measures.
	Hand Protection	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	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

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Melting Point/Freezing Point		4 °C
Boiling Point or Initial Boiling Point and Boiling Ranges		78 °C
Flammability		Flammability
Lower and Upper Explosion Limit / Flammability Limit	Lower Limit	1.6vol%
	Upper Limit	19.0vol%
Flash Point		5.5°C (Tag Closed Cup)
Auto-Ignition Temperature		439°C
Decomposition Temperature		No data available
pH		No data available
Kinematic Viscosity		0.6mm <sup>2</sup> /s
Solubility		water-solubility139g/L (20°C) (as Dimethyl carbonate)
Partition Coefficient : n-Octanol/Water		No data available
Vapour Pressure		5.880kPa
Density and/or Relative Density		0.909
Relative Gas Density		2.8 (air=1)
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

Acute Toxicity	Oral	Classified as Not classified since ATE is over more than 2000(mg/kg).
	Dermal	Classified as Not classified since ATE is over 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 2B since the sum of Eye Category 2B ingredients 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.

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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 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%.
Aspiration Hazard	Classification not possible since lots of the concentrations of unknown ingredients.

## 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	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.  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.  Do not let wastewater, etc. used for cleaning machinery or containers flow directly onto the ground or in to the culverts.
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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.

When incinerating of waste materials, etc., do not use an incinerator without cleaning equipment, as harmful gas will be generated.

Clarify the contents of waste materials and entrust disposal to a waste disposal company.

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

Industrial Safety and Health Act(Substances subject to labeling and notification ,Carcinogenic substances) (Implementation in Reiwa 8)	<p>Dangerous Substances –Flammable substances(Order Article Appended Table 1 part 4)</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)</p> <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>
Industrial Safety and Health Act(Substances subject to labeling and notification ,Carcinogenic substances) (Implementation in Reiwa 9)	<p>Ethanol 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)</p> <p>dimethyl carbonate(Ordinance on Industrial Safety and Health Number of Appended Tables 2:1188) (Trade Secrets)</p> <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>
Poisonous and Deleterious Substances Control Act Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof	<p>Ethanol 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)</p> <p>dimethyl carbonate(Ordinance on Industrial Safety and Health Number of Appended Tables 2:1188) (Trade Secrets)</p>
Fire Service Act Foreign Exchange and Foreign Trade Act	<p>Organic Solvent Poisoning Prevention Regulations Article 1-2 (Class 2 Organic Solvents, etc.), Enforcement Ordinance Appendix 6-2 Not applicable</p> <p>Not applicable</p> <p>Not applicable</p> <p>Hazardous Materials Category IV inflammable liquids Class I petroleum non water-soluble Packing Group II</p> <p>Import Trade Control Order Appended Table I part 16</p> <p>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)</p> <p>Flammable liquids(Order Article 3,Appended Table I)</p> <p>Flammable liquids(Order Article 194,Appended Table I)</p>

## Section 16 – OTHER INFORMATION

Industrial Safety and Health Act	<p>Second-class organic solvents, etc. contain more than 5% of Second-class organic solvents.</p> <p>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.</p> <p>dimethyl carbonate, DMC and Carbonic Acid Dimethyl Ester is the same substance.</p>
Act on the Regulation of Manufacture and Evaluation of Chemical Substances	<p>We have a Priority Assessment Chemical Substance posting threshold of 0.1% or more.</p> <p>The posting of a Priority Assessment Chemical Substance in SDS is as of November 2019 as an effort.</p>
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	<p>Substances treated as equipment are exempt from this law.</p> <p>Cd&lt;100ppm Pb, Hg, Cr(VI), PBB, PBDE, DEHP, DBP, BBP, DIBP &lt;1000ppm</p>
Allowable concentration Standards	<p>TLV-TWA: Threshold Limit Values-Time Weighted Average STEL (Short Term Exposure Limit</p> <p>JIS Z7253:2019</p>
Cited Literature	<p>1) International Chemical Safety Cards</p> <p>2) National Institute of Technology and Evaluation (NITE), Japan</p> <p>3) Site for Safe Workplace by Ministry of Health, Labour and Welfare, Japan</p> <p>4) EZSDS(JCDB)</p>
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.