Issue 2022.7.21

Revision 2024.11.11

Safety Data Sheet (SDS)

Section 1 – CHEMICALS AND COMPANY IDENTIFICATION

Chemical Identifier	Ink-4147F
Product Code	4147F
Reference Number	63
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	IJP 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 effect, respiratory tract irritation) Specific target organ toxicity (repeated exposure) Category 1(liver) Specific target organ toxicity (repeated exposure) Category 2(blood, 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、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)
- Keep container tightly closed.(P233)
- Ground and bond container and receiving equipment.(P240)
- Use explosion-proof electrical, ventilating and lighting equipment.(P241)
- Use non-sparking tools.(P242)
- Take action to prevent static discharges.(P243)
- Do not breathe dust/fume/gas/mist/vapours/spray.(P260)
- Avoid breathing dust/fume/gas/mist/vapours/spray.(P261)
- Wash hand thoroughly after handling.(P264)
- Wash eye thoroughly after handling.(P264)
- Do not eat, drink or smoke when using this product.(P270)
- Use only outdoors or in a well-ventilated area.(P271)
- Wear protective gloves/protective clothing/eye protection/face protection.(P280)

Response
- IF ON SKIN or hair: Take off immediately all contaminated clothing. Rinse skin with water or shower.(P303+P361+P353)
- IF INHALED: Remove person to fresh air and keep comfortable for breathing.(P304+P340)
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.(P305+P351+P338)
- IF exposed or concerned: Call a doctor.(P308+P311)
- IF exposed or concerned: Get medical advice/attention.(P308+P313)
- Call a doctor if you feel unwell.(P312)
- Get medical advice and attention if you feel unwell.(P314)
- If eye irritation persists: Get medical advice/attention.(P337+P313)
- In case of fire: Use appropriate media to extinguish.(P370+P378)

Storage
- Store in a well-ventilated place. Keep container tightly closed.(P403+P233)
- Store in a well-ventilated place. Keep cool.(P403+P235)
- Store locked up.(P405)

Disposal
- Dispose of contents and container in accordance with local, regional and national regulations (to be specified).(P501)

Section 3 – COMPOSITION / INFORMATION ON INGREDIENTS

Distinction of Substance or Mixture: Mixture

Chemical Name or Generic	Concentration or Its	Formula	ENCS No./ISHL No.	CAS RN

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.

Name	Ranges (wt%)		ENCS No.	ISHL No.	
Ethanol	20-30	CH3CH2OH	(2)-202	Registered	64-17-5
Isopropyl alcohol	1-3	CH3CH(OH)CH3	(2)-207	Registered	67-63-0
n-Propyl alcohol	1-3	CH3CH2CH2OH	(2)-207	Registered	71-23-8
dimethyl carbonate	60-70	CH3OCOOCH3	(2)-2853	Registered	616-38-6
2-Methoxy-1-methylethyl Acetate	1-3	-	(2)-3144	Registered	108-65-6
Nitrocellulose	3-5	-	(8)-176	Registered	9004-70-0

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. IF exposed or concerned: Call a doctor.
Ingestion	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.
Unsuitable Extinguishing Media	Cylindric water.
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. Large spills :Evacuate area. Ensure adequate ventilation.
Environmental Precautions	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)
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 –
dimethyl carbonate	Not listed	Not listed	Not listed
2-Methoxy-1-methylethyl Acetate	Not listed	Not listed	Not listed
Nitrocellulose	Not listed	Not listed	Not listed

	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
Ethanol	Not listed	Not listed
Isopropyl alcohol	Not listed	Not listed
n-Propyl alcohol	Not listed	Not listed
dimethyl carbonate	Not listed	Not listed
2-Methoxy-1-methylethyl Acetate	Not listed	Not listed
Nitrocellulose	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 electrocity.
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		Solvent odor
Melting Point/Freezing Point		4.6 ℃ (as Dimethyl carbonate)
Boiling Point or Initial Boiling Point and Boiling Ranges		90.3 ℃ (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		7.3℃ (Tag Closed Cup)
Auto-Ignition Temperature		458℃ (as Dimethyl carbonate)
Decomposition Temperature		No data available
pH		No data available
Kinematic Viscosity		3mm2/s
Solubility		water-solubility139g/L (20℃) (as Dimethyl carbonate)
Partition Coefficient : n-Octanol/Water		No data available
Vapour Pressure		7.38kPa (20℃)(as Dimethyl carbonate)
Density and/or Relative Density		0.99
Relative Gas Density		3.1 (air=1)(as Dimethyl carbonate)
Particle Characteristics		No data available
as Ethanol		
Boiling Point or Initial Boiling Point and Boiling Ranges		78.3℃

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Density and/or Relative Density	0.7892(20℃, 4℃)
as Isopropyl alcohol	
Boiling Point or Initial Boiling Point and Boiling Ranges	82.4℃
Density and/or Relative Density	0.7863(20℃, 20℃)
as n-Propyl alcohol	
Boiling Point or Initial Boiling Point and Boiling Ranges	97.4℃, 49.92℃(90mmHg), 30.35℃(28.5mmHg)
Density and/or Relative Density	0.8035(20℃/4℃)
as dimethyl carbonate	
Melting Point/Freezing Point	0.5℃
Boiling Point or Initial Boiling Point and Boiling Ranges	90～91℃
Density and/or Relative Density	1.0702(20℃/4℃)

Section 10 - STABILITY AND REACTIVITY

Reactivity	Does not react dangerously under nomal 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	Classification not possible since lots of the concentrations of unknown ingredients.
	Dermal	Classification not possible since lots of the concentrations of unknown ingredients.
	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		Classification not possible since lots of the concentrations of unknown ingredients.
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		Unable to classify due to insufficient data.
Germ Cell Mutagenicity		Unable to classify due to insufficient data.
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)
	Unable to classify due to insufficient data.
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 effect) since the sum of Category 3(narcotic effect) 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) since one of the Category 1(blood) ingredients is 1 to 10%.
Aspiration Hazard	Unable to classify due to insufficient data.

Section 12 – ECOLOGICAL INFORMATION

Hazardous to the Aquatic Environment, Short-Term (Acute)	Classification not possible since lots of the concentrations of unknown ingredients.
Hazardous to the Aquatic Environment, Long-Term (Chronic)	Classification not possible since lots of the concentrations of unknown ingredients.
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 groundor in to the culverts.
	For waste materials generated by wastewater treatment, incineration, etc. either carry out processingin 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 Transported in Bulk According to MARPOL 73/78, Annex Ⅱ, the IBC Code	Not applicable
	Regulatory Information by Air	Conform to the provisions of ICAO/IATA.
	UN No.	1210
	Proper Shipping Name	PRINTING INK RELATED MATERIAL
	Class	3
	Packing Group	Ⅱ
Regulations in Japan	Regulatory Information by Road	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
	Marine Pollutant	Not applicable
	Liquid Substance Transported in Bulk According to MARPOL 73/78, Annex Ⅱ, the IBC Code	Not applicable
	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	the standards for work environment monitoring Article 65 part 2-1 Dangerous or Harmful Substances Subject to Be Indicated their Names, etc. (Article 57 part 1 ,Order Article 18 part 1 and 2, Attached Table9) Hazardous and Explosive Products (Enforcement Ordinance Appendix 1 No. 1) Dangerous Goods and Flammable Objects (Enforcement Ordinance Appendix 1 No. 2) Dangerous Substances –Flammable substances(Order Article Appended Table 1 part 4) Hazardous Substances to be notified in terms of Whose Names,etc .(Article 57 part 2 ,Order Article 18 part 2-1and part 2, Attached Table9)

	Ethanol(Number:61) (Trade Secrets) Nitrocellulose(Number:424) (Trade Secrets) Propyl alcohol(Number:494) (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
Substances subject to obligation such as labeling and SDS issuance based on the Industrial Safety and Health Act (scheduled to come into effect on April 1, Reiwa 8)	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)
	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) dimethyl carbonate(Ordinance on Industrial Safety and Health Number of Appended Tables 2:1188) (Trade Secrets) 2-Methoxy-1-methylethyl Acetate(Ordinance on Industrial Safety and Health Number of Appended Tables 2:610) (Trade Secrets)
	Organic Solvent Poisoning Prevention Regulations Article 1-2 (Class 2 Organic Solvents, etc.), Enforcement Ordinance Appendix 6-2 Not applicable
Poisonous and Deleterious Substances Control Act	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 petroleums non water-soluble Packing Group Ⅱ
Water Pollution Prevention Act	Hazardous substances (Article 2, Ordinance of Enforcement, article 2, Ordinance 1) that prescribe wastewater standards)
Foreign Exchange and Foreign Trade Act	Import Trade Control Order Appended Table I part 1 Import Trade Control Order Appended Table I part 16
Ship Safety Law	Flammable liquids(Order Article 3,Appended Table I)
Aviation Law	Flammable liquids(Order Article 194,Appended Table I)

Section 16 - OTHER 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.

Industrial Safety and Health Act	Second-class organic solvents, etc.contain more than 5% of Second-class organic solvents. 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 petroleums 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	TLV-TWA：Threshold Limit Values-Time Weighted Average STEL (Short Term Exposure Limit
Standards	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.