

1. Product and Company Identification

Material name OIR 305-23
Issue date 01-28-2013
Revision date -
Supersedes date -
CAS # Mixture
Product use Positive photoresist.
Synonym(s) None.
Spec ID 100000002267
Manufacturer information
FUJIFILM Electronic Materials U.S.A., Inc.
80 Circuit Road
North Kingstown RI 02852
Transportation Emergency:
FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC: 1-800-424-9300
Medical Emergency (24HR):
FOR ANY HEALTH & MEDICAL EMERGENCY, 24 HOURS /7 DAYS CALL:
1-800-365-8951
Non-emergency Telephone:
FOR ALL MSDS REQUESTS & QUESTIONS, CALL CUSTOMER SERVICE:
1-800-553-6546
MSDS file 12047_NA_EN_V2.0
Replaces file 12047_NA_EN_V1.0

2. Hazards Identification

Physical state Liquid.
Emergency overview WARNING! Causes skin, eye and respiratory tract irritation.
Combustible liquid.
OSHA regulatory status This product is hazardous according to OSHA 29 CFR 1910.1200.
Potential health effects
Routes of exposure Eyes. Skin. Inhalation. Ingestion.
Eyes Causes eye irritation.
Skin Causes skin irritation.
Inhalation Causes respiratory tract irritation.
Ingestion May cause discomfort if swallowed.
Target organs Eyes. Skin. Respiratory tract. Central nervous system.
Chronic effects Organic solvents may be absorbed into the body by inhalation and cause permanent damage to the nervous system, including the brain.
Signs and symptoms Inhalation: Vapors may cause drowsiness and dizziness. Eye contact: May cause redness and pain. Skin contact: Defats the skin.
Potential environmental effects Harmful to aquatic organisms.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Ethyl 3-ethoxypropionate	763-69-9	40-55
Methyl 3-methoxypropionate	3852-09-3	15-25
Naphthoquinone diazide esters	Proprietary	1-5

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.
The product contains: Novolac resin. Novolak polymer, reaction products with naphthoquinone diazide ester.

4. First Aid Measures

First aid procedures

Eye contact Immediately flush with plenty of water for up to 15 minutes. Remove any contact lenses and open eyelids wide apart. Get medical attention promptly if symptoms occur after washing.

Skin contact	Remove contaminated clothes and rinse skin thoroughly with water for at least 15 minutes. Get medical attention promptly if symptoms persist or occur after washing.
Inhalation	Move injured person into fresh air and keep person calm under observation. Get medical attention if any discomfort continues.
Ingestion	Rinse mouth thoroughly with water and give large amounts of milk or water, if person is conscious. Only induce vomiting at the instruction of medical personnel. Get medical attention if any discomfort continues.
Notes to physician	Treat symptomatically.
General advice	Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital.

5. Fire Fighting Measures

Flammable properties	The product is combustible, and heating may generate vapors which may form explosive vapor/air mixtures.
Extinguishing media	
Suitable extinguishing media	Extinguish with foam, carbon dioxide, dry powder or water fog.
Unsuitable extinguishing media	None.
Protection of firefighters	
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed. Solvent vapors may form explosive mixtures with air.
Protective equipment and precautions for firefighters	Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Use standard firefighting procedures and consider the hazards of other involved materials. Containers close to fire should be removed or cooled with water.
Hazardous combustion products	Carbon monoxide. Carbon dioxide.

6. Accidental Release Measures

Personal precautions	Extinguish all ignition sources. Avoid sparks, flames, heat and smoking. Ventilate the area. Avoid inhalation of vapors/spray and contact with skin and eyes. Wear suitable protective clothing. See Section 8 of the MSDS for Personal Protective Equipment.
Environmental precautions	Do not allow to enter drains, sewers or watercourses.
Methods for cleaning up	Remove sources of ignition. Absorb spillage with non-combustible, absorbent material. For waste disposal, see section 13 of the MSDS.

7. Handling and Storage

Handling	Local exhaust is recommended. Avoid inhalation of vapors and spray mist and contact with skin and eyes. Wear approved safety goggles. Wear protective gloves and appropriate clothing to prevent skin contact. The product is combustible, and heating may generate vapors which may form explosive vapor/air mixtures. Do not smoke and do not spray near an open flame or other sources of ignition. Ground container and transfer equipment to eliminate static electric sparks. Observe good industrial hygiene practices.
Storage	Follow rules for combustible liquids. Keep away from heat, sparks and open flame. Do not store near heat sources or expose to high temperatures. Store in closed original container in a dry place. Store away from incompatible materials.

8. Exposure Controls / Personal Protection

Occupational exposure limits

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value
Ethyl 3-ethoxypropionate (CAS 763-69-9)	TWA	300 mg/m ³
		50 ppm

Engineering controls	Use explosion-proof ventilation equipment. Provide adequate ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of vapors. Provide easy access to water supply or an emergency shower.
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Personal protective equipment

Eye / face protection	Wear approved safety goggles.
Skin protection	Wear protective gloves impervious to the chemicals in use. Also wear appropriate clothing to prevent any possibility of skin contact. Suitable items can be recommended by the protective equipment supplier or by a qualified industrial hygienist.

Respiratory protection

If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA 29 CFR 1910.134. Use a NIOSH/MSHA approved air purifying respirator as needed to control exposure. Consult with respirator manufacturer to determine respirator selection, use, and limitations. Use positive pressure, air-supplied respirator for uncontrolled releases or when air purifying respirator limitations may be exceeded. Follow respirator protection program requirements (OSHA 1910.134 and ANSI Z88.2) for all respirator use.

General hygiene considerations

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical & Chemical Properties

Molecular weight	Not Applicable/Mixture.
Physical state	Liquid.
Color	Red brown.
Odor	Mild. Ether-like.
Odor threshold	No data available.
pH	Not applicable
Melting point/Freezing point	No data available.
Boiling point	293 °F (145 °C)
Density	0.96 - 1.04 g/cc
Relative density (= specific gravity)	0.96 - 1.04
Vapor pressure	No data available.
Vapor density	No data available.
Evaporation rate	< 1 (n-Butyl acetate = 1)
Percent volatile	62 - 75 %
Solubility (water)	Miscible with water.
Partition coefficient (n-octanol/water)	No data available.
Flash point	125.6 - 129.2 °F (52 - 54 °C)
Auto-ignition temperature	No data available.
Viscosity	No data available.
Flammability limits in air, upper, % by volume	No data available.
Flammability limits in air, lower, % by volume	No data available.
Decomposition temperature	No data available.

10. Chemical Stability & Reactivity Information

Chemical stability	Material is stable under normal conditions.
Conditions to avoid	Heat, sparks, flames.
Incompatible materials	Strong oxidizing agents. Strong bases.
Hazardous decomposition products	At elevated temperatures: Carbon dioxide (CO ₂). Carbon monoxide.
Possibility of hazardous reactions	Will not occur.

11. Toxicological Information**Toxicological data**

Components	Species	Test Results
Ethyl 3-ethoxypropionate (CAS 763-69-9)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	4076 mg/kg
<i>Inhalation</i>		
LC50	Rat	> 1000 ppm

Components	Species	Test Results
<i>Oral</i> LD50	Rat	5000 mg/kg
Methyl 3-methoxypropionate (CAS 3852-09-3)		
Acute <i>Inhalation</i> LC50	Mouse	40000 mg/m ³
Naphthoquinone diazide esters (CAS Proprietary)		
Acute <i>Dermal</i> LD50	Rabbit	> 2000 mg/kg
<i>Oral</i> LD50	Rat	> 2000 mg/kg
Sensitization	Not a skin sensitizer.	
Acute effects	May cause discomfort if swallowed.	
Local effects	Causes skin, eye and respiratory tract irritation.	
Chronic effects	Organic solvents may be absorbed into the body by inhalation and cause permanent damage to the nervous system, including the brain. Ethyl-3-ethoxypropionate: May cause central nervous system effects.	
Carcinogenicity	No data available.	
Mutagenicity	No data available.	
Reproductive effects	No data available.	
Symptoms and target organs	Inhalation: Vapors may cause drowsiness and dizziness. Eye contact: May cause redness and pain. Skin contact: Defats the skin.	
Further information	In high concentrations, vapors are narcotic and may cause headache, fatigue, dizziness and nausea. Ethyl-3-ethoxypropionate: Causes skin and eye irritation. Methyl 3-methoxypropionate: Causes skin, eye and respiratory tract irritation.	

12. Ecological Information

Ecotoxicological data

Components	Species	Test Results
Ethyl 3-ethoxypropionate (CAS 763-69-9)		
Aquatic Fish	LC50	Fathead minnow (<i>Pimephales promelas</i>) 62 - 88 mg/l
Naphthoquinone diazide esters (CAS Proprietary)		
Aquatic Crustacea	EC50	Daphnia magna 3.2 mg/l, 48 Hours
Fish	LC50	Rainbow Trout > 241 mg/l, 96 Hours
Ecotoxicity	Harmful to aquatic life.	
Persistence and degradability	No data available.	
Bioaccumulation / Accumulation	No data available.	
Partition coefficient	No data available.	
Mobility in environmental media	The product is miscible with water. May spread in water systems. The product contains organic solvents which will evaporate easily from all surfaces.	

13. Disposal Considerations

Waste codes	D001: Waste Flammable material with a flash point <140 °F
Disposal instructions	Disposal recommendations are based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.
Waste from residues / unused products	Dispose of in accordance with local regulations.
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport Information

DOT

Basic shipping requirements:

UN number	UN1993
Proper shipping name	Flammable liquids, n.o.s. (3-Methoxypropionic acid, methyl ester, Ethyl 3-ethoxypropionate)
Hazard class	3
Packing group	III
Environmental hazards	
Marine pollutant	No
Special precautions	Read safety instructions, MSDS and emergency procedures before handling.
Additional information:	
Special provisions	B1, B52, IB3, T4, TP1, TP29
Packaging exceptions	150
Packaging non bulk	203
Packaging bulk	242

Notes

This material can be reclassified as a combustible liquid and is considered not regulated by ground transport when packaged in non-bulk packaging (<119 G). This exception is found in 49 CFR 173.150(f).

IATA

UN number	UN1993
UN proper shipping name	Flammable liquid, n.o.s. (3-Methoxypropionic acid, methyl ester, Ethyl 3-ethoxypropionate)
Transport hazard class(es)	3
Packing group	III
Environmental hazards	No
Labels required	3
ERG code	3L
Special precautions for user	Read safety instructions, MSDS and emergency procedures before handling.

IMDG

UN number	UN1993
UN proper shipping name	Flammable liquid, n.o.s. (3-Methoxypropionic acid, methyl ester, Ethyl 3-ethoxypropionate)
Transport hazard class(es)	3
Packing group	III
Environmental hazards	
Marine pollutant	No
Labels required	3
EmS	F-E, S-E*
Special precautions for user	Read safety instructions, MSDS and emergency procedures before handling.

TDG

UN number	UN1993
Proper shipping name	FLAMMABLE LIQUID, N.O.S. (3-Methoxypropionic acid, methyl ester, Ethyl 3-ethoxypropionate)
Hazard class	3
Packing group	III
Marine pollutant	No
Special provisions	16
Labels required	3

15. Regulatory Information

US federal regulations	This product is hazardous according to OSHA 29 CFR 1910.1200. TSCA Section 4(a) Final Test Rules & Testing Consent Orders: Not regulated. TSCA Section 5(e) PMN-Substance Consent Orders: Not regulated.
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Drug Enforcement Administration (DEA). List 1(i), Precursor Chemicals (21 CFR 1310.02(a) and 1310.04(f)(1))

Not listed.

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Not listed.

TSCA Section 5(a)(2) Final Significant New Use Rules (SNURs)(40CFR 721, Subpt. E)

Not regulated.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

CERCLA (Superfund) reportable quantity (lbs) (40 CFR 302.4)

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard - No

Section 302 extremely hazardous substance (40 CFR 355, Appendix A)

No

Section 311/312 (40 CFR 370)

Yes

Drug Enforcement Administration (DEA) (21 CFR 1308.11-15)

Not controlled

Canadian regulations

This product has been classified according to the hazard criteria of the Canadian Controlled Products Regulations, Section 33, and the MSDS contains all required information.

WHMIS status

Controlled

WHMIS classification

B3 - Combustible Liquids
D2B - Other Toxic Effects-TOXIC

WHMIS labeling



Inventory status

Country(s) or region

Inventory name

On inventory (yes/no)*

Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

All ingredients are TSCA compliant.

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s)

State regulations

This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Not listed.

US. Massachusetts RTK - Substance List

Not regulated.

US. New Jersey Worker and Community Right-to-Know Act

Not regulated.

US. Pennsylvania RTK - Hazardous Substances

Not regulated.

US. Rhode Island RTK

Not regulated.

Mexico regulations

This product is dangerous according to Mexican regulations.

16. Other Information

Further information

HMIS® is a registered trade and service mark of the NPCA.
G - Safety Glasses, Gloves, Vapor Respirator

HMIS® ratings

Health: 2*
Flammability: 2
Physical hazard: 0
Personal protection: G

NFPA ratings

Health: -
Flammability: -
Instability: -

Disclaimer

THIS MATERIAL SAFETY DATA SHEET (MSDS) HAS BEEN PREPARED IN COMPLIANCE WITH THE FEDERAL OSHA HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200 AND THE CANADIAN CONTROLLED PRODUCT REGULATION (SOR/88-66). THE INFORMATION IN THIS MSDS SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. FUJIFILM ELECTRONIC MATERIALS BELIEVES THIS INFORMATION TO BE RELIABLE AND UP TO DATE AS OF THE DATE OF PUBLICATION BUT, MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS MSDS IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT FUJIFILM ELECTRONIC MATERIALS AT THE PHONE NUMBER 1-800-553-6546 (CUSTOMER SERVICE) TO MAKE CERTAIN THAT THIS DOCUMENT IS CURRENT.

This MSDS contains revisions in the following section(s):

MSDS file

Replaces file

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16.

12047_NA_EN_V2.0

12047_NA_EN_V1.0

Uncontrolled Distribution