



SAFETY DATA SHEET

ROHM AND HAAS ELECTRONIC MATERIALS LLC

**Product name: MEGAPOSIT™ SPR™ 220-3.0 POSITIVE
PHOTORESIST**

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ROHM AND HAAS ELECTRONIC MATERIALS LLC encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: MEGAPOSIT™ SPR™ 220-3.0 POSITIVE PHOTORESIST

Recommended use of the chemical and restrictions on use

Identified uses: For industrial use: use in the manufacturing of semiconductor devices

Uses advised against: We recommend that you use this product in a manner consistent with the listed use. If your intended use is not consistent with the stated use, please contact your sales or technical service representative.

COMPANY IDENTIFICATION

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EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact: 1-800-424-9300

Local Emergency Contact: 800-424-9300

2. HAZARDS IDENTIFICATION

Hazard classification

GHS classification in accordance with 29 CFR 1910.1200

Flammable liquids - Category 3

Serious eye damage - Category 1

Carcinogenicity - Category 1B

Specific target organ toxicity - single exposure - Category 3

Label elements

Hazard pictograms



Signal word: **DANGER!**

Hazards

Flammable liquid and vapour.
Causes serious eye damage.
May cause respiratory irritation.
May cause cancer.

Precautionary statements

Prevention

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
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.
Avoid breathing mist or vapours.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
IF exposed or concerned: Get medical advice/ attention.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Storage

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

Disposal

Dispose of contents/ container to an approved waste disposal plant.

Other hazards

No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature: Solution of organic compounds

This product is a mixture.

Component	CASRN	Concentration
Cresol novolak resin		30.0 - 40.0 %
Ethyl (S)-(-)-lactate	687-47-8	28.0 - 38.0 %
Anisole	100-66-3	10.0 - 20.0 %
Diazo Photoactive Compound		1.0 - 10.0 %
2-Methyl Butyl Acetate	624-41-9	1.0 - 10.0 %
n-amyl acetate	628-63-7	1.0 - 10.0 %
Cresol	1319-77-3	< 1.0 %
Organic Siloxane Surfactant		< 1.0 %
1,4-Dioxane	123-91-1	< 1.0 %

Note

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

Description of first aid measures

General advice:

If potential for exposure exists refer to Section 8 for specific personal protective equipment. First Aid responders should pay attention to self-protection and use the recommended protective clothing

Inhalation: Remove from exposure. If there is difficulty in breathing, give oxygen. Seek medical attention if symptoms persist.

Skin contact: Wash skin with water. Continue washing for at least 15 minutes. Obtain medical attention if blistering occurs or redness persists.

Eye contact: Immediately flush the eye with plenty of water for at least 15 minutes, holding the eye open. Obtain medical attention if soreness or redness persists.

Ingestion: Wash out mouth with water. Have victim drink 1-3 glasses of water to dilute stomach contents. Induce vomiting if person is conscious. Immediate medical attention is required. Never administer anything by mouth if a victim is losing consciousness, is unconscious or is convulsing.

Most important symptoms and effects, both acute and delayed:

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed

Notes to physician: Treat symptomatically.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: Dry sand Dry chemical Alcohol-resistant foam Carbon dioxide (CO₂) Keep containers and surroundings cool with water spray.

Unsuitable extinguishing media: Straight or direct water streams may not be effective to extinguish fire.

Special hazards arising from the substance or mixture

Hazardous combustion products: No data available

Unusual Fire and Explosion Hazards: This product may give rise to hazardous vapors in a fire. Vapors can travel a considerable distance to a source of ignition and result in flashback.

Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry.

Special protective equipment for firefighters: Wear full protective clothing and self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Wear suitable protective clothing. Wear respiratory protection. Eliminate all ignition sources.

Environmental precautions: Prevent the material from entering drains or water courses. Do not discharge directly to a water source. Advise Authorities if spillage has entered watercourse or sewer or has contaminated soil or vegetation.

Methods and materials for containment and cleaning up: Contain spills immediately with inert materials (e.g., sand, earth). Transfer into suitable containers for recovery or disposal. Finally flush area with plenty of water.

7. HANDLING AND STORAGE

Precautions for safe handling: Use local exhaust ventilation. Avoid contact with eyes, skin and clothing. Keep container tightly closed.

Conditions for safe storage: Store in original container. Keep away from heat and sources of ignition. Storage area should be: cool dry well ventilated out of direct sunlight

Keep away from heat, sparks, flame, and other sources of ignition. Practice good personal hygiene to prevent accidental exposure.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

If exposure limits exist, they are listed below. If no exposure limits are displayed, then no values are applicable.

Component	Regulation	Type of listing	Value
Anisole	Dow IHG	TWA	5 ppm
	Dow IHG	STEL	10 ppm
2-Methyl Butyl Acetate	Dow IHG	TWA	50 ppm
	Dow IHG	STEL	100 ppm
	ACGIH	TWA	50 ppm
	Further information: URT irr: Upper Respiratory Tract irritation		
	ACGIH	STEL	100 ppm
Further information: URT irr: Upper Respiratory Tract irritation			
	CAL PEL	STEL	532 mg/m3 100 ppm
	CAL PEL	PEL	266 mg/m3 50 ppm
n-amyl acetate	Dow IHG	TWA	50 ppm
	Dow IHG	STEL	100 ppm
	OSHA Z-1	TWA	525 mg/m3 100 ppm
Further information: (b): The value in mg/m3 is approximate.			
	ACGIH	TWA	50 ppm
Further information: URT irr: Upper Respiratory Tract irritation			
	ACGIH	STEL	100 ppm
Further information: URT irr: Upper Respiratory Tract irritation			
	CAL PEL	STEL	532 mg/m3 100 ppm
	CAL PEL	PEL	266 mg/m3 50 ppm
Cresol	ACGIH	TWA Inhalable fraction and vapor	20 mg/m3
	Further information: URT irr: Upper Respiratory Tract irritation; A4: Not classifiable as a human carcinogen; Skin: Danger of cutaneous absorption		
	OSHA Z-1	TWA	22 mg/m3 5 ppm
Further information: X: Skin designation			
1,4-Dioxane	Dow IHG	TWA	5 ppm
	Further information: SKIN: Absorbed via skin		
	DUPONT AEL	AEL *	25 ppm
Further information: Skin: Danger of cutaneous absorption			
	ACGIH	TWA	20 ppm
Further information: liver dam: Liver damage; A3: Confirmed animal carcinogen with unknown relevance to humans; Skin: Danger of cutaneous absorption			
	ACGIH	TWA	20 ppm
Further information: liver dam: Liver damage; A3: Confirmed animal carcinogen with unknown relevance to humans; Skin: Danger of cutaneous absorption			
	OSHA Z-1	TWA	360 mg/m3 100 ppm
Further information: X: Skin designation; (b): The value in mg/m3 is approximate.			
	CAL PEL	PEL	1 mg/m3 0.28 ppm
Further information: S: Skin			

Exposure controls

Engineering measures: Engineering methods to prevent or control exposure are preferred. Methods include process or personnel enclosure, mechanical ventilation (local exhaust), and control of process conditions.

Individual protection measures

Eye/face protection: Goggles

Skin protection

Hand protection: Butyl rubber gloves. Other chemical resistant gloves may be recommended by your safety professional.

Other protection: Normal work wear.

Respiratory protection: Respiratory protection if there is a risk of exposure to high vapor concentrations. The specific respirator selected must be based on the airborne concentration found in the workplace and must not exceed the working limits of the respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical state	liquid
Color	Red Amber
Odor	ester-like
Odor Threshold	No data available
pH	7
Melting point/range	No data available
Freezing point	No data available
Boiling point (760 mmHg)	150 °C (302 °F)
Flash point	45 °C (113 °F)
Evaporation Rate (Butyl Acetate = 1)	Slower than ether
Flammability (solid, gas)	Not Applicable
Lower explosion limit	No data available
Upper explosion limit	No data available
Vapor Pressure	No data available
Relative Vapor Density (air = 1)	Heavier than air.
Relative Density (water = 1)	1.04 - 1.11
Water solubility	insoluble
Partition coefficient: n-octanol/water	This product is a mixture. See Section 12 for individual component data.
Auto-ignition temperature	ca.400 °C (752 °F) <i>Literature</i> Ethyl lactate
Decomposition temperature	No data available
Kinematic Viscosity	No data available
Explosive properties	Not explosive

Oxidizing properties	No
Molecular weight	No data available for mixture
Volatile Organic Compounds	710.00 g/L

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: Not classified as a reactivity hazard.

Chemical stability: Stable under normal conditions.

Possibility of hazardous reactions: No dangerous reaction known under conditions of normal use. Product will not undergo hazardous polymerization.

Conditions to avoid: High temperatures Static discharge

Incompatible materials: Oxidizing agents Bases Acids

Hazardous decomposition products: Carbon monoxide carbon dioxide phenols oxides of sulfur Nitrogen oxides (NOx)

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity

Product test data not available. Refer to component data.

Acute dermal toxicity

Product test data not available. Refer to component data.

Acute inhalation toxicity

Product test data not available. Refer to component data.

Skin corrosion/irritation

Product test data not available. Refer to component data.

Serious eye damage/eye irritation

Product test data not available. Refer to component data.

Sensitization

Product test data not available. Refer to component data.

Specific Target Organ Systemic Toxicity (Single Exposure)

Product test data not available. Refer to component data.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

Product test data not available. Refer to component data.

Carcinogenicity

Product test data not available. Refer to component data.

Teratogenicity

Product test data not available. Refer to component data.

Reproductive toxicity

Product test data not available. Refer to component data.

Mutagenicity

Product test data not available. Refer to component data.

Aspiration Hazard

Product test data not available. Refer to component data.

COMPONENTS INFLUENCING TOXICOLOGY:

Cresol novolak resin

Acute oral toxicity

Single dose oral LD50 has not been determined.

Acute dermal toxicity

The dermal LD50 has not been determined.

Acute inhalation toxicity

The LC50 has not been determined.

Skin corrosion/irritation

No relevant data found.

Serious eye damage/eye irritation

No relevant data found.

Sensitization

For skin sensitization:

No relevant data found.

For respiratory sensitization:

No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)

Available data are inadequate to determine single exposure specific target organ toxicity.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

No relevant data found.

Carcinogenicity

No relevant data found.

Teratogenicity

No relevant data found.

Reproductive toxicity

No relevant data found.

Mutagenicity

No relevant data found.

Aspiration Hazard

Based on physical properties, not likely to be an aspiration hazard.

Ethyl (S)-(-)-lactate

Acute oral toxicity

LD50, Rat, > 2,000 mg/kg OECD Test Guideline 401

Acute dermal toxicity

LD50, Rat, > 5,000 mg/kg

Acute inhalation toxicity

LC50, Rat, 4 Hour, vapour, > 5.4 mg/l

Skin corrosion/irritation

Prolonged contact may cause skin irritation with local redness.

Serious eye damage/eye irritation

May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

Sensitization

Did not demonstrate the potential for contact allergy in mice.

Specific Target Organ Systemic Toxicity (Single Exposure)

May cause respiratory irritation.

Route of Exposure: Inhalation

Target Organs: Respiratory system

Specific Target Organ Systemic Toxicity (Repeated Exposure)

Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.

Teratogenicity

Did not cause birth defects or any other fetal effects in laboratory animals.

Reproductive toxicity

In animal studies, did not interfere with reproduction.

Mutagenicity

Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

Anisole

Acute oral toxicity

LD50, Rat, 3,700 mg/kg

Acute dermal toxicity

The dermal LD50 has not been determined.

Acute inhalation toxicity

LC50, Rat, 4 Hour, vapour, > 6.51 mg/l OECD Test Guideline 403 No deaths occurred at this concentration.

Skin corrosion/irritation

Brief contact may cause moderate skin irritation with local redness.
Prolonged contact may cause skin irritation with local redness.

Serious eye damage/eye irritation

May cause slight temporary eye irritation.
May cause slight temporary corneal injury.
Vapor may cause eye irritation experienced as mild discomfort and redness.

Sensitization

For skin sensitization:
Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)

May cause drowsiness or dizziness.
Route of Exposure: Inhalation

Specific Target Organ Systemic Toxicity (Repeated Exposure)

Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.

Carcinogenicity

No relevant data found.

Teratogenicity

No relevant data found.

Reproductive toxicity

No relevant data found.

Mutagenicity

In vitro genetic toxicity studies were negative.

Aspiration Hazard

Based on available information, aspiration hazard could not be determined.

Diazo Photoactive Compound

Acute oral toxicity

No relevant data found.

Acute dermal toxicity

No relevant data found.

Acute inhalation toxicity

No relevant data found.

Skin corrosion/irritation

No relevant data found.

Serious eye damage/eye irritation

No relevant data found.

Sensitization

For skin sensitization:

No relevant data found.

For respiratory sensitization:

No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)

Available data are inadequate to determine single exposure specific target organ toxicity.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

No relevant data found.

Carcinogenicity

No relevant data found.

Teratogenicity

No relevant data found.

Reproductive toxicity

No relevant data found.

Mutagenicity

No relevant data found.

Aspiration Hazard

Based on physical properties, not likely to be an aspiration hazard.

2-Methyl Butyl Acetate

Acute oral toxicity

LD50, Rat, 12,306 mg/kg

Acute dermal toxicity

LD50, Rabbit, 8,359 mg/kg

Acute inhalation toxicity

No adverse effects are anticipated from single exposure to vapor.

LC50, Rat, 4 Hour, vapour, > 5.2 mg/l No deaths occurred at this concentration.

Skin corrosion/irritation

Prolonged contact may cause skin irritation with local redness.

Serious eye damage/eye irritation

May cause eye irritation.
May cause corneal injury.

Sensitization

Did not cause allergic skin reactions when tested in humans.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

Repeated excessive exposure may cause irritation of the upper respiratory tract.

Carcinogenicity

No relevant data found.

Reproductive toxicity

No relevant data found.

Mutagenicity

In vitro genetic toxicity studies were negative.

Aspiration Hazard

Based on available information, aspiration hazard could not be determined.

n-amyl acetate

Acute oral toxicity

LD50, Rat, > 6,500 mg/kg

Acute dermal toxicity

LD50, Rabbit, > 8,300 mg/kg

Acute inhalation toxicity

LC50, Rat, vapour, > 24 mg/l No deaths occurred at this concentration.

Skin corrosion/irritation

Prolonged contact may cause skin irritation with local redness.
May cause drying and flaking of the skin.

Serious eye damage/eye irritation

May cause eye irritation.
May cause slight temporary corneal injury.

Sensitization

Skin contact may cause an allergic skin reaction in a small proportion of individuals.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

In animals, effects have been reported on the following organs:
Respiratory tract.

Carcinogenicity

No relevant data found.

Teratogenicity

No relevant data found.

Reproductive toxicity

No relevant data found.

Mutagenicity

In vitro genetic toxicity studies were negative.

Aspiration Hazard

Based on physical properties, not likely to be an aspiration hazard.

Cresol

Acute oral toxicity

Typical for this family of materials. LD50, Rat, 100 - 300 mg/kg

Acute dermal toxicity

Typical for this family of materials. LD50, Rabbit, 300 - 1,000 mg/kg

Acute inhalation toxicity

Typical for this family of materials. LC50, Rat, 8 Hour, vapour, 35.38 mg/l

Skin corrosion/irritation

Brief contact may cause skin burns. Symptoms may include pain, severe local redness and tissue damage.

Serious eye damage/eye irritation

May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

Sensitization

For skin sensitization:

No relevant data found.

For respiratory sensitization:

No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)

Material is corrosive. Material is not classified as a respiratory irritant; however, upper respiratory tract irritation or corrosivity may be expected.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.

Teratogenicity

Did not cause birth defects in laboratory animals. Has been toxic to the fetus in laboratory animals at doses toxic to the mother.

Reproductive toxicity

In animal studies, did not interfere with reproduction.

Mutagenicity

In vitro genetic toxicity studies were negative in some cases and positive in other cases. Animal genetic toxicity studies were negative.

Aspiration Hazard

Aspiration into the lungs may occur during ingestion or vomiting, resulting in rapid absorption and injury to other body systems.

Organic Siloxane Surfactant

Acute oral toxicity

Single dose oral LD50 has not been determined.

Acute dermal toxicity

The dermal LD50 has not been determined.

Acute inhalation toxicity

The LC50 has not been determined.

Skin corrosion/irritation

No data available

Serious eye damage/eye irritation

No data available

Sensitization

For skin sensitization:
No relevant data found.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)

Available data are inadequate to determine single exposure specific target organ toxicity.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

No relevant data found.

Carcinogenicity

No relevant data found.

Teratogenicity

No relevant data found.

Reproductive toxicity

No relevant data found.

Mutagenicity

No relevant data found.

Aspiration Hazard

Based on available information, aspiration hazard could not be determined.

1,4-Dioxane

Acute oral toxicity

Central nervous system effects. Respiratory effects. LD50, Rat, 5,150 mg/kg OECD Test Guideline 401

Acute dermal toxicity

The dermal LD50 has not been determined.

Acute inhalation toxicity

Central nervous system effects. Respiratory effects. LC50, Rat, 7 Hour, vapour, 77.5 mg/l OECD Test Guideline 403

Skin corrosion/irritation

Brief contact may cause slight skin irritation with local redness.

Serious eye damage/eye irritation

May cause severe eye irritation.

Sensitization

Did not cause allergic skin reactions when tested in guinea pigs.

Specific Target Organ Systemic Toxicity (Single Exposure)

The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.

The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with narcotic effects.

Route of Exposure: Inhalation

Target Organs: Respiratory system, Nervous system

Specific Target Organ Systemic Toxicity (Repeated Exposure)

Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

Carcinogenicity

Has caused cancer in laboratory animals.

Teratogenicity

Has been toxic to the fetus in laboratory animals at doses toxic to the mother.

Mutagenicity

Animal genetic toxicity studies were negative in some cases and positive in other cases. In vitro genetic toxicity studies were negative.

Carcinogenicity

Not considered carcinogenic by NTP, IARC, and OSHA

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Toxicity

Cresol novolak resin

Acute toxicity to fish

No relevant data found.

Ethyl (S)-(-)-lactate

Acute toxicity to fish

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

LC50, Danio rerio (zebra fish), 96 Hour, 320 mg/l

Acute toxicity to aquatic invertebrates

EC50, Daphnia magna (Water flea), 48 Hour, 683 mg/l

Acute toxicity to algae/aquatic plants

EC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, 3,500 mg/l

Anisole

Acute toxicity to fish

Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested).

Acute toxicity to aquatic invertebrates

EC50, Daphnia magna (Water flea), 48 Hour, 27 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants

NOEC, Pseudokirchneriella subcapitata (green algae), 72 Hour, 21 mg/l, OECD Test Guideline 201 or Equivalent

ErC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, 47 mg/l, OECD Test Guideline 201 or Equivalent

Diazo Photoactive Compound

Acute toxicity to fish

No relevant data found.

2-Methyl Butyl Acetate

Acute toxicity to fish

Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested).

Material is harmful to aquatic organisms (LC50/EC50/IC50 between 10 and 100 mg/L in the most sensitive species).

LC50, Fathead minnow (Pimephales promelas), 96 Hour, 69 mg/l, Method Not Specified.

Acute toxicity to aquatic invertebrates

EC50, Daphnia magna, 48 Hour, 40.9 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants

EC50, Pseudokirchneriella subcapita, 96 Hour, >466 mg/l

n-amyl acetate

Acute toxicity to fish

Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested).

LC50, Pimephales promelas (fathead minnow), 96 Hour, 69 mg/l, Method Not Specified.

Acute toxicity to aquatic invertebrates

LC50, Daphnia magna (Water flea), 24 Hour, 210 mg/l

EC50, Daphnia magna (Water flea), 24 Hour, 205 mg/l

Cresol

Acute toxicity to fish

Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

LC50, Oncorhynchus mykiss (rainbow trout), flow-through test, 96 Hour, 7.5 mg/l

Acute toxicity to aquatic invertebrates

LC50, Daphnia magna (Water flea), 48 Hour, 4.9 mg/l

Acute toxicity to algae/aquatic plants

Based on data from similar materials

EC50, Desmodesmus subspicatus (green algae), 48 Hour, 21 mg/l

Based on data from similar materials

EC10, Desmodesmus subspicatus (green algae), 48 Hour, 21 mg/l

Toxicity to bacteria

EC50, activated sludge, 458 mg/l

Chronic toxicity to fish

For similar material(s):

NOEC, Pimephales promelas (fathead minnow), 32 d, 1.35 mg/l

Chronic toxicity to aquatic invertebrates

NOEC, Daphnia magna (Water flea), 21 d, number of offspring, > 1 mg/l

Organic Siloxane Surfactant

Acute toxicity to fish

No relevant data found.

1,4-Dioxane

Acute toxicity to fish

LC50, Pimephales promelas (fathead minnow), 96 Hour, > 100 mg/l

Acute toxicity to aquatic invertebrates

EC50, Daphnia magna (Water flea), 48 Hour, > 1,000 mg/l, OECD Test Guideline 202

Acute toxicity to algae/aquatic plants

EC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, > 1,000 mg/l, OECD Test Guideline 201

NOEC, Pseudokirchneriella subcapitata (green algae), 72 Hour, 1,000 mg/l, OECD Test Guideline 201

Chronic toxicity to fish

NOEC, Pimephales promelas (fathead minnow), 32 d, 145 mg/l

Chronic toxicity to aquatic invertebrates

NOEC, Daphnia magna (Water flea), 21 d, 1,000 mg/l

Persistence and degradability

Cresol novolak resin

Biodegradability: No relevant data found.

Ethyl (S)-(-)-lactate

Biodegradability: Material shows rapid biodegradation. Attains the pass level of 60% biodegradation (based on oxygen consumption or CO₂ evolution) or 70% biodegradation (based on dissolved organic carbon loss) within 28 days.

10-day Window: Fail

Biodegradation: 85 %

Exposure time: 28 d

Anisole

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

10-day Window: Not applicable

Biodegradation: 56 %

Exposure time: 14 d

Method: OECD Test Guideline 301C or Equivalent

Diazo Photoactive Compound

Biodegradability: No relevant data found.

2-Methyl Butyl Acetate

Biodegradability: Biodegradation under aerobic static laboratory conditions is high (BOD₂₀ or BOD₂₈/ThOD > 40%). Material is expected to be readily biodegradable.

n-amyl acetate

Biodegradability: Biodegradation under aerobic static laboratory conditions is high (BOD₂₀ or BOD₂₈/ThOD > 40%). Material is expected to be readily biodegradable.

Theoretical Oxygen Demand: 2.34 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	64 %
10 d	76 %
20 d	72 %

Stability in Water (1/2-life)

, 78 d

Photodegradation

Test Type: Half-life (indirect photolysis)

Sensitization: OH radicals

Atmospheric half-life: 21 Hour

Method: Estimated.

Cresol

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

Theoretical Oxygen Demand: 2.52 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	1.40 mg/mg
10 d	2.02 mg/mg
20 d	2.06 mg/mg

Organic Siloxane Surfactant

Biodegradability: No relevant data found.

1,4-Dioxane

Biodegradability: Material is not readily biodegradable according to OECD/EEC guidelines.

Biodegradation: 2 %

Exposure time: 60 d

Method: OECD Test Guideline 310

Theoretical Oxygen Demand: 1.82 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	20 %
10 d	23 %
20 d	30 %

Photodegradation

Test Type: Half-life (indirect photolysis)

Sensitization: OH radicals

Atmospheric half-life: 0.382 d

Method: Estimated.

Bioaccumulative potential

Cresol novolak resin

Bioaccumulation: No relevant data found.

Ethyl (S)-(-)-lactate

Partition coefficient: n-octanol/water(log Pow): 0.31 at 20 °C

Anisole

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Partition coefficient: n-octanol/water(log Pow): 2.62 OECD Test Guideline 117 or Equivalent

Diazo Photoactive Compound

Bioaccumulation: No relevant data found.

2-Methyl Butyl Acetate

Bioaccumulation: No relevant data found.

n-amyl acetate

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Partition coefficient: n-octanol/water(log Pow): 2.34 Estimated. **Partition coefficient: n-octanol/water(log Pow):** 2.34 Estimated.

Cresol

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Partition coefficient: n-octanol/water(log Pow): 1.95 Calculated.

Bioconcentration factor (BCF): < 100 Fish Measured

Organic Siloxane Surfactant

Bioaccumulation: No relevant data found.

1,4-Dioxane

Bioaccumulation: Does not bioaccumulate. Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Partition coefficient: n-octanol/water(log Pow): -0.42 at 20 °C Measured
OECD Test Guideline 305C

Mobility in soil

Cresol novolak resin

No relevant data found.

Ethyl (S)-(-)-lactate

No relevant data found.

Anisole

No relevant data found.

Diazo Photoactive Compound

No relevant data found.

2-Methyl Butyl Acetate

No relevant data found.

n-amyl acetate

Potential for mobility in soil is very high (Koc between 0 and 50).

Partition coefficient (Koc): 38 Estimated.

Cresol

No relevant data found.

Organic Siloxane Surfactant

No relevant data found.

1,4-Dioxane

Potential for mobility in soil is very high (Koc between 0 and 50).

Partition coefficient (Koc): 1.23 Estimated.

13. DISPOSAL CONSIDERATIONS

Disposal methods: Dispose in accordance with all local, state (provincial), and federal regulations. Incineration is the recommended method of disposal for containers. Under RCRA, it is the responsibility of the product's user to determine at the time of disposal, whether the product meets RCRA criteria for hazardous waste. This is because the product uses, transformations, mixtures, processes, etc. may render the resulting materials hazardous.

Treatment and disposal methods of used packaging: Empty containers retain product residues. Follow label warnings even after container is emptied. Improper disposal or reuse of this container may be dangerous and illegal. Refer to applicable federal, state and local regulations.

Contaminated packaging: Dispose of as unused product. CONTAINERS MAY BE HAZARDOUS WHEN EMPTY. Since emptied containers retain product residue follow all (M)SDS and label warnings even after container is emptied.

14. TRANSPORT INFORMATION

DOT

Proper shipping name	Resin solution
UN number	UN 1866
Class	3
Packing group	III
Reportable Quantity	Cresol

Classification for SEA transport (IMO-IMDG):

Proper shipping name	RESIN SOLUTION
UN number	UN 1866
Class	3
Packing group	III
Marine pollutant	No

Transport in bulk
according to Annex I or II
of MARPOL 73/78 and the
IBC or IGC Code

Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	Resin solution
UN number	UN 1866
Class	3
Packing group	III

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Flammable (gases, aerosols, liquids, or solids)
Serious eye damage or eye irritation
Specific target organ toxicity (single or repeated exposure)
Carcinogenicity

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

The following components are subject to reporting levels established by SARA Title III, Section 313:

Components	CASRN
1,4-Dioxane	123-91-1

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) Section 103

Calculated RQ exceeds reasonably attainable upper limit.

Components	CASRN	RQ (RCRA Code)
Cresol	1319-77-3	100 lbs RQ
Cresol	1319-77-3	100 lbs RQ (D026)
Cresol	1319-77-3	100 lbs RQ (F004)
1,4-Dioxane	123-91-1	100 lbs RQ

Pennsylvania Right To Know

The following chemicals are listed because of the additional requirements of Pennsylvania law:

Components	CASRN
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n-amyl acetate
1,4-Dioxane

628-63-7
123-91-1

California Prop. 65

WARNING: This product can expose you to chemicals including 1,4-Dioxane, Cumene, Benzene, which is/are known to the State of California to cause cancer, and WARNING: This product can expose you to chemicals including 1,4-Dioxane, Cumene, Benzene, which is/are known to the State of California to cause cancer, and Benzene, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov. Benzene, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

United States TSCA Inventory (TSCA)

All components of this product are in compliance with the Active inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

16. OTHER INFORMATION

Hazard Rating System

NFPA

Health	Flammability	Instability
2	2	0

Revision

Identification Number: 360417 / 1304 / Issue Date: 06/15/2023 / Version: 9.0

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

ACGIH	USA. ACGIH Threshold Limit Values (TLV)
AEL *	8 & 12 hr. TWA
CAL PEL	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
Dow IHG	Dow Industrial Hygiene Guideline
DUPONT AEL	DuPont AEL (Acceptable Exposure Limit)
OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
PEL	Permissible exposure limit
STEL	Short Term Exposure Limit (STEL):
TWA	Time Weighted Average (TWA):

Full text of other abbreviations

AllC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP

- Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Information Source and References

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

ROHM AND HAAS ELECTRONIC MATERIALS LLC urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

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