



# SAFETY DATA SHEET

## ROHM & HAAS CHEMICALS LLC

**Product name:** PARALOID™ K-445 Processing Aid

**Issue Date:** 12/20/2019

**Print Date:** 02/27/2021

ROHM & HAAS CHEMICALS 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:** PARALOID™ K-445 Processing Aid

**Recommended use of the chemical and restrictions on use**

**Identified uses:** Plastics Additive

**COMPANY IDENTIFICATION**

ROHM & HAAS CHEMICALS LLC  
Agent for Rohm and Haas Chemicals LLC  
400 ARCOLA ROAD  
COLLEGEVILLE PA 19426-2914  
UNITED STATES

**Customer Information Number:**

800-258-2436  
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**

GHS classification in accordance with 29 CFR 1910.1200  
Combustible dust

**Label elements**

Signal word: **WARNING!**

**Hazards**

May form combustible dust concentrations in air.

**Precautionary statements**

**Prevention**

Keep away from heat, sparks, open flames and/or hot surfaces. No smoking.  
Ground and bond container and receiving equipment.  
Use explosion-proof electrical, ventilating, and/or lighting equipment.  
Take precautionary measures against static discharge.

**Other hazards**

No data available

---

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

---

**Chemical nature:** Acrylic copolymer

This product is a mixture.

| <b>Component</b>   | <b>CASRN</b>  | <b>Concentration</b> |
|--|---------------|----------------------|
| 2-Propenoic acid, 2-methyl-, butyl ester, polymer with butyl 2-propenoate and methyl 2-methyl-2-propenoate | 25322-99-0    | 93.0 - 96.0 %        |
| Acrylic polymer(s)   | Not hazardous | 3.0 - 5.0 %          |
| Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate   | 119345-04-9   | 1.0 - 2.0 %          |
| Residual monomers  | Not required  | <= 0.015 %           |

*Note*

Polymeric description(s) presented in this section are the U.S. Toxic Substances Control Act (TSCA) definitions.

---

**4. FIRST AID MEASURES**

---

**Description of first aid measures****General advice:**

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

**Inhalation:** Move person to fresh air; if effects occur, consult a physician.**Skin contact:** Wash off with plenty of water.**Eye contact:** Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.**Ingestion:** No emergency medical treatment necessary.**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:** May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Repeated excessive exposure may aggravate preexisting lung disease.

---

---

**5. FIREFIGHTING MEASURES**

---

**Extinguishing media**

**Suitable extinguishing media:** Carbon dioxide (CO<sub>2</sub>). Dry chemical. Water spray.

**Unsuitable extinguishing media:** No information currently available..

**Special hazards arising from the substance or mixture**

**Hazardous combustion products:** Carbon oxides.

**Unusual Fire and Explosion Hazards:** Material as sold is combustible; burns vigorously with intense heat.. Dusts at sufficient concentrations can form explosive mixtures with air.. DO NOT use a solid stream of water. A solid stream of water directed at this material may create a potentially explosive airborne dust mixture..

**Advice for firefighters**

**Fire Fighting Procedures:** Isolate the area immediately for at least 50 meters in all directions..

**Special protective equipment for firefighters:** Wear self-contained breathing apparatus and protective suit..

---

---

**6. ACCIDENTAL RELEASE MEASURES**

---

**Personal precautions, protective equipment and emergency procedures:** Wear compatible, chemically resistant gloves. Use personal protective equipment. Avoid breathing dust. Material can create slippery conditions. Remove all sources of ignition. Ensure adequate ventilation.

**Environmental precautions:** CAUTION: Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

**Methods and materials for containment and cleaning up:** Sweep up and shovel into suitable containers for disposal. Use water spray to keep dusting to a minimum.

---

## 7. HANDLING AND STORAGE

---

**Precautions for safe handling:** Do not breathe dust. Do not breathe vapors, mist or gas. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Keep away from heat and sources of ignition. Ground all metal containers during storage and handling. Ensure adequate ventilation. Keep container tightly closed.

**Conditions for safe storage:** Store in original container. Avoid temperature extremes during storage; ambient temperature preferred. Keep away from heat, sparks, flame, and other sources of ignition.

**Other data:** Avoid high concentrations of dust in air and accumulation of dust on equipment. An airborne dust of this material can create a dust explosion. When handling and processing this material local exhaust ventilation may be required to control dust and reduce exposure to vapors. To prevent dust explosions employ bonding and grounding for operations capable of generating static electricity. Protect all equipment from explosions by following the guidelines in NFPA-68 and NFPA-69. For electrical equipment follow local codes and electrical classification NFPA-70 (the National Electrical Code), class II, division 2, group G.

---

## 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.

### Exposure controls

**Engineering controls:** Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

### Individual protection measures

**Eye/face protection:** Use safety glasses (with side shields).

#### Skin protection

**Hand protection:** Chemical protective gloves should not be needed when handling this material. Consistent with general hygienic practice for any material, skin contact should be minimized.

**Other protection:** No precautions other than clean body-covering clothing should be needed.

**Respiratory protection:** Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. In dusty or misty atmospheres, use an approved particulate respirator. The following should be effective types of air-purifying respirators: Particulate filter.

---

## 9. PHYSICAL AND CHEMICAL PROPERTIES

---

### Appearance

|                |        |
|----------------|--------|
| Physical state | powder |
| Color          | white  |

|   |  |
|---|--|
| <b>Odor</b>                                   | No data available                                |
| <b>Odor Threshold</b>                         | No data available                                |
| <b>pH</b>                                     | No data available                                |
| <b>Melting point/range</b>                    | No data available                                |
| <b>Freezing point</b>                         | No data available                                |
| <b>Boiling point (760 mmHg)</b>               | No data available                                |
| <b>Flash point</b>                            | Not applicable                                   |
| <b>Evaporation Rate (Butyl Acetate = 1)</b>   | Not applicable                                   |
| <b>Flammability (solid, gas)</b>              | May form combustible dust concentrations in air. |
| <b>Lower explosion limit</b>                  | No data available                                |
| <b>Upper explosion limit</b>                  | No data available                                |
| <b>Vapor Pressure</b>                         | Not applicable                                   |
| <b>Relative Vapor Density (air = 1)</b>       | Not applicable                                   |
| <b>Relative Density (water = 1)</b>           | No data available                                |
| <b>Water solubility</b>                       | insoluble  |
| <b>Partition coefficient: n-octanol/water</b> | No data available                                |
| <b>Auto-ignition temperature</b>              | Not applicable                                   |
| <b>Decomposition temperature</b>              | No data available                                |
| <b>Kinematic Viscosity</b>                    | No data available                                |
| <b>Explosive properties</b>                   | No data available                                |
| <b>Oxidizing properties</b>                   | No data available                                |
| <b>Molecular weight</b>                       | No data available                                |

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

---

## 10. STABILITY AND REACTIVITY

---

**Reactivity:** None reasonably foreseeable.

**Chemical stability:** Stable

**Possibility of hazardous reactions:** Product will not undergo polymerization.

**Conditions to avoid:** No data available

**Incompatible materials:** Prolonged contact with acids, alkalies and strong oxidizing agents may attack or dissolve the polymer.

**Hazardous decomposition products:** Heating above the decomposition temperature will release acrylic monomers..

---

## 11. TOXICOLOGICAL INFORMATION

---

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

### Information on likely routes of exposure

Ingestion, Inhalation, Skin contact, Eye contact.

**Acute toxicity (represents short term exposures with immediate effects - no chronic/delayed effects known unless otherwise noted)**

#### Acute oral toxicity

Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

For similar material(s):

LD50, Rat, > 5,000 mg/kg No deaths occurred at this concentration.

#### Information for components:

##### **2-Propenoic acid, 2-methyl-, butyl ester, polymer with butyl 2-propenoate and methyl 2-methyl-2-propenoate**

For this family of materials: LD50, Rat, > 5,000 mg/kg

##### **Acrylic polymer(s)**

Single dose oral LD50 has not been determined.

##### **Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

LD50, Rat, female, > 2,000 mg/kg No deaths occurred at this concentration.

##### **Residual monomers**

Single dose oral LD50 has not been determined.

#### Acute dermal toxicity

Prolonged skin contact is unlikely to result in absorption of harmful amounts.

For similar material(s):

LD50, Rabbit, > 5,000 mg/kg No deaths occurred at this concentration.

#### Information for components:

##### **2-Propenoic acid, 2-methyl-, butyl ester, polymer with butyl 2-propenoate and methyl 2-methyl-2-propenoate**

For this family of materials: LD50, Rat, > 2,000 mg/kg No deaths occurred at this concentration.

##### **Acrylic polymer(s)**

The dermal LD50 has not been determined.

##### **Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

LD50, Rabbit, male, > 2,000 mg/kg No deaths occurred at this concentration.

**Residual monomers**

The dermal LD50 has not been determined.

**Acute inhalation toxicity**

No adverse effects are anticipated from single exposure to dust. Dust may cause irritation of the upper respiratory tract (nose and throat) and lungs.

For similar material(s):

LC50, Rat, male and female, 4 Hour, dust/mist, > 3.36 mg/l No deaths occurred at this concentration.

**Information for components:**

**2-Propenoic acid, 2-methyl-, butyl ester, polymer with butyl 2-propenoate and methyl 2-methyl-2-propenoate**

No adverse effects are anticipated from single exposure to vapor. Mist may cause irritation of upper respiratory tract (nose and throat).

For this family of materials: The LC50 has not been determined.

**Acrylic polymer(s)**

The LC50 has not been determined.

**Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

As product: The LC50 has not been determined.

**Residual monomers**

The LC50 has not been determined.

**Skin corrosion/irritation**

Based on testing for product(s) in this family of materials:

Essentially nonirritating to skin.

**Information for components:**

**2-Propenoic acid, 2-methyl-, butyl ester, polymer with butyl 2-propenoate and methyl 2-methyl-2-propenoate**

Brief contact is essentially nonirritating to skin.

Prolonged contact may cause slight skin irritation with local redness.

Latex may stick to skin causing irritation upon removal.

**Acrylic polymer(s)**

Essentially nonirritating to skin.

**Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

Prolonged exposure not likely to cause significant skin irritation.

**Serious eye damage/eye irritation**

Based on testing for product(s) in this family of materials:

May cause slight temporary eye irritation.

Corneal injury is unlikely.

**Information for components:**

**2-Propenoic acid, 2-methyl-, butyl ester, polymer with butyl 2-propenoate and methyl 2-methyl-2-propenoate**

May cause slight temporary eye irritation.  
Corneal injury is unlikely.

**Acrylic polymer(s)**

Essentially nonirritating to eyes.

**Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

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.

**Information for components:**

**2-Propenoic acid, 2-methyl-, butyl ester, polymer with butyl 2-propenoate and methyl 2-methyl-2-propenoate**

For skin sensitization:

For this family of materials, sensitization studies done in guinea pigs have been negative.

For respiratory sensitization:

No relevant data found.

**Acrylic polymer(s)**

For skin sensitization:

No relevant data found.

For respiratory sensitization:

No relevant data found.

**Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

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)**

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

**Information for components:**

**Acrylic polymer(s)**

The substance or mixture is not classified as specific target organ toxicant, single exposure.

**Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

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



**Aspiration Hazard**

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

**Information for components:**

**2-Propenoic acid, 2-methyl-, butyl ester, polymer with butyl 2-propenoate and methyl 2-methyl-2-propenoate**

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

**Acrylic polymer(s)**

No aspiration toxicity classification

**Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

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

**Chronic toxicity (represents longer term exposures with repeated dose resulting in chronic/delayed effects - no immediate effects known unless otherwise noted)**

**Specific Target Organ Systemic Toxicity (Repeated Exposure)**

A 13-week inhalation study in rats of a compositionally similar acrylic powder showed inflammatory effects in the lung at concentrations of 6 mg/m<sup>3</sup> for 6 hours per day, 5 days per week. These findings were consistent with high concentration exposure effects reported for other non-soluble dusts. Maintaining airborne dust concentrations within the recommended exposure limit is not expected to produce adverse effects within the lung.

**Information for components:**

**2-Propenoic acid, 2-methyl-, butyl ester, polymer with butyl 2-propenoate and methyl 2-methyl-2-propenoate**

For this family of materials:

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

**Acrylic polymer(s)**

No relevant data found.

**Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

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

**Carcinogenicity**

No relevant data found.

**Information for components:**

**2-Propenoic acid, 2-methyl-, butyl ester, polymer with butyl 2-propenoate and methyl 2-methyl-2-propenoate**

No relevant data found.

**Acrylic polymer(s)**

No relevant data found.

**Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

Did not cause cancer in laboratory animals.

**Teratogenicity**

No relevant data found.

**Information for components:**

**2-Propenoic acid, 2-methyl-, butyl ester, polymer with butyl 2-propenoate and methyl 2-methyl-2-propenoate**

No relevant data found.

**Acrylic polymer(s)**

No relevant data found.

**Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

For similar material(s): Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother.

**Reproductive toxicity**

No relevant data found.

**Information for components:**

**2-Propenoic acid, 2-methyl-, butyl ester, polymer with butyl 2-propenoate and methyl 2-methyl-2-propenoate**

No relevant data found.

**Acrylic polymer(s)**

No relevant data found.

**Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

For similar material(s): In animal studies, did not interfere with reproduction. In animal studies, did not interfere with fertility.

**Mutagenicity**

No relevant data found.

**Information for components:**

**2-Propenoic acid, 2-methyl-, butyl ester, polymer with butyl 2-propenoate and methyl 2-methyl-2-propenoate**

In vitro genetic toxicity studies were negative.

**Acrylic polymer(s)**

No relevant data found.

**Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

In vitro genetic toxicity studies were negative. Based on information for a similar material: Animal genetic toxicity studies were negative.

---

## **12. ECOLOGICAL INFORMATION**

---

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

## Toxicity

### 2-Propenoic acid, 2-methyl-, butyl ester, polymer with butyl 2-propenoate and methyl 2-methyl-2-propenoate

#### **Acute toxicity to fish**

For this family of materials:

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).

For this family of materials:

LC50, Oncorhynchus mykiss (rainbow trout), 96 Hour, > 100 mg/l

#### **Acute toxicity to aquatic invertebrates**

For this family of materials:

EC50, Daphnia magna (Water flea), 48 Hour, > 100 mg/l

### Acrylic polymer(s)

#### **Acute toxicity to fish**

No relevant data found.

### Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate

#### **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, Lepomis macrochirus (Bluegill sunfish), static test, 96 Hour, 6.81 mg/l

LC50, Oncorhynchus mykiss (rainbow trout), static test, 96 Hour, 6.2 mg/l

#### **Acute toxicity to aquatic invertebrates**

LC50, Daphnia magna (Water flea), static test, 48 Hour, 1.64 mg/l, Other guidelines

#### **Acute toxicity to algae/aquatic plants**

EC50, Pseudokirchneriella subcapitata (green algae), 21 d, Growth inhibition (cell density reduction), 100 mg/l

#### **Toxicity to bacteria**

Based on analogy.

EC50, activated sludge, static test, 0.5 Hour, Respiration rates., > 100 mg/l, activated sludge test (OECD 209)

#### **Chronic toxicity to aquatic invertebrates**

NOEC, Ceriodaphnia dubia (water flea), semi-static test, 7 d, survival, 0.65 mg/l

#### **Toxicity to soil-dwelling organisms**

LC50, Eisenia fetida (earthworms), 28 d, > 1,000 mg/kg

### Residual monomers

#### **Acute toxicity to fish**

No relevant data found.

## Persistence and degradability

**2-Propenoic acid, 2-methyl-, butyl ester, polymer with butyl 2-propenoate and methyl 2-methyl-2-propenoate**

**Biodegradability:** Although the polymers are not biodegradable, they would likely be removed in biological wastewater treatment plants by adsorption to biosolids.

**Acrylic polymer(s)**

**Biodegradability:** No relevant data found.

**Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

**Biodegradability:** Material is inherently biodegradable (reaches > 20% biodegradation in OECD test(s) for inherent biodegradability). Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

10-day Window: Not applicable

**Biodegradation:** < 70 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 302B or Equivalent

10-day Window: Not applicable

**Biodegradation:** < 60 %

**Exposure time:** 20 d

**Method:** OECD Test Guideline 301D or Equivalent

**Residual monomers**

**Biodegradability:** No relevant data found.

**Bioaccumulative potential****2-Propenoic acid, 2-methyl-, butyl ester, polymer with butyl 2-propenoate and methyl 2-methyl-2-propenoate**

**Bioaccumulation:** No bioconcentration of the polymeric component is expected because of its high molecular weight. Latex dispersions will color water a milky white.

**Acrylic polymer(s)**

**Bioaccumulation:** No relevant data found.

**Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

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

**Partition coefficient: n-octanol/water(log Pow):** -2.68 at 20 °C estimated

**Residual monomers**

**Bioaccumulation:** No relevant data found.

**Mobility in soil****2-Propenoic acid, 2-methyl-, butyl ester, polymer with butyl 2-propenoate and methyl 2-methyl-2-propenoate**

No data available.

**Acrylic polymer(s)**

No relevant data found.

**Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

No relevant data found.

**Residual monomers**

No relevant data found.

---

**13. DISPOSAL CONSIDERATIONS**

---

**Disposal methods:** Place powder in air-tight bags. For disposal, incinerate or landfill at a permitted facility in accordance with local, state, and federal regulations.

**Contaminated 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.

---

**14. TRANSPORT INFORMATION**

---

**DOT**

Not regulated for transport

**Classification for SEA transport (IMO-IMDG):**

Not regulated for transport

**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):**

Not regulated for transport

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**

Combustible dust

**Pennsylvania**

Any material listed as "Not Hazardous" in the CAS REG NO. column of SECTION 2, Composition/Information On Ingredients, of this MSDS is a trade secret under the provisions of the Pennsylvania Worker and Community Right-to-Know Act.

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

| <b>Components</b> | <b>CASRN</b> |
|-------------------|--------------|
| Ethyl acrylate    | 140-88-5     |

**California Prop. 65**

WARNING: This product can expose you to chemicals including Ethyl acrylate, which is/are known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**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**

---

**Revision**

Identification Number: 10299039 / 1001 / Issue Date: 12/20/2019 / Version: 3.0

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

**Full text of other abbreviations**

AICS - Australian Inventory of Chemical Substances; 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; 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 & HAAS CHEMICALS 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.

US