SAFETY DATA SHEET
ROHM AND HAAS ELECTRONIC MATERIALS LLC

Product name: MEGAPOSIT™ SPR™ 510-A POSITIVE PHOTORESIST

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™ 510-A 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
ROHM AND HAAS ELECTRONIC MATERIALS LLC
A Subsidiary of The Dow Chemical Company
455 FOREST STREET
MARLBOROUGH MA 01752
UNITED STATES

Customer Information Number: 215-592-3000
SDSQuestion@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 1 800 424 9300
Local Emergency Contact: 800-424-9300

2. HAZARDS IDENTIFICATION

Hazard classification
This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.
Flammable liquids - Category 3
Eye irritation - Category 2A
Specific target organ toxicity - single exposure - Category 3
Acute aquatic toxicity - Category 3

Label elements
Hazard pictograms
Signal word: **WARNING!**

**Hazards**
Flammable liquid and vapour.
Causes serious eye irritation.
May cause respiratory irritation.
Harmful to aquatic life.

**Precautionary statements**

**Prevention**
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 dust/fume/gas/mist/vapours/spray.
Wash skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Avoid release to the environment.
Wear protective gloves/eye protection/face protection.

**Response**
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician 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.
If eye irritation persists: Get medical advice/attention.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

**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

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**3. COMPOSITION/INFORMATION ON INGREDIENTS**
**Chemical nature:** Solution of organic compounds
This product is a mixture.

<table>
<thead>
<tr>
<th>Component</th>
<th>CASRN</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl lactate</td>
<td>97-64-3</td>
<td>65.0 - 75.0 %</td>
</tr>
<tr>
<td>Cresol novolak resin</td>
<td></td>
<td>15.0 - 25.0 %</td>
</tr>
<tr>
<td>n-Butyl Acetate</td>
<td>123-86-4</td>
<td>1.0 - 10.0 %</td>
</tr>
<tr>
<td>Xylene</td>
<td>1330-20-7</td>
<td>1.0 - 10.0 %</td>
</tr>
<tr>
<td>Diazo Photoactive Compound</td>
<td></td>
<td>1.0 - 10.0 %</td>
</tr>
<tr>
<td>Cresol</td>
<td>1319-77-3</td>
<td>&lt; 1.0 %</td>
</tr>
<tr>
<td>Organic Siloxane Surfactant</td>
<td></td>
<td>&lt; 1.0 %</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>100-41-4</td>
<td>&lt; 1.0 %</td>
</tr>
</tbody>
</table>

**4. FIRST AID MEASURES**

**Description of first aid measures**

**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  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**

Exposure limits are listed below, if they exist.

<table>
<thead>
<tr>
<th>Component</th>
<th>Regulation</th>
<th>Type of listing</th>
<th>Value/Notation</th>
</tr>
</thead>
</table>
Ethyl lactate  Dow IHG  TWA  5 ppm
n-Butyl Acetate  Dow IHG  TWA  75 ppm
                     Dow IHG  STEL  150 ppm
                     ACGIH  TWA  50 ppm
                     ACGIH  STEL  150 ppm
                      OSHA Z-1  TWA  710 mg/m3  150 ppm
                      CAL PEL  PEL  710 mg/m3  150 ppm
                      CAL PEL  STEL  950 mg/m3  200 ppm
Xylene  ACGIH  TWA  BEI
                     ACGIH  STEL  BEI
                      OSHA Z-1  TWA  435 mg/m3  100 ppm
                      ACGIH  TWA  100 ppm
                      ACGIH  STEL  150 ppm
                      CAL PEL  STEL  655 mg/m3  150 ppm
                      CAL PEL  C  300 ppm
                      CAL PEL  PEL  435 mg/m3  100 ppm
Cresol  ACGIH  TWA  Inhalable  20 mg/m3
                     Inhalable fraction and vapor
                      OSHA Z-1  TWA  22 mg/m3  5 ppm
Ethylbenzene  ACGIH  TWA  20 ppm
                      ACGIH  TWA  BEI
                      OSHA Z-1  TWA  435 mg/m3  100 ppm
                      CAL PEL  PEL  22 mg/m3  5 ppm
                      CAL PEL  STEL  130 mg/m3  30 ppm

Exposure controls
Engineering controls: 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  viscous liquid
   Color  red
Odor  sweet
Odor Threshold  No data available
pH  ca.7
Melting point/range  -26 °C ( -15 °F) Literature
Freezing point  -26 °C ( -15 °F) Literature
Boiling point (760 mmHg) 154 °C (309 °F)
Flash point 46.1 °C (115.0 °F) closed cup
Evaporation Rate (Butyl Acetate = 1) Slower than ether
Flammability (solid, gas) Not Applicable
Lower explosion limit 1.5 % vol
Upper explosion limit 7.5 % vol Literature n-Butyl acetate
Vapor Pressure 2 mmHg at 20 °C (68 °F)
Relative Vapor Density (air = 1) Heavier than air.
Relative Density (water = 1) 1.08
Water solubility slightly soluble
Partition coefficient: n-octanol/water This product is a mixture. See Section 12 for individual component data.
Auto-ignition temperature 400 °C (752 °F) Literature Ethyl lactate
Decomposition temperature Temperatures greater than recommended storage temperature.
Dynamic Viscosity 2.4 mPa.s at 25 °C (77 °F)
Kinematic Viscosity 2.4 mm2/s at 25 °C (77 °F)
Explosive properties Not explosive
Oxidizing properties no oxidising properties
Molecular weight No data available for mixture
Volatile Organic Compounds 842.21 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

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:

Ethyl lactate

Acute oral toxicity
LD50, Rat, > 2,000 mg/kg OECD Test Guideline 425 No deaths occurred at this concentration.

Acute dermal toxicity
LD50, Rat, > 5,000 mg/kg
Acute inhalation toxicity
LC50, Rat, 4 Hour, vapour, 5.4 mg/l No deaths occurred at this concentration.

Skin corrosion/irritation
Essentially nonirritating to skin.

Serious eye damage/eye irritation
May cause severe eye irritation.
May cause moderate corneal injury.
Effects may be slow to heal.

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 respiratory irritation.
Route of Exposure: Inhalation
Target Organs: Respiratory system

Specific Target Organ Systemic Toxicity (Repeated Exposure)
In animals, effects have been reported on the following organs:
Nasal tissue.

Carcinogenicity
No relevant data found.

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

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.

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.

n-Butyl Acetate

Acute oral toxicity
LD50, Rat, male, 12,789 mg/kg

LD50 Oral, Rat, female, 10,760 mg/kg

Acute dermal toxicity
LD50, Rabbit, male and female, > 14,112 mg/kg

Acute inhalation toxicity
At room temperature, exposure to vapor is minimal due to low volatility; single exposure is not likely to be hazardous. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs. Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed.

As product: The LC50 has not been determined.

Skin corrosion/irritation
Brief contact is essentially nonirritating to skin.
Prolonged contact may cause severe skin irritation with local redness and discomfort. May cause drying and flaking of the skin.
**Serious eye damage/eye irritation**
May cause moderate eye irritation.
Corneal injury is unlikely.
Vapor may cause eye irritation experienced as mild discomfort and redness.

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

For respiratory sensitization:
No relevant data found.

**Specific Target Organ Systemic Toxicity (Single Exposure)**
May cause drowsiness or dizziness.
Route of Exposure: Inhalation
Target Organs: Nervous system

**Specific Target Organ Systemic Toxicity (Repeated Exposure)**
In animals, effects have been reported on the following organs:
Nasal tissue.

**Carcinogenicity**
No relevant data found.

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

**Reproductive toxicity**
In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals. In animal studies, did not interfere with fertility.

**Mutagenicity**
In vitro genetic toxicity studies were negative.

**Aspiration Hazard**
Aspiration into the lungs may occur during ingestion or vomiting, causing lung damage or even death due to chemical pneumonia.

**Xylene**

**Acute oral toxicity**
LD50, Rat, 4,300 mg/kg

**Acute dermal toxicity**
LD50, Rabbit, > 2,000 mg/kg

**Acute inhalation toxicity**
LC50, Rat, 4 Hour, vapour, 27.5 mg/l

**Skin corrosion/irritation**
Prolonged contact may cause skin irritation with local redness.
Repeated contact may cause skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage.
Vapor may cause skin irritation.
May cause drying and flaking of the skin.

**Serious eye damage/eye irritation**
May cause moderate eye irritation.
May cause slight temporary corneal injury.
Vapor may cause eye irritation experienced as mild discomfort and redness.

**Sensitization**
For skin sensitization:
No relevant data found.

For respiratory sensitization:
No relevant data found.

**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)**
In animals, effects have been reported on the following organs:
Liver
kidney
Blood
Xylene is reported to have caused hearing loss in laboratory animals upon exposure to high concentrations; such effects have not been reported in humans.

**Carcinogenicity**
Xylene was not found to be carcinogenic in a National Toxicology Program bioassay in rats and mice.

**Teratogenicity**
Exaggerated doses of xylene given orally to pregnant mice resulted in an increase in cleft palate, a common developmental abnormality in mice. In animal inhalation studies, xylene caused toxicity to the fetus but did not cause birth defects. Available data are inadequate for evaluation of maternal toxicity.

**Reproductive toxicity**
In animal studies, did not interfere with reproduction.

**Mutagenicity**
In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

**Aspiration Hazard**
May be fatal if swallowed and enters airways.

**Diazo Photoactive Compound**
**Acute oral toxicity**
LD50, Rat, > 2,000 mg/kg
Acute dermal toxicity
LD50, Rat, > 2,000 mg/kg

Serious eye damage/eye irritation
Single application to the rabbit eye produced moderate irritation.

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

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
Repeated administration produced no systemic toxicity under the following study conditions:
rats
Oral

Mutagenicity
Not mutagenic when tested in bacterial or mammalian systems.

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, 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 pain disproportionate to the level of irritation to eye tissues.
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)
Available data are inadequate to determine single exposure specific target organ toxicity.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
May cause central nervous system effects.
Excessive exposure may cause neurologic signs and symptoms. Symptoms may include convulsions or seizures.
In animals, effects have been reported on the following organs:
Blood-forming organs (Bone marrow & Spleen).
Bone marrow.
Spleen.
Female reproductive organs.
Gastrointestinal tract.
Kidney.
Liver.

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
May be harmful if swallowed and enters airways.

Organic Siloxane Surfactant

Acute oral toxicity
LD50, Rat, > 5,000 mg/kg

Acute dermal toxicity
LD50, Rat, > 2,000 mg/kg

Acute inhalation toxicity
The LC50 has not been determined.

Skin corrosion/irritation
A single application to rabbit skin produced mild irritation.

Serious eye damage/eye irritation
Single application to the rabbit eye produced no signs of ocular irritation.

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.

Ethylbenzene

**Acute oral toxicity**
LD50, Rat, 3,500 mg/kg

**Acute dermal toxicity**
LD50, Rabbit, 15,500 mg/kg

**Acute inhalation toxicity**
LC50, Rat, 4 Hour, vapour, 17.2 mg/l

**Skin corrosion/irritation**
Brief contact may cause moderate skin irritation with local redness. Prolonged contact may cause skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage. May cause drying and flaking of the skin.

**Serious eye damage/eye irritation**
May cause moderate eye irritation. Vapor may cause lacrimation (tears).

**Sensitization**
Did not cause allergic skin reactions when tested in humans.

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: May cause hearing loss based on animal data.
Kidney.
Liver.
Lung.
Although one early inhalation study on ethylbenzene reported an adverse effect on the testes, recent, more comprehensive studies have not shown this effect.

**Carcinogenicity**
Ethylbenzene has been shown to cause cancer in laboratory animals. There is no evidence that these findings are relevant to humans.

**Teratogenicity**
Has caused birth defects in laboratory animals only at doses toxic to the mother. Has been toxic to the fetus in lab animals at doses nontoxic to the mother.
Reproductive toxicity
In animal studies, did not interfere with reproduction. In animal studies, did not interfere with fertility.

Mutagenicity
In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Aspiration Hazard
Aspiration into the lungs may occur during ingestion or vomiting, causing lung damage or even death due to chemical pneumonia. May be fatal if swallowed and enters airways.

Carcinogenicity

<table>
<thead>
<tr>
<th>Component</th>
<th>List</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylbenzene</td>
<td>IARC</td>
<td>Group 2B: Possibly carcinogenic to humans</td>
</tr>
<tr>
<td></td>
<td>ACGIH</td>
<td>A3: Confirmed animal carcinogen with unknown relevance to humans.</td>
</tr>
</tbody>
</table>

12. ECOLOGICAL INFORMATION

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

Toxicity

Ethyl 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), semi-static test, 96 Hour, 320 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), static test, 48 Hour, 683 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
ErC50, Pseudokirchneriella subcapitata (green algae), Static, 96 Hour, Growth rate, 3,500 mg/l, Method Not Specified.

Cresol novolak resin

Acute toxicity to fish
No relevant data found.

n-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).
LC50, Pimephales promelas (fathead minnow), flow-through test, 96 Hour, 18 mg/l

Acute toxicity to aquatic invertebrates
LC50, Daphnia magna (Water flea), 48 Hour, 44 mg/l, Method Not Specified.
Acute toxicity to algae/aquatic plants
ErC50, Desmodesmus subspicatus (green algae), 72 Hour, Growth rate inhibition, 648 mg/l

Toxicity to bacteria
EC50, Bacteria, 16 Hour, > 1,000 mg/l

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), 21 d, 23 mg/l

Xylene
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), semi-static test, 96 Hour, 2.6 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates
IC50, Daphnia magna (Water flea), 24 Hour, 1 - 4.7 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
ErC50, Pseudokirchneriella subcapitata (algae), Static, 73 Hour, Growth rate, 4.36 mg/l, OECD Test Guideline 201 or Equivalent
NOEC, Pseudokirchneriella subcapitata (green algae), 73 Hour, Growth rate, 0.44 mg/l, OECD Test Guideline 201 or Equivalent

Chronic toxicity to fish
NOEC, Oncorhynchus mykiss (rainbow trout), flow-through, 56 d, mortality, > 1.3 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

Toxicity to bacteria
EC50, activated sludge, 458 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.

Ethylbenzene
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), semi-static test, 96 Hour, 4.2 mg/l, OECD Test Guideline 203 or Equivalent

**Acute toxicity to aquatic invertebrates**
EC50, Daphnia magna (Water flea), Static, 1 d, 2.2 mg/l

**Acute toxicity to algae/aquatic plants**
EC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, Growth inhibition (cell density reduction), 3.6 - 4.6 mg/l, OECD Test Guideline 201 or Equivalent

**Toxicity to bacteria**
EC50, Bacteria, 16 Hour, > 12 mg/l

**Chronic toxicity to aquatic invertebrates**
NOEC, Ceriodaphnia dubia (water flea), semi-static test, 7 d, 0.96 mg/l

**Toxicity to soil-dwelling organisms**
LC50, Eisenia fetida (earthworms), 2 d, survival, 0.047 mg/cm2

**Persistence and degradability**

**Ethyl lactate**
**Biodegradability:** Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%).

**Biodegradation:** 75 %
**Exposure time:** 28 d
**Method:** OECD Test Guideline 301D

**Cresol novolak resin**
**Biodegradability:** No relevant data found.

**n-Butyl Acetate**
**Biodegradability:** Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
**10-day Window:** Pass
**Biodegradation:** 83 %
**Exposure time:** 28 d
**Method:** OECD Test Guideline 301D or Equivalent

**Theoretical Oxygen Demand:** 2.20 mg/mg Estimated.

**Photodegradation**
**Sensitizer:** OH radicals
**Atmospheric half-life:** 2.32 d
**Method:** Estimated.

**Xylene**
**Biodegradability:** Material is expected to be readily biodegradable.
**10-day Window:** Pass
**Biodegradation:** > 60 %
**Exposure time:** 10 d
**Method:** OECD Test Guideline 301F or Equivalent
Theoretical Oxygen Demand: 3.17 mg/mg

Biological oxygen demand (BOD)

<table>
<thead>
<tr>
<th>Incubation Time</th>
<th>BOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 d</td>
<td>37.000 %</td>
</tr>
<tr>
<td>10 d</td>
<td>58.000 %</td>
</tr>
<tr>
<td>20 d</td>
<td>72.000 %</td>
</tr>
</tbody>
</table>

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 19.7 Hour
Method: Estimated.

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

Biological oxygen demand (BOD)

<table>
<thead>
<tr>
<th>Incubation Time</th>
<th>BOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 d</td>
<td>1.40 mg/mg</td>
</tr>
<tr>
<td>10 d</td>
<td>2.02 mg/mg</td>
</tr>
<tr>
<td>20 d</td>
<td>2.06 mg/mg</td>
</tr>
</tbody>
</table>

Organic Siloxane Surfactant
Biodegradability: No relevant data found.

Ethylbenzene
Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
Biodegradation: 100 %
Exposure time: 6 d
Method: OECD Test Guideline 301E or Equivalent

Theoretical Oxygen Demand: 3.17 mg/mg Estimated.

Chemical Oxygen Demand: 2.62 mg/mg Dichromate

Biological oxygen demand (BOD)

<table>
<thead>
<tr>
<th>Incubation Time</th>
<th>BOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 d</td>
<td>31.5 %</td>
</tr>
<tr>
<td>10 d</td>
<td>38.5 %</td>
</tr>
</tbody>
</table>
Photodegradation
Sensitizer: OH radicals
Atmospheric half-life: 55 Hour
Method: Estimated.

Bioaccumulative potential

**Ethyl lactate**
*Bioaccumulation:* Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
*Partition coefficient: n-octanol/water (log Pow):* 0.06 Measured

**Cresol novolak resin**
*Bioaccumulation:* No relevant data found.

**n-Butyl Acetate**
*Bioaccumulation:* Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
*Partition coefficient: n-octanol/water (log Pow):* Pow: 3.2 at 25 °C Measured
*Bioconcentration factor (BCF):* 15 Fish Estimated.

**Xylene**
*Bioaccumulation:* Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
*Partition coefficient: n-octanol/water (log Pow):* 3.12 Measured
*Bioconcentration factor (BCF):* 25.9 Rainbow trout (Salmo gairdneri) Measured

**Diazo Photoactive Compound**
*Bioaccumulation:* No relevant data found.

**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.

**Ethylbenzene**
*Bioaccumulation:* Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
*Partition coefficient: n-octanol/water (log Pow):* 3.15 Measured
*Bioconcentration factor (BCF):* 15 Fish Measured

Mobility in soil

**Ethyl lactate**
*No relevant data found.*

**Cresol novolak resin**
*No relevant data found.*

**n-Butyl Acetate**
*Potential for mobility in soil is very high (Koc between 0 and 50).*

| 20 d | 45.4 % |
Partition coefficient (Koc): 19 - 70 Estimated.

**Xylene**
Potential for mobility in soil is medium (Koc between 150 and 500).
Partition coefficient (Koc): 443 Estimated.

**DiazO Photoactive Compound**
No relevant data found.

**Cresol**
No relevant data found.

**Organic Siloxane Surfactant**
No relevant data found.

**Ethylbenzene**
Potential for mobility in soil is low (Koc between 500 and 2000).
Partition coefficient (Koc): 518 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**
Not regulated per 49CFR 173.150(f)(2)

**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:** Consult IMO regulations before transporting ocean bulk
of MARPOL 73/78 and the
IBC or IGC Code

Classification for AIR transport (IATA/ICAO):

<table>
<thead>
<tr>
<th>Proper shipping name</th>
<th>Resin solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN number</td>
<td>UN 1866</td>
</tr>
<tr>
<td>Class</td>
<td>3</td>
</tr>
<tr>
<td>Packing group</td>
<td>III</td>
</tr>
</tbody>
</table>

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

OSHA Hazard Communication Standard
This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312
Immediate (acute) Health Hazard
Delayed (chronic) Health Hazard
Fire Hazard

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
This product contains a chemical which is listed in Section 313 at or above de minimis concentrations.

<table>
<thead>
<tr>
<th>Components</th>
<th>CASRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xylene</td>
<td>1330-20-7</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>100-41-4</td>
</tr>
</tbody>
</table>

California (Proposition 65)
This product contains a component or components known to the state of California to cause cancer:

<table>
<thead>
<tr>
<th>Components</th>
<th>CASRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylbenzene</td>
<td>100-41-4</td>
</tr>
</tbody>
</table>

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

Hazard Rating System

<table>
<thead>
<tr>
<th>NFPA</th>
<th>Health</th>
<th>Fire</th>
<th>Reactivity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

Revision

Identification Number: 101099613 / 1304 / Issue Date: 04/29/2016 / Version: 2.2
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
<tr>
<td>BEI</td>
<td>Biological Exposure Indices</td>
</tr>
<tr>
<td>C</td>
<td>Ceiling</td>
</tr>
<tr>
<td>CAL PEL</td>
<td>California permissible exposure limits for chemical contaminants (Title 8, Article 107)</td>
</tr>
<tr>
<td>Dow IHG</td>
<td>Dow Industrial Hygiene Guideline</td>
</tr>
<tr>
<td>OSHA Z-1</td>
<td>USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants</td>
</tr>
<tr>
<td>PEL</td>
<td>Permissible exposure limit</td>
</tr>
<tr>
<td>STEL</td>
<td>Short term exposure limit</td>
</tr>
<tr>
<td>TWA</td>
<td>8-hour, time-weighted average</td>
</tr>
</tbody>
</table>

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.

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