



SAFETY DATA SHEET

THE DOW CHEMICAL COMPANY*

Product name: PARALOID™ A-21LV 30% Resin

Issue Date: 02/25/2020

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THE DOW CHEMICAL COMPANY* 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™ A-21LV 30% Resin

Recommended use of the chemical and restrictions on use

Identified uses: Coatings product

COMPANY IDENTIFICATION

THE DOW CHEMICAL COMPANY*
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

Flammable liquids - Category 2

Skin irritation - Category 2

Serious eye damage - Category 1

Skin sensitisation - Category 1

Reproductive toxicity - Category 2

Specific target organ toxicity - single exposure - Category 3

Specific target organ toxicity - repeated exposure - Category 2 - Inhalation

Aspiration hazard - Category 1

Label elements

Hazard pictograms



Signal word: **DANGER!**

Hazards

Highly flammable liquid and vapour.
May be fatal if swallowed and enters airways.
Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye damage.
May cause drowsiness or dizziness.
Suspected of damaging fertility or the unborn child.
May cause damage to organs (Nervous system) through prolonged or repeated exposure if inhaled.

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.
Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing must not be allowed out of the workplace.
Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response

IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
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.
Do NOT induce vomiting.
If skin irritation or rash occurs: Get medical advice/ attention.
Take off contaminated clothing and wash before reuse.
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: Polymers, solvent based

This product is a mixture.

Component	CASRN	Concentration
Acrylic polymer(s)	Not hazardous	>= 29.0 - 31.0 %
Methyl methacrylate	80-62-6	<= 1.0 %
Toluene	108-88-3	>= 44.0 - 46.0 %
Methyl ethyl ketone	78-93-3	>= 17.0 - 19.0 %
Butanol	71-36-3	>= 6.0 - 8.0 %

4. FIRST AID MEASURES

Description of first aid measures

Inhalation: Move to fresh air. Give artificial respiration if breathing has stopped. In case of shortness of breath, give oxygen. Call a physician immediately.

Skin contact: Wash off with soap and plenty of water. Remove contaminated clothing. Consult a physician. Wash contaminated clothing before re-use. Do not take clothing home to be laundered. Discard contaminated shoes, belts, and other articles made of leather.

Eye contact: Rinse immediately with plenty of water for at least 15 minutes. Get prompt medical attention.

Ingestion: Do NOT induce vomiting. Drink 1 or 2 glasses of water. Get prompt medical attention. If vomiting occurs spontaneously, keep airway clear. Never give anything by mouth to an unconscious person.

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: Massive ingestion of methyl ethyl ketone may cause gastric irritation with absorption leading to metabolic acidosis with an anion gap. CNS narcosis and cardiac arrhythmias effects may be similar to other organic solvents. Acute massive exposure to toluene can cause transient hematuria and albuminuria. Cardiac arrhythmias can occur after massive inhalation. n-Butyl alcohol is especially toxic if aspirated. The vapors appear to cause a special vacuolar keratopathy in humans. There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and clinical condition of the patient.

5. FIREFIGHTING MEASURES

Extinguishing media

Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide..

Unsuitable extinguishing media: No data available

Special hazards arising from the substance or mixture

Hazardous combustion products: No data available

Unusual Fire and Explosion Hazards: Vapors can travel to a source of ignition and flash back.. Heated material can form flammable or explosive vapors with air.. Closed containers may rupture via pressure build-up when exposed to fire or extreme heat.. During a fire, irritating and highly toxic gases and/or fumes may be generated during combustion or decomposition..

Advice for firefighters

Fire Fighting Procedures: EXPLOSION HAZARD. Fight advanced fires from a protected location.. Cool closed containers exposed to fire with water spray.. Remain upwind.. Avoid breathing smoke..

Special protective equipment for firefighters: In the event of fire, wear self-contained breathing apparatus..

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Appropriate protective equipment must be worn when handling a spill of this material. See SECTION 8, Exposure Controls/Personal Protection, for recommendations. If exposed to material during clean-up operations, see SECTION 4, First Aid Measures, for actions to follow. MATERIAL IS A POTENTIAL SENSITIZER.

Environmental precautions: WARNING: KEEP SPILLS AND CLEANING RUNOFFS OUT OF MUNICIPAL SEWERS AND OPEN BODIES OF WATER.

Methods and materials for containment and cleaning up: Eliminate all ignition sources. Evacuate personnel to safe areas. Ventilate the area. Floor may be slippery; use care to avoid falling. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Sweep up

or vacuum up spillage and collect in suitable container for disposal. No sparking tools should be used. Avoid breathing vapor. NOTE: Spills on porous surfaces can contaminate groundwater.

7. HANDLING AND STORAGE

Precautions for safe handling: Vapors can be evolved when material is heated during processing operations. See SECTION 8, Exposure Controls/Personal Protection, for types of ventilation required. Use non-sparking tools and grounding cables when transferring. This material is a potential skin sensitizer. See SECTION 8, Exposure Controls/Personal Protection, prior to handling. Wash after handling and shower at end of work period. CONTAINERS MAY BE HAZARDOUS WHEN EMPTY. Since emptied containers retain product residue follow all (M)SDS and label warnings even after container is emptied.

Conditions for safe storage: Avoid temperature extremes during storage; ambient temperature preferred. Store away from excessive heat (e.g. steampipes, radiators), from sources of ignition and from reactive materials. Material can burn; limit indoor storage to approved areas equipped with automatic sprinklers. Store out of direct sunlight in a cool place. Keep containers tightly closed in a cool, well-ventilated place. Avoid all ignition sources. Ground all metal containers during storage and handling.

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
Methyl methacrylate	ACGIH	TWA	50 ppm
	Further information: DSEN: Dermal Sensitization; URT irr: Upper Respiratory Tract irritation; eye irr: Eye irritation; pulm edema: Pulmonary edema; body weight eff: body weight effects; A4: Not classifiable as a human carcinogen		
	ACGIH	STEL	100 ppm
	Further information: DSEN: Dermal Sensitization; URT irr: Upper Respiratory Tract irritation; eye irr: Eye irritation; pulm edema: Pulmonary edema; body weight eff: body weight effects; A4: Not classifiable as a human carcinogen		
	OSHA Z-1	TWA	410 mg/m3 100 ppm
	Further information: (b): The value in mg/m3 is approximate.		
	CAL PEL	PEL	205 mg/m3 50 ppm
	CAL PEL	STEL	410 mg/m3 100 ppm
Toluene	ACGIH	TWA	20 ppm
	Further information: visual impair: Visual impairment; female repro: Female reproductive; pregnancy loss: Pregnancy loss; BEI: Substances for which there is a Biological Exposure Index or Indices (see BEI® section); A4: Not classifiable as a human carcinogen		
	OSHA Z-1		See Further information
	Further information: (2): See Table Z-2		
	OSHA Z-2	TWA	200 ppm
	Further information: Z37.12-1967		
	OSHA Z-2	CEIL	300 ppm
	Further information: Z37.12-1967		
	OSHA Z-2	Peak	500 ppm
	Further information: Z37.12-1967		
Methyl ethyl ketone	Dow IHG	TWA	50 ppm
	Dow IHG	STEL	100 ppm

	ACGIH	TWA	200 ppm
	Further information: CNS impair: Central Nervous System impairment; URT irr: Upper Respiratory Tract irritation; PNS impair: Peripheral Nervous System impairment; BEI: Substances for which there is a Biological Exposure Index or Indices (see BEI® section)		
	ACGIH	STEL	300 ppm
	Further information: CNS impair: Central Nervous System impairment; URT irr: Upper Respiratory Tract irritation; PNS impair: Peripheral Nervous System impairment; BEI: Substances for which there is a Biological Exposure Index or Indices (see BEI® section)		
	OSHA Z-1	TWA	590 mg/m3 200 ppm
	Further information: (b): The value in mg/m3 is approximate.		
	OSHA P0	TWA	590 mg/m3 200 ppm
	OSHA P0	STEL	885 mg/m3 300 ppm
Butanol	ACGIH	TWA	20 ppm
	Further information: URT irr: Upper Respiratory Tract irritation; eye irr: Eye irritation		
	OSHA Z-1	TWA	300 mg/m3 100 ppm
	Further information: (b): The value in mg/m3 is approximate.		
	OSHA P0	C	150 mg/m3 50 ppm
	Further information: X: Skin notation		

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
Toluene	108-88-3	Toluene	In blood	Prior to last shift of workweek	0.02 mg/l	ACGIH BEI
		Toluene	Urine	End of shift (As soon as possible after exposure ceases)	0.03 mg/l	ACGIH BEI
		o-Cresol	Urine	End of shift (As soon as possible after exposure ceases)	0.3 mg/g Creatinine	ACGIH BEI
Methyl ethyl ketone	78-93-3	methyl ethyl ketone	Urine	End of shift (As soon as possible after exposure ceases)	2 mg/l	ACGIH BEI

Exposure controls

Engineering controls: Use explosion-proof local exhaust ventilation with a minimum capture velocity of 100 ft/min (0.5 m/sec) at the point of vapor evolution. Refer to the current edition of Industrial Ventilation: A Manual of Recommended Practice published by the American Conference of

Governmental Industrial Hygienists for information on the design, installation, use, and maintenance of exhaust systems.

Protective measures: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

Individual protection measures

Eye/face protection: Chemical resistant goggles must be worn. Eye protection worn must be compatible with respiratory protection system employed.

Skin protection

Hand protection: Chemical-resistant gloves should be worn whenever this material is handled. The glove(s) listed below may provide protection against permeation.

(Gloves of other chemically resistant materials may not provide adequate protection): Nitrile rubber butyl-rubber Solvent-resistant gloves Gloves should be removed and replaced immediately if there is any indication of degradation or chemical breakthrough. Rinse and remove gloves immediately after use. Wash hands with soap and water.

Other protection: Use chemically resistant apron or other impervious clothing to avoid prolonged or repeated skin contact. Where splashing is possible, full chemically resistant protective clothing (e.g. acid suit) and boots are required.

Respiratory protection: A respiratory protection program meeting OSHA 1910.134 and ANSI Z88.2 requirements or equivalent must be followed whenever workplace conditions warrant a respirator's use. None required if airborne concentrations are maintained below the exposure limit listed in Exposure Limit Information. Up to 10 times the exposure limit: Wear a properly fitted NIOSH approved (or equivalent) half-mask, air-purifying respirator. Up to 1000 ppm organic vapor: Wear a properly fitted NIOSH approved (or equivalent) full-facepiece, air-purifying respirator, OR full-facepiece, airline respirator in the pressure demand mode. Above 1000 ppm organic vapor or Unknown: Wear a properly fitted NIOSH approved (or equivalent) self-contained breathing apparatus in the pressure demand mode, OR full-facepiece, airline respirator in the pressure demand mode with emergency escape provision. Air-purifying respirators should be equipped with NIOSH approved (or equivalent) organic vapor cartridges and N95 filters. If oil mist is present, use R95 or P95 filters.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical state	liquid
Color	Clear to hazy
Odor	Sweet, burnt odor
Odor Threshold	No data available
pH	Not Applicable
Melting point/range	-86.00 °C (-122.80 °F) Initial
Freezing point	No data available
Boiling point (760 mmHg)	80.00 °C (176.00 °F) Initial
Flash point	closed cup 2.00 °C (35.60 °F) <i>SETAFLASH CLOSED CUP</i>
Evaporation Rate (Butyl Acetate = 1)	>1.00
Flammability (solid, gas)	Not Applicable
Lower explosion limit	1.20 % vol estimated

Upper explosion limit	12.00 % vol estimated
Vapor Pressure	4.0000000 mmHg at 20.00 °C (68.00 °F) estimated
Relative Vapor Density (air = 1)	>1.0000
Relative Density (water = 1)	0.9300
Water solubility	partly soluble
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	365.00 °C (689.00 °F) estimated
Decomposition temperature	No data available
Dynamic Viscosity	440.000 mPa.s maximum
Kinematic Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No data available
Molecular weight	No data available
Percent volatility	69.00 - 71.00 %

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

10. STABILITY AND REACTIVITY

Reactivity: No data available

Chemical stability: No data available

Possibility of hazardous reactions: This material is considered stable. However, avoid contact with ignition sources (e.g. sparks, open flame, heated surfaces).
Product will not undergo polymerization.

Conditions to avoid: No data available

Incompatible materials: Avoid contact with the following: Strong oxidizing agents Strong acids and strong bases

Hazardous decomposition products: There are no known hazardous decomposition products for this material..

11. TOXICOLOGICAL INFORMATION

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

Information on likely routes of exposure

Inhalation, Skin contact, Eye contact, Dermal Absorption.

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

Acute oral toxicity

Product test data not available.

Information for components:

Acrylic polymer(s)

Single dose oral LD50 has not been determined.

Methyl methacrylate

Swallowing may result in gastrointestinal irritation. LD50, Rat, 7,900 mg/kg

Toluene

LD50, Rat, 5,580 mg/kg

Methyl ethyl ketone

LD50, Rat, 2,657 - 5,554 mg/kg

Butanol

LD50, Rat, female, 2,292 mg/kg OECD 401 or equivalent

Acute dermal toxicity

Product test data not available.

Information for components:

Acrylic polymer(s)

The dermal LD50 has not been determined.

Methyl methacrylate

LD50, Rabbit, > 5,000 mg/kg

Toluene

LD50, Rabbit, 12,267 mg/kg

Methyl ethyl ketone

LD50, Rabbit, > 5,000 mg/kg

Butanol

LD50, Rabbit, male, 3,430 mg/kg OECD Test Guideline 402

Acute inhalation toxicity

Product test data not available.

Information for components:

Acrylic polymer(s)

The LC50 has not been determined.

Methyl methacrylate

LC50, Rat, 4 Hour, vapour, 29.8 mg/l

Toluene

LC50, Rat, male, 4 Hour, vapour, 25.7 mg/l

LC50, Rat, female, 4 Hour, vapour, 30 mg/l

Methyl ethyl ketone

LC50, Rat, 4 Hour, vapour, 34.5 mg/l

Butanol

LC50, Rat, male and female, 4 Hour, vapour, > 17.76 mg/l OECD Test Guideline 403
No deaths occurred at this concentration.

Skin corrosion/irritation

Product test data not available.

Information for components:

Acrylic polymer(s)

Essentially nonirritating to skin.

Methyl methacrylate

Brief contact may cause moderate skin irritation with local redness.

Toluene

Brief contact may cause slight skin irritation with local redness.

Prolonged contact may cause moderate skin irritation with local redness.

May cause drying and flaking of the skin.

Methyl ethyl ketone

Brief contact is essentially nonirritating to skin.

Prolonged contact may cause moderate skin irritation with local redness.

Repeated contact may cause moderate skin irritation with local redness.

May cause drying and flaking of the skin.

Butanol

Brief contact may cause skin irritation with local redness.

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

Product test data not available.

Information for components:

Acrylic polymer(s)

Essentially nonirritating to eyes.

Methyl methacrylate

May cause slight eye irritation.

Corneal injury is unlikely.

Vapor may cause eye irritation experienced as mild discomfort and redness.

Toluene

May cause slight eye irritation.

May cause slight temporary corneal injury.

Vapor may cause eye irritation experienced as mild discomfort and redness.

Vapor may cause lacrimation (tears).

Methyl ethyl ketone

May cause pain disproportionate to the level of irritation to eye tissues.
May cause moderate eye irritation which may be slow to heal.
May cause moderate corneal injury.
Vapor may cause eye irritation experienced as mild discomfort and redness.

Butanol

May cause severe eye irritation.
May cause moderate corneal injury.
Vapor may cause eye irritation experienced as mild discomfort and redness.

Sensitization

Product test data not available.

Information for components:

Acrylic polymer(s)

For skin sensitization:
No relevant data found.

For respiratory sensitization:
No relevant data found.

Methyl methacrylate

Has caused allergic skin reactions in humans.
Has demonstrated the potential for contact allergy in mice.

For respiratory sensitization:
No relevant data found.

Toluene

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

For respiratory sensitization:
No relevant data found.

Methyl ethyl ketone

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

For respiratory sensitization:
No relevant data found.

Butanol

For similar material(s):
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)

Product test data not available.

Information for components:

Acrylic polymer(s)

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

Methyl methacrylate

May cause respiratory irritation.

Route of Exposure: Inhalation

Target Organs: Respiratory Tract

Toluene

May cause drowsiness or dizziness.

Route of Exposure: Inhalation

Target Organs: Central nervous system

Methyl ethyl ketone

May cause drowsiness or dizziness.

Route of Exposure: Inhalation

Target Organs: Nervous system

Butanol

May cause drowsiness or dizziness.

Route of Exposure: Inhalation

Target Organs: Nervous system

May cause respiratory irritation.

Route of Exposure: Inhalation

Target Organs: Respiratory Tract

Aspiration Hazard

Product test data not available.

Information for components:

Acrylic polymer(s)

No aspiration toxicity classification

Methyl methacrylate

May be harmful if swallowed and enters airways.

Toluene

May be fatal if swallowed and enters airways.

Methyl ethyl ketone

May be harmful if swallowed and enters airways.

Butanol

May be harmful if swallowed and enters airways.

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)

Product test data not available.

Information for components:

Acrylic polymer(s)

No relevant data found.

Methyl methacrylate

In humans, effects have been reported on the following organs:

Respiratory tract.

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

kidney

Liver

Gastrointestinal tract

nervous system

lung

Toluene

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

central nervous system (CNS) effects

Excessive exposure may cause neurologic signs and symptoms.

Toluene has caused hearing loss in laboratory animals upon exposure to high concentrations.

Intentional misuse by deliberately inhaling toluene may cause nervous system damage, hearing loss, liver and kidney effects and death.

Methyl ethyl ketone

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

Liver.

Methyl ethyl ketone has caused liver effects in laboratory animals exposed by inhalation to high concentrations.

Methyl ethyl ketone is probably not neurotoxic in itself but it potentiates the neurotoxicity of methyl-n-butyl ketone and n-hexane.

Butanol

Butanol has been reported to cause eye effects (tearing, blurred vision, sensitivity to light, temporary corneal effects), hearing loss and vertigo.

Carcinogenicity

Product test data not available.

Information for components:

Acrylic polymer(s)

No relevant data found.

Methyl methacrylate

Did not cause cancer in laboratory animals. Workers exposed during 1933-1945 to very high vapor concentrations of ethyl acrylate and methyl methacrylate, and to volatile by-products of the ethyl acrylate/methyl methacrylate polymerization process, showed an increase in deaths due to colorectal cancer. Such increases were not observed in workers exposed after that time. Although suggestive, these findings do not establish a causal relationship between high level exposure to these acrylates and colorectal cancer.

Toluene

Did not cause cancer in laboratory animals.

Methyl ethyl ketone

Available data are inadequate to evaluate carcinogenicity.

Butanol

No relevant data found.

Teratogenicity

Product test data not available.

Information for components:

Acrylic polymer(s)

No relevant data found.

Methyl methacrylate

MMA did not cause birth defects, malformations, or fetal toxicity in pregnant rats inhaling concentrations up to 2028 ppm. Has been toxic to the fetus in laboratory animals at doses toxic to the mother. The weight of evidence indicates that methyl methacrylate does not cause birth defects in animals.

Toluene

In laboratory animals, toluene has been toxic to the fetus at doses toxic to the mother; it has caused birth defects in mice when administered orally, but not by inhalation.

Methyl ethyl ketone

Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Has caused birth defects in laboratory animals only at doses toxic to the mother.

Butanol

n-Butanol has caused birth defects and has been toxic to the fetus in laboratory animals at doses nontoxic to the mother. Dose levels producing these effects were many times higher than any dose levels expected from exposure due to use.

Reproductive toxicity

Product test data not available.

Information for components:

Acrylic polymer(s)

No relevant data found.

Methyl methacrylate

In animal studies, did not interfere with fertility.

Toluene

In animal studies, did not interfere with reproduction.

Methyl ethyl ketone

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

Butanol

In animal studies, did not interfere with reproduction.

Mutagenicity

Product test data not available.

Information for components:**Acrylic polymer(s)**

No relevant data found.

Methyl methacrylate

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

Toluene

The majority and most reliable of the many genetic toxicity studies on toluene, both in vitro and in animals, indicate that it is not genetically toxic.

Methyl ethyl ketone

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

Butanol

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

12. ECOLOGICAL INFORMATION

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

General Information

There is no data available for this product.

Toxicity**Acrylic polymer(s)****Acute toxicity to fish**

No relevant data found.

Methyl methacrylate**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, Oncorhynchus mykiss (rainbow trout), flow-through test, 96 Hour, > 79 mg/l, OECD Test Guideline 203 or Equivalent

LC50, Lepomis macrochirus (Bluegill sunfish), flow-through test, 96 Hour, 233 mg/l, EPA-660-75-009

Acute toxicity to aquatic invertebrates

EC50, Daphnia magna, flow-through test, 48 Hour, 69 mg/l

Acute toxicity to algae/aquatic plants

EC50, Pseudokirchneriella subcapitata (green algae), static test, 72 Hour, Growth rate, > 110 mg/l, OECD Test Guideline 201

NOEC, Pseudokirchneriella subcapitata (green algae), static test, 72 Hour, 110 mg/l, OECD Test Guideline 201

Toxicity to bacteria

EC50, 14 d, > 100 mg/l

Chronic toxicity to fish

NOEC, Danio rerio (zebra fish), 35 d, 9.4 mg/l

Chronic toxicity to aquatic invertebrates

NOEC, Daphnia magna (Water flea), 21 d, number of offspring, 37 mg/l

Toluene

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, 5.8 mg/l

Acute toxicity to aquatic invertebrates

LC50, water flea Ceriodaphnia dubia, semi-static test, 48 Hour, 3.78 mg/l

Acute toxicity to algae/aquatic plants

EbC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, Biomass, 12.5 mg/l, OECD Test Guideline 201

Toxicity to bacteria

IC50, Bacteria, 16 Hour, 29 mg/l

Chronic toxicity to fish

NOEC, Fish, flow-through test, 40 d, growth, 1.4 mg/l

Chronic toxicity to aquatic invertebrates

NOEC, Ceriodaphnia dubia (water flea), 7 d, number of offspring, 0.74 mg/l

Toxicity to soil-dwelling organisms

LC50, Eisenia fetida (earthworms), 150 - 280 mg/kg

Methyl ethyl ketone

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, Pimephales promelas (fathead minnow), static test, 96 Hour, 2,993 mg/l, OECD Test Guideline 203

Acute toxicity to aquatic invertebrates

EC50, Daphnia magna (Water flea), static test, 48 Hour, 308 mg/l, OECD Test Guideline 202

Acute toxicity to algae/aquatic plants

ErC50, Pseudokirchneriella subcapitata (microalgae), static test, 96 Hour, Growth rate inhibition, 2,029 mg/l, OECD Test Guideline 201

Toxicity to bacteria

EC50, Bacteria, 96 Hour, > 1,000 mg/l, hUCC

Butanol

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, Pimephales promelas (fathead minnow), flow-through test, 96 Hour, 1,376 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates

EC50, Daphnia magna (Water flea), static test, 48 Hour, 1,328 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants

EC50, Pseudokirchneriella subcapitata (green algae), 96 Hour, Growth rate inhibition, 225 mg/l, OECD Test Guideline 201 or Equivalent

Toxicity to bacteria

EC50, Pseudomonas putida, static test, 17 Hour, Growth inhibition, > 1,000 mg/l, DIN 38412

Chronic toxicity to aquatic invertebrates

NOEC, Daphnia magna (Water flea), semi-static test, 21 d, number of offspring, 4.1 mg/l

Toxicity to Above Ground Organisms

Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).

Persistence and degradability

Acrylic polymer(s)

Biodegradability: No relevant data found.

Methyl methacrylate

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Material is ultimately biodegradable (reaches > 70% mineralization in OECD test(s) for inherent biodegradability).

10-day Window: Not applicable

Biodegradation: 94 %

Exposure time: 14 d

Method: OECD Test Guideline 301C or Equivalent

10-day Window: Not applicable

Biodegradation: > 95 %

Exposure time: 28 d

Method: OECD Test Guideline 302B or Equivalent

Theoretical Oxygen Demand: 1.02 mg/mg

Physico-chemical removability

Rapidly hydrolyzed under alkaline conditions.

Photodegradation

Test Type: Half-life (indirect photolysis)

Sensitization: OH radicals

Atmospheric half-life: 6.997 d

Method: Estimated.

Toluene

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

10-day Window: Not applicable

Biodegradation: 100 %

Exposure time: 14 d
Method: OECD Test Guideline 301C or Equivalent

Theoretical Oxygen Demand: 3.13 mg/mg Calculated.

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitization: OH radicals
Atmospheric half-life: 2 d
Method: Estimated.

Methyl ethyl ketone

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

10-day Window: Not applicable

Biodegradation: 98 %

Exposure time: 28 d

Method: OECD Test Guideline 301D or Equivalent

Theoretical Oxygen Demand: 2.44 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	71 - 76 %
10 d	71 - 82 %
20 d	71 - 89 %

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitization: OH radicals
Atmospheric half-life: 8 d
Method: Estimated.

Butanol

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

10-day Window: Pass

Biodegradation: 98 %

Exposure time: 19 d

Method: OECD Test Guideline 301E or Equivalent

Theoretical Oxygen Demand: 2.59 mg/mg Estimated.

Chemical Oxygen Demand: 2.45 mg/mg Estimated.

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitization: OH radicals
Atmospheric half-life: 55.9 Hour
Method: Estimated.

Bioaccumulative potential

Acrylic polymer(s)

Bioaccumulation: No relevant data found.

Methyl methacrylate

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

Partition coefficient: n-octanol/water(log Pow): 1.38 Measured

Toluene

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

Partition coefficient: n-octanol/water(log Pow): 2.73 Measured

Bioconcentration factor (BCF): 13.2 - 90 Fish Measured

Methyl ethyl ketone

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

Partition coefficient: n-octanol/water(log Pow): 0.29 Measured

Butanol

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

Partition coefficient: n-octanol/water(log Pow): 1 at 25 °C OECD Guideline 117 (Partition Coefficient (n-octanol / water), HPLC Method)

Bioconcentration factor (BCF): 3.16 Fish Estimated.

Mobility in soil

Acrylic polymer(s)

No relevant data found.

Methyl methacrylate

Potential for mobility in soil is high (Koc between 50 and 150).

Partition coefficient (Koc): 87 Estimated.

Toluene

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

Partition coefficient (Koc): 37 - 178 Estimated.

Methyl ethyl ketone

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

Partition coefficient (Koc): 3.8 Estimated.

Butanol

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

Partition coefficient (Koc): 2.4 Estimated.

13. DISPOSAL CONSIDERATIONS

Disposal methods: Incinerate liquid and contaminated solids in accordance with local, state, and federal regulations.
(See 40 CFR 268)

Contaminated packaging: Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. TRANSPORT INFORMATION

DOT

Proper shipping name	Resin solution
UN number	UN 1866
Class	3
Packing group	II
Reportable Quantity	Methyl ethyl ketone, Toluene

Classification for SEA transport (IMO-IMDG):

Proper shipping name	RESIN SOLUTION
UN number	UN 1866
Class	3
Packing group	II
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	II

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)
Respiratory or skin sensitisation
Reproductive toxicity
Specific target organ toxicity (single or repeated exposure)
Aspiration hazard
Skin corrosion or irritation

Serious eye damage or eye irritation

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
Toluene	108-88-3
Butanol	71-36-3
Methyl methacrylate	80-62-6

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:

Components	CASRN
Benzene	71-43-2

California Prop. 65

WARNING: This product can expose you to chemicals including Ethylbenzene, Cumene, which is/are known to the State of California to cause cancer, and Toluene, 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 inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

16. OTHER INFORMATION

Hazard Rating System

HMIS

Health	Flammability	Physical Hazard
3*	3	0

* = Chronic Effects (See Hazards Identification)

Revision

Identification Number: 10077647 / 1001 / Issue Date: 02/25/2020 / Version: 3.0

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)
ACGIH BEI	ACGIH - Biological Exposure Indices (BEI)
C	Ceiling limit
CAL PEL	California permissible exposure limits for chemical contaminants (Title 8, Article 107)

CEIL	Acceptable ceiling concentration
Dow IHG	Dow Industrial Hygiene Guideline
OSHA P0	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
OSHA Z-2	USA. Occupational Exposure Limits (OSHA) - Table Z-2
Peak	Acceptable maximum peak above the acceptable ceiling concentration for an 8-hr shift
PEL	Permissible exposure limit
STEL	Short term exposure limit
TWA	Time weighted average

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.

THE DOW CHEMICAL COMPANY* 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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