

Safety Data Sheet

According to Regulation (EC) No. 1272/2008 (CLP), as amended by Commission Regulation (EU) 2019/521 and Commission Delegated Regulation (EU) 2020/217, and (EC) No. 1907/2006 (REACH), as amended by Commission Regulation (EU) 2020/878.

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Grey V5 Resin

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product Name: Grey V5 Resin

Product code: FLGPGR05

UFI: MT40-H0EP-200K-VD1C

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses: For use in Formlabs SLA Printers.

Uses advised against: Not determined or not applicable.

Reasons why uses advised against: Not determined or not applicable.

1.3 Details of the manufacturer/supplier of the safety data sheet

Manufacturer:

United States

Formlabs, Inc

35 Medford St

Suite 201 Somerville, MA 02143

+1 617 855 0762

sds@formlabs.com

Supplier:

Germany

Formlabs GmbH

Nalepastr. 18

Berlin, . 12459

+49 30 700 146 501

1.4 Emergency telephone number:

European Union

CHEMTREC (EMEA)

+44 20 3885 0382 (24/7)

SECTION 2: Hazard(s) identification

2.1 Classification of the substance or mixture:

Classification according to Regulation (EC) No. 1272/2008 (CLP):

Skin irritation, category 2

Eye Irritation, category 2

Skin sensitization, category 1

Chronic aquatic hazard, category 2

Hazard-determining components of labeling:

Methacrylate Monomer(s)

Urethane dimethacrylate

Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate

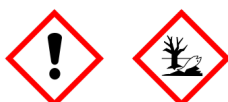
BAPO

Additional Information: None

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008 (CLP)

Hazard pictograms:



Signal Word: Warning

Hazard statements:

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H315 Causes skin irritation
H319 Causes serious eye irritation
H317 May cause an allergic skin reaction
H411 Toxic to aquatic life with long lasting effects

Precautionary statements:

P264 Wash skin thoroughly after handling.
P280 Wear protective gloves, protective clothing and eye protection.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray
P272 Contaminated work clothing should not be allowed out of the workplace
P273 Avoid release to the environment
P302+P352 IF ON SKIN: Wash with plenty of soap and water
P332+P313 If skin irritation occurs: Get medical advice/attention
P362 Take off contaminated clothing
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P337+P313 If eye irritation persists: Get medical advice/attention.
P333+P313 If skin irritation or rash occurs: Get medical advice/attention
P363 Wash contaminated clothing before reuse
P391 Collect spillage
P501 Dispose of contents and container in accordance with local, regional, national, and international regulations.

2.3 Other hazards: None known

SECTION 3: Composition/information on ingredients

3.1 Substance: Not applicable.

3.2 Mixture:

| Identification | EU REACH Registration No. | Name | Classification according to Regulation (EC) No. 1272/2008 (CLP) | Weight % |
|---|------------------------------|---|--|----------|
| CAS number: Trade Secret EC number: Not Applicable | - | Methacrylate Oligomer(s) | Not classified; | 10-15 |
| CAS number: Trade Secret EC number: Trade Secret | - | Methacrylate Monomer(s) | Skin Irrit. 2; H315 Skin Sens. 1; H317 Eye Irrit. 2; H319 | 65-85 |
| CAS number: 72869-86-4 EC number: 276-957-5 | - | Urethane dimethacrylate | Skin Sens. 1; H317 Aquatic Chronic 2; H411 | 10-15 |
| CAS number: 84434-11-7 EC number: 282-810-6 | - | Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate | Skin Sens. 1B; H317 Aquatic Chronic 2; H411 | <3 |

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| | | | | |
|---|---|------|--|------|
| CAS number: 162881-26-7 EC number: 423-340-5 | - | BAPO | Acute Tox. 4 (Oral); H302 Skin Sens. 1; H317 Aquatic Chronic 3; H412 Eye Irrit. 2; H319 | <0.5 |
|---|---|------|--|------|

Additional information: None

Full Text of H and EUH statements: See section 16

SECTION 4: First aid measures

4.1 Description of first aid measures

General notes:

Show this Safety Data Sheet to the doctor in attendance.

Following inhalation:

If inhaled, remove person to fresh air and place in a position comfortable for breathing. If respiratory symptoms develop or persist, seek medical advice/attention.

Following skin contact:

Wash affected area with plenty of soap and water. Remove contaminated clothing and launder before reuse. If skin irritation develops or persists, seek medical advice/attention.

Following eye contact:

Rinse eyes with plenty of water for several minutes. Remove contact lenses if present and easy to do so. Protect unexposed eye. If symptoms develop or persist, seek medical advice/attention.

Following ingestion:

If swallowed, DO NOT induce vomiting unless told to do so by a physician or poison control center. Rinse mouth with water. Never give anything by mouth to an unconscious person. If spontaneous vomiting occurs, place on the left side with head down to prevent aspiration of liquid into the lungs. If symptoms develop or persist, seek medical advice/attention.

Self-Protection of the first aider:

Not determined or not available.

4.2 Most important symptoms and effects, both acute and delayed

Acute symptoms and effects:

Skin contact may result in redness, pain, burning and inflammation.

Eye contact may result in irritation, redness, pain, inflammation, itching, burning and tearing.

Dermal exposure may cause an allergic skin reaction. Symptoms may include irritation, redness, pain, rash, inflammation, itching, burning and dermatitis.

Delayed symptoms and effects:

Effects are dependent on exposure (dose, concentration, contact time).

4.3 Indication of any immediate medical attention and special treatment needed

Specific treatment:

Not determined or not available.

Notes for the doctor:

Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media:

Water mist/fog, carbon dioxide, dry chemical or alcohol resistant foam.

Unsuitable extinguishing media:

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Do not use water jet.

5.2 Special hazards arising from the substance or mixture:

Thermal decomposition may produce irritating/toxic fumes/gases.

5.3 Advice for firefighters

Personal protection equipment:

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA).

Special precautions:

Avoid contact with skin, eyes, hair and clothing. Do not breathe fumes/gas/mists/aerosols/vapors/dusts. Move containers from fire area if safe to do so. Use water spray/fog for cooling fire exposed containers. Avoid unnecessary run-off of extinguishing media which may cause pollution.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:

Evacuate unnecessary personnel. Ventilate area. Extinguish any sources of ignition. Wear recommended personal protective equipment (see Section 8). Avoid contact with skin, eyes and clothing. Avoid breathing mist, vapor, dust, fume and spray. Do not walk through spilled material. Wash thoroughly after handling.

6.2 Environmental precautions:

Prevent further leakage or spillage if safe to do so. Prevent from reaching drains, sewers and waterways. Discharge into the environment must be avoided.

6.3 Methods and material for containment and cleaning up:

Do not touch damaged containers or spilled material unless wearing appropriate personal protective clothing. Stop leak if you can do it without risk. Contain and collect spillage and place in suitable container for future disposal. Dispose of in accordance with all applicable regulations (see Section 13).

6.4 Reference to other sections:

For personal protective equipment see Section 8. For disposal see Section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling:

Use appropriate personal protective equipment (see Section 8). Use only with adequate ventilation. Avoid breathing mist/vapor/spray/dust. Do not eat, drink, smoke, or use personal products when handling chemical substances. Avoid contact with skin, eyes and clothing. Wash affected areas thoroughly after handling. Keep away from incompatible materials (See Section 10). Keep containers tightly closed when not in use.

7.2 Conditions for safe storage, including any incompatibilities:

Store in cool, dry, well-ventilated location out of direct sunlight. Keep away from food and beverages. Protect from freezing and physical damage. Store away from heat, open flames and other sources of ignition. Keep container tightly sealed. Store away from incompatible materials (See Section 10).

7.3 Specific end use(s):

Refer to Section 1 (Recommended Use).

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Only those substances with limit values have been included below.

Occupational Exposure limit values:

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| Country (Legal Basis) | Substance | Identifier | Permissible concentration |
|-----------------------|-------------------------|--------------|---|
| Lithuania | Methacrylate Monomer(s) | Trade Secret | 8-Hour TWA: 20 mg/m ³ |
| Austria | BAPO | 162881-26-7 | STEL: 10 mg/m ³ (STEL KZGW 4 X 15 min) |
| | BAPO | 162881-26-7 | MAK TWA: 5 mg/m ³ |
| Greece | BAPO | 162881-26-7 | 8-Hour TWA: 5 mg/m ³ |
| Italy | BAPO | 162881-26-7 | TLV-TWA: 5 mg/m ³ (ACGIH) |
| Poland | BAPO | 162881-26-7 | 8-Hour TWA: 5 mg/m ³ |
| Portugal | BAPO | 162881-26-7 | 8-Hour TWA: 5 mg/m ³ |
| Slovenia | BAPO | 162881-26-7 | 8-Hour TWA: 5 mg/m ³ |
| Spain | BAPO | 162881-26-7 | TWA: 5 mg/m ³ |
| Belgium | BAPO | 162881-26-7 | 8-Hour TWA: 5 mg/m ³ |
| Denmark | BAPO | 162881-26-7 | MAK TWA: 5 mg/m ³ |
| | BAPO | 162881-26-7 | STEL: 10 mg/m ³ |
| France | BAPO | 162881-26-7 | TWA: 5 mg/m ³ |
| Ireland | BAPO | 162881-26-7 | 8-Hour TWA: 5 mg/m ³ |
| | BAPO | 162881-26-7 | STEL: 15 mg/m ³ |

Biological limit values:

No biological exposure limits noted for the ingredient(s).

Derived No Effect Level (DNEL):

Ingredient Name: Methacrylate Monomer(s)

CAS #: Trade Secret

| | | |
|----------------------------|----------------------|-----------------------------------|
| Workers - Systemic Effects | Acute - Oral | Not determined or not applicable. |
| | Acute - Inhalation | No hazard identified |
| | Acute - Dermal | No hazard identified |
| | Chronic - Oral | Not determined or not applicable. |
| | Chronic - Inhalation | 4.9 mg/m ³ |
| | Chronic - Dermal | 1.39 mg/kg bw/day |
| Workers - Local Effects | Acute - Oral | Not determined or not applicable. |
| | Acute - Inhalation | No hazard identified |
| | Acute - Dermal | No hazard identified |
| | Chronic - Oral | Not determined or not applicable. |
| | Chronic - Inhalation | No hazard identified |
| | Chronic - Dermal | No hazard identified |

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| | | |
|---------------------------------------|----------------------|-----------------------------------|
| General Population - Systemic Effects | Acute - Oral | No hazard identified |
| | Acute - Inhalation | No hazard identified |
| | Acute - Dermal | No hazard identified |
| | Chronic - Oral | 0.83 mg/kg bw/day |
| | Chronic - Inhalation | 1.45 mg/m ³ |
| | Chronic - Dermal | 0.83 mg/kg bw/day |
| General Population - Local Effect | Acute - Oral | Not determined or not applicable. |
| | Acute - Inhalation | No hazard identified |
| | Acute - Dermal | No hazard identified |
| | Chronic - Oral | Not determined or not applicable. |
| | Chronic - Inhalation | No hazard identified |
| | Chronic - Dermal | No hazard identified |

Ingredient Name: Urethane dimethacrylate

CAS #: 72869-86-4

| | | |
|---------------------------------------|----------------------|---|
| Workers - Systemic Effects | Acute - Oral | Not determined or not applicable. |
| | Acute - Inhalation | No exposure expected |
| | Acute - Dermal | No hazard identified |
| | Chronic - Oral | Not determined or not applicable. |
| | Chronic - Inhalation | 3.3 mg/m ³ |
| | Chronic - Dermal | 1.3 mg/kg bw/day |
| Workers - Local Effects | Acute - Oral | Not determined or not applicable. |
| | Acute - Inhalation | No exposure expected |
| | Acute - Dermal | Hazard identified but no DNEL available |
| | Chronic - Oral | Not determined or not applicable. |
| | Chronic - Inhalation | No exposure expected |
| | Chronic - Dermal | Hazard identified but no DNEL available |
| General Population - Systemic Effects | Acute - Oral | No hazard identified |
| | Acute - Inhalation | No exposure expected |
| | Acute - Dermal | No hazard identified |
| | Chronic - Oral | 0.3 mg/kg bw/day |
| | Chronic - Inhalation | 0.6 mg/m ³ |
| | Chronic - Dermal | 0.7 mg/kg bw/day |
| General Population - Local Effect | Acute - Oral | Not determined or not applicable. |
| | Acute - Inhalation | No exposure expected |
| | Acute - Dermal | No exposure expected |
| | Chronic - Oral | Not determined or not applicable. |
| | Chronic - Inhalation | No exposure expected |
| | Chronic - Dermal | Hazard identified but no DNEL available |

Ingredient Name: Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate

CAS #: 84434-11-7

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| | | |
|---------------------------------------|----------------------|---|
| Workers - Systemic Effects | Acute - Oral | Not determined or not applicable. |
| | Acute - Inhalation | No hazard identified |
| | Acute - Dermal | No hazard identified |
| | Chronic - Oral | Not determined or not applicable. |
| | Chronic - Inhalation | 4.93 mg/m ³ |
| | Chronic - Dermal | 1.4 mg/kg bw/day |
| Workers - Local Effects | Acute - Oral | Not determined or not applicable. |
| | Acute - Inhalation | No hazard identified |
| | Acute - Dermal | No hazard identified |
| | Chronic - Oral | Not determined or not applicable. |
| | Chronic - Inhalation | No hazard identified |
| | Chronic - Dermal | Hazard identified but no DNEL available |
| General Population - Systemic Effects | Acute - Oral | No hazard identified |
| | Acute - Inhalation | No hazard identified |
| | Acute - Dermal | No hazard identified |
| | Chronic - Oral | 0.5 mg/kg bw/day |
| | Chronic - Inhalation | 0.87 mg/m ³ |
| | Chronic - Dermal | 0.5 mg/kg bw/day |
| General Population - Local Effect | Acute - Oral | Not determined or not applicable. |
| | Acute - Inhalation | No hazard identified |
| | Acute - Dermal | No hazard identified |
| | Chronic - Oral | Not determined or not applicable. |
| | Chronic - Inhalation | No hazard identified |
| | Chronic - Dermal | No hazard identified |

Ingredient Name: BAPO

CAS #: 162881-26-7

| | | |
|----------------------------|----------------------|---|
| Workers - Systemic Effects | Acute - Oral | Not determined or not applicable. |
| | Acute - Inhalation | Hazard identified but no DNEL available |
| | Acute - Dermal | No hazard identified |
| | Chronic - Oral | Not determined or not applicable. |
| | Chronic - Inhalation | 3 mg/m ³ |
| | Chronic - Dermal | No hazard identified |
| Workers - Local Effects | Acute - Oral | Not determined or not applicable. |
| | Acute - Inhalation | No hazard identified |
| | Acute - Dermal | Hazard identified but no DNEL available |
| | Chronic - Oral | Not determined or not applicable. |
| | Chronic - Inhalation | No hazard identified |
| | Chronic - Dermal | Hazard identified but no DNEL available |

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| | | |
|---------------------------------------|----------------------|---|
| General Population - Systemic Effects | Acute - Oral | Hazard identified but no DNEL available |
| | Acute - Inhalation | No exposure expected |
| | Acute - Dermal | No hazard identified |
| | Chronic - Oral | Hazard identified but no DNEL available |
| | Chronic - Inhalation | No exposure expected |
| | Chronic - Dermal | No hazard identified |
| General Population - Local Effect | Acute - Oral | Not determined or not applicable. |
| | Acute - Inhalation | No exposure expected |
| | Acute - Dermal | No hazard identified |
| | Chronic - Oral | Not determined or not applicable. |
| | Chronic - Inhalation | No exposure expected |
| | Chronic - Dermal | No hazard identified |

Predicted No Effect Concentration (PNEC):

Ingredient Name: Methacrylate Monomer(s)

CAS #: Trade Secret

| Environmental Protection Target | PNEC |
|------------------------------------|------------------------|
| Fresh water | 0.482 mg/L |
| Freshwater sediments | 3.79 mg/kg sediment dw |
| Marine water | 0.048 mg/L |
| Marine sediments | 3.79 mg/kg sediment dw |
| Microorganisms in sewage treatment | 10 mg/L |
| Soil (agricultural) | 0.476 mg/kg soil dw |
| Air | No hazard identified |
| Oral (Secondary Poisoning) | No exposure expected |

Ingredient Name: Urethane dimethacrylate

CAS #: 72869-86-4

| Environmental Protection Target | PNEC |
|------------------------------------|------------------------|
| Fresh water | 0.01 mg/L |
| Freshwater sediments | 4.56 mg/kg sediment dw |
| Marine water | 0.001 mg/L |
| Marine sediments | 0.46 mg/kg sediment dw |
| Microorganisms in sewage treatment | 3.61 mg/L |
| Soil (agricultural) | 0.91 mg/kg soil dw |
| Air | No hazard identified |
| Oral (Secondary Poisoning) | No exposure expected |

Ingredient Name: Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate

CAS #: 84434-11-7

| Environmental Protection Target | PNEC |
|------------------------------------|-------------------------|
| Fresh water | 1.01 µg/L |
| Freshwater sediments | 0.24 mg/kg sediment dw |
| Marine water | 0.101 µg/L |
| Marine sediments | 0.024 mg/kg sediment dw |
| Microorganisms in sewage treatment | No hazard identified |
| Soil (agricultural) | 0.047 mg/kg soil dw |

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| | |
|----------------------------|----------------------|
| Air | No hazard identified |
| Oral (Secondary Poisoning) | No exposure expected |

Ingredient Name: BAPO

CAS #: 162881-26-7

| Environmental Protection Target | PNEC |
|------------------------------------|-------------------------|
| Fresh water | 0.014 mg/L |
| Freshwater sediments | 0.125 mg/kg sediment dw |
| Marine water | 0.001 mg/L |
| Marine sediments | 0.013 mg/kg sediment dw |
| Microorganisms in sewage treatment | 10 mg/L |
| Soil (agricultural) | 0.017 mg/kg soil dw |
| Air | No hazard identified |
| Oral (Secondary Poisoning) | No exposure expected |

Information on monitoring procedures:

Not determined or not applicable.

8.2 Exposure controls

Appropriate engineering controls:

Emergency eye wash stations and safety showers should be available in the immediate vicinity of use or handling. Provide adequate ventilation to maintain the airborne concentrations of vapor, mists, and/or dusts below the applicable workplace exposure limits, while observing recognized national standards (or equivalent).

Personal protection equipment

Eye and face protection:

Safety glasses or goggles. Use eye protection equipment that has been tested and approved by recognized national standards (or equivalent).

Skin and body protection:

Chemical resistant, impervious gloves approved by the appropriate standards. Gloves must be inspected prior to use. Avoid skin contact with used gloves. Appropriate techniques should be used to remove used gloves and contaminated clothing. Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Ensure that all personal protective equipment is approved by recognized national standards (or equivalent).

Respiratory protection:

If engineering controls do not maintain airborne concentrations below the applicable workplace exposure limits, or to an acceptable level (if exposure limits have not been established), a respirator approved by recognized national standards (or equivalent) must be worn.

General hygienic measures:

When handling chemical products, do not eat, drink or smoke. Wash hands after handling, before breaks, and at the end of the workday. Avoid contact with skin, eyes and clothing. Wash contaminated clothing before reuse. Perform routine housekeeping.

Environmental exposure controls:

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

| | |
|---|-----------------------------------|
| Product (substance / mixture) related measures to prevent exposure: | Not determined or not applicable. |
| Instruction measures to prevent exposure: | Not determined or not applicable. |
| Organisational measures to prevent exposure: | Not determined or not applicable. |

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| | |
|---|-----------------------------------|
| Technical measures to prevent exposure: | Not determined or not applicable. |
|---|-----------------------------------|

Risk management measures to control exposure:

Not determined or not applicable.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

| | |
|---|----------------------------------|
| Physical State | Liquid |
| Color | Opaque Grey |
| Odor/Odor threshold | Characteristic acrylate |
| pH | Not determined or not available. |
| Melting point/freezing point | Not determined or not available. |
| Initial boiling point/range | > 100°C |
| Flash point (closed cup) | > 93.5°C |
| Flammability | Not flammable |
| Upper flammability/explosive limit | Not determined or not available. |
| Lower flammability/explosive limit | Not determined or not available. |
| Vapor pressure | Not determined or not available. |
| Relative vapor density | Not determined or not available. |
| Density | 1.11 gm/cm ³ |
| Relative density | Not determined or not available. |
| Solubilities | Not determined or not available. |
| Partition coefficient (n-octanol/water) | Not determined or not available. |
| Auto/Self-ignition temperature | Not determined or not available. |
| Decomposition temperature | Not determined or not available. |
| Kinematic viscosity | Not determined or not available. |
| Particle characteristics | Not determined or not available. |

9.2 Other information

9.2.1 Information with regard to physical hazard classes

| | |
|---------------------------------------|----------------------------------|
| Explosives | No data available/Not applicable |
| Flammable gases | No data available/Not applicable |
| Aerosols | No data available/Not applicable |
| Oxidizing gases | No data available/Not applicable |
| Gases under pressure | No data available/Not applicable |
| Flammable liquids | No data available/Not applicable |
| Flammable solids | No data available/Not applicable |
| Self-reactive substances and mixtures | No data available/Not applicable |
| Pyrophoric liquids | No data available/Not applicable |
| Pyrophoric solids | No data available/Not applicable |
| Self-heating substances and mixtures | No data available/Not applicable |

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|---|----------------------------------|
| Substances and mixtures, which emit flammable gases in contact with water | No data available/Not applicable |
| Oxidizing liquids | No data available/Not applicable |
| Oxidizing solids | No data available/Not applicable |
| Organic peroxides | No data available/Not applicable |
| Corrosive to metals | No data available/Not applicable |
| Desensitized explosives | No data available/Not applicable |

9.2.2 Other safety characteristics

| | |
|-------------------|---------------|
| Dynamic Viscosity | 800 cP @ 25°C |
|-------------------|---------------|

SECTION 10: Stability and reactivity

10.1 Reactivity:

Not reactive under recommended handling and storage conditions.

10.2 Chemical stability:

Stable under recommended handling and storage conditions.

10.3 Possibility of hazardous reactions:

Hazardous reactions are not anticipated under recommended conditions of handling and storage.
Stable under recommended handling and storage conditions.

10.4 Conditions to avoid:

Extreme heat, open flames, hot surfaces, sparks, ignition sources and incompatible materials.
Avoid storage >38°C (100°F) and exposure to light/direct sunlight and heat.

10.5 Incompatible materials:

Polymerization initiators, including peroxides, strong oxidizing agents, alcohols, copper, copper alloys, carbon steel, iron, rust, and strong bases.

10.6 Hazardous decomposition products:

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity

Assessment: Based on available data, the classification criteria are not met.

Product data: No data available.

Substance data:

| Name | Route | Result |
|---|--------|--------------------------|
| Methacrylate Monomer(s) | oral | LD50 Rat: 5564 mg/kg |
| | dermal | LD50 Rabbit: >5000 mg/kg |
| Urethane dimethacrylate | oral | LD50 Rat: >5000 mg/kg |
| | dermal | LD50 Rat: >2000 mg/kg |
| Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate | oral | LD50 Rat: >5000 mg/kg |
| | dermal | LD50 Rat: >=2000 mg/kg |
| BAPO | oral | LD50 Rat: 1600 mg/kg |
| | dermal | LD50 Rat: >2000 mg/kg |
| Methacrylate Oligomer(s) | oral | LD50 Rat: >5110 mg/kg |

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Skin corrosion/irritation

Assessment:

Causes skin irritation.

Product data:

No data available.

Substance data:

| Name | Result |
|-------------------------|-------------------------|
| Methacrylate Monomer(s) | Causes skin irritation. |

Serious eye damage/irritation

Assessment:

Causes serious eye irritation.

Product data:

No data available.

Substance data:

| Name | Result |
|-------------------------|--------------------------------|
| Methacrylate Monomer(s) | Causes serious eye irritation. |
| BAPO | Causes serious eye irritation. |

Respiratory or skin sensitization

Assessment:

May cause an allergic skin reaction.

Product data:

No data available.

Substance data:

| Name | Result |
|---|--------------------------------------|
| Methacrylate Monomer(s) | May cause an allergic skin reaction. |
| Urethane dimethacrylate | May cause an allergic skin reaction. |
| Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate | May cause an allergic skin reaction. |
| BAPO | May cause an allergic skin reaction. |

Carcinogenicity

Assessment: Based on available data, the classification criteria are not met.

Product data: No data available.

Substance data: No data available.

International Agency for Research on Cancer (IARC):

| Name | Classification |
|---|----------------|
| Methacrylate Monomer(s) | Not Applicable |
| Urethane dimethacrylate | Not Applicable |
| Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate | Not Applicable |
| BAPO | Not Applicable |

Germ cell mutagenicity

Assessment: Based on available data, the classification criteria are not met.

Product data: No data available.

Substance data: No data available.

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Reproductive Toxicity

Assessment: Based on available data, the classification criteria are not met.

Product data:

No data available.

Substance data: No data available.

Specific target organ toxicity (single exposure)

Assessment: Based on available data, the classification criteria are not met.

Product data:

No data available.

Substance data: No data available.

Specific target organ toxicity (repeated exposure)

Assessment: Based on available data, the classification criteria are not met.

Product data:

No data available.

Substance data: No data available.

Aspiration toxicity

Assessment: Based on available data, the classification criteria are not met.

Product data:

No data available.

Substance data: No data available.

Information on likely routes of exposure:

No data available.

Symptoms related to the physical, chemical and toxicological characteristics:

No data available.

11.2 Information on other hazards

Endocrine disrupting properties:

Substance data: No data available.

Other information:

No data available.

SECTION 12: Ecological information

12.1 Toxicity

Acute (short-term) toxicity

Assessment: Based on available data, the classification criteria are not met.

Product data: No data available.

Substance data:

| Name | Result |
|---|--|
| Methacrylate Monomer(s) | Fish LC50 Oryzias latipes: >100 mg/L (96 hr) |
| | Aquatic Invertebrates EC50 Daphnia magna: 380 mg/L (48 hr [mobility]) |
| Urethane dimethacrylate | Fish LC50 Danio rerio: 10.1 mg/L (96 hr) |
| | Aquatic Invertebrates EC50 Daphnia magna: > 1.2 mg/L (48 hr) |
| Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate | Aquatic Plants EC50 Pseudokirchneriella subcapitata: >2.01 mg/L (72 hr [growth rate; read-across]) |
| | Fish LC50 Danio rerio: 1 mg/L (96 hr [read-across]) |
| | Aquatic Invertebrates EC50 Daphnia magna: 3.53 mg/L (48 hr [read-across]) |

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| Name | Result |
|--------------------------|---|
| BAPO | Aquatic Plants EC50 Raphidocelis subcapitata: 54.7 mg/L (72 hr [growth rate]) |
| | Fish LC50 Oncorhynchus mykiss: 28.5 mg/L (96 hr) |
| | Aquatic Invertebrates EC50 Daphnia magna: 3 mg/L (48 hr [mobility]) |
| Methacrylate Oligomer(s) | Fish LC50 Poecilia reticulata: \geq 100 mg/L (96 hr) |

Chronic (long-term) toxicity

Assessment:

Toxic to aquatic life with long lasting effects.

Product data: No data available.

Substance data:

| Name | Result |
|-------------------------|---|
| Methacrylate Monomer(s) | Aquatic Invertebrates EC50 Daphnia magna: 90.1 mg/L (21 d [reproduction]) |
| Urethane dimethacrylate | Aquatic Plants NOEC Desmodesmus subspicatus: 0.21 mg/L (72 hr) |
| BAPO | Aquatic Invertebrates NOEC Daphnia magna: 0.68 mg/L (21 d [reproduction]) |

12.2 Persistence and degradability

Product data: No data available.

Substance data:

| Name | Result |
|---|--|
| Methacrylate Monomer(s) | Readily biodegradable (92 - 100% degradation after 14 days, measured by Oxygen consumption). |
| Urethane dimethacrylate | The substance is not readily biodegradable (22% degradation in 28 days). |
| Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate | The substance is not readily biodegradable. <10 % degradation in water, measured by O ₂ consumption, after 28 days. |
| BAPO | The substance is readily biodegradable. 99% degradation in water, measured by TOC removal, after 28 days. |
| Methacrylate Oligomer(s) | The substance is not readily biodegradable. |

12.3 Bioaccumulative potential

Product data: No data available.

Substance data:

| Name | Result |
|---|---|
| Methacrylate Monomer(s) | This substance has low potential to bioaccumulate (log kow: \leq 3). |
| Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate | The substance has a low potential for bioaccumulation based on a log Kow of 2.91. |
| BAPO | The substance is not expected to bioaccumulate (log Pow=1.62). |
| Methacrylate Oligomer(s) | The substance has the potential to bioaccumulate (BCF=292.4, Calculation method). |

12.4 Mobility in soil

Product data: No data available.

Substance data:

| Name | Result |
|-------------------------|--|
| Urethane dimethacrylate | The substance has moderate potential to adsorb to organic soil and sediment particles (log Koc: 3.66 dimensionless). |

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| Name | Result |
|---|---|
| Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate | Based on a log Koc of 3.37, adsorption to solid soil phase is expected. |
| BAPO | This substance is mobile, therefore adsorption to soil is not expected. (Koc at 20 °C= 55.7). |

12.5 Results of PBT and vPvB assessment

Product data:

PBT assessment: This product does not contain any substances that are assessed to be a PBT.

vPvB assessment: This product does not contain any substances that are assessed to be a vPvB.

Substance data:

PBT assessment:

| | |
|-------------------------|----------------------------|
| Methacrylate Monomer(s) | This substance is not PBT. |
| Urethane dimethacrylate | This substance is not PBT. |
| BAPO | The substance is not PBT. |

vPvB assessment:

| | |
|-------------------------|-----------------------------|
| Methacrylate Monomer(s) | This substance is not vPvB. |
| Urethane dimethacrylate | This substance is not vPvB. |
| BAPO | The substance is not vPvB. |

12.6 Endocrine disrupting properties

Substance data: No data available.

12.7 Other adverse effects: No data available.

12.8 Hazard to the ozone layer

Assessment: Based on available data, the classification criteria are not met.

Product data: No data available.

Substance data: No data available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

13.1.1 Product / Packaging disposal:

Dispose contaminated packages in a safe manner in accordance with local and national regulations. Do not allow the product to be released into the environment.

Waste codes / waste designations according to LoW: Not determined or not available.

13.1.2 Waste treatment-relevant information: Not determined or not available.

13.1.3 Sewage disposal-relevant information: Not determined or not available.

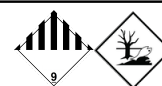
13.1.4 Other disposal recommendations:

Do not discharge into public wastewater or surface waters. It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities.

SECTION 14: Transport information

International Carriage of Dangerous Goods by Road/Rail (ADR/RID)

| | |
|-------------------------------|--|
| UN number or ID number | UN 3082 |
| UN proper shipping name | Environmentally hazardous liquid, N.O.S. Urethane dimethacrylate |
| UN transport hazard class(es) | 9 |



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According to Regulation (EC) No. 1272/2008 (CLP), as amended by Commission Regulation (EU) 2019/521 and Commission Delegated Regulation (EU) 2020/217, and (EC) No. 1907/2006 (REACH), as amended by Commission Regulation (EU) 2020/878.

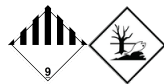
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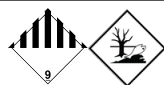
Grey V5 Resin

| | |
|-------------------------------------|--|
| Packing group | III |
| Environmental hazards | Marine Pollutant |
| Special precautions for user | None |
| Additional Information | This product is not regulated as a dangerous good when transported in sizes of $\leq 5L$ provided the packaging meets the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8. |

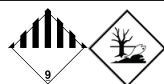
International Carriage of Dangerous Goods by Inland Waterways (ADN)

| | |
|--------------------------------------|--|
| UN number or ID number | UN 3082 |
| UN proper shipping name | Environmentally hazardous liquid, N.O.S. Urethane dimethacrylate |
| UN transport hazard class(es) | 9  |
| Packing group | III |
| Environmental hazards | Marine Pollutant |
| Special precautions for user | None |
| Additional Information | This product is not regulated as a dangerous good when transported in sizes of $\leq 5L$ provided the packaging meets the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8. |

International Maritime Dangerous Goods (IMDG)

| | |
|--------------------------------------|--|
| UN number or ID number | UN 3082 |
| UN proper shipping name | Environmentally hazardous liquid, N.O.S. Urethane dimethacrylate |
| UN transport hazard class(es) | 9  |
| Packing group | III |
| Environmental hazards | Marine Pollutant |
| Special precautions for user | This product is not regulated as a dangerous good when transported in sizes of $\leq 5L$ provided the packaging meets the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8. |

International Air Transport Association Dangerous Goods Regulations (IATA-DGR)

| | |
|--------------------------------------|--|
| UN number or ID number | UN 3082 |
| UN proper shipping name | Environmentally hazardous liquid, N.O.S. Urethane dimethacrylate |
| UN transport hazard class(es) | 9  |
| Packing group | III |
| Environmental hazards | Marine Pollutant |
| Special precautions for user | None |
| Additional Information | This product is not regulated as a dangerous good when transported in sizes of $\leq 5L$ provided the packaging meet the general provisions of 5.0.2.4.1, 5.0.2.6.1 and 5.0.2.8. |

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Maritime Transport in Bulk according to IMO Instruments

| | |
|---------------------------------|------|
| Bulk Name | None |
| Ship type | None |
| Pollution category | None |
| IMO hazard class | None |
| Environmental hazards | None |
| Material hazardous only in bulk | None |
| Cargo Group | None |

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture.

European regulations

Inventory listing (EINECS): All ingredients are listed or exempt.

REACH SVHC candidate list: None of the ingredients are listed.

REACH SVHC Authorizations: None of the ingredients are listed.

REACH Restriction:

| | | |
|--------------|---|------------|
| Trade Secret | Methacrylate Monomer(s) | Not Listed |
| 72869-86-4 | Urethane dimethacrylate | Not Listed |
| 84434-11-7 | Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate | Not Listed |
| 162881-26-7 | BAPO | Listed |

Water hazard class (WGK) (Product): Not determined.

Water hazard class (WGK) (Substance):

| Ingredient Name | CAS | Class |
|---|--------------|--|
| Methacrylate Monomer(s) | Trade Secret | Water hazard class 1: slightly hazardous to water |
| Urethane dimethacrylate | 72869-86-4 | Water hazard class 1: slightly hazardous to water |
| Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate | 84434-11-7 | Water hazard class 2: obviously hazardous to water |
| BAPO | 162881-26-7 | Water hazard class 1: slightly hazardous to water |

Other regulations

Germany TA Luft:

| Ingredient Name | CAS | Class | Base Emission Rate | Max Concentration |
|-----------------|-------------|---------|--------------------|----------------------|
| BAPO | 162881-26-7 | Class I | 0.10 kg/h | 20 mg/m ³ |

Additional information: Not determined.

15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

SECTION 16: Other information

Abbreviations and Acronyms: None

Classification procedure:

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| Classification according to Regulation (EC) No. 1272/2008 (CLP) | Method Used |
|---|--------------------|
| Skin irritation, category 2 | Calculation method |
| Eye Irritation, category 2 | Calculation method |
| Skin sensitization, category 1 | Calculation method |
| Chronic aquatic hazard, category 2 | Calculation method |

Summary of classification(s) in section 3:

| | |
|---------------------|------------------------------------|
| Skin Irrit. 2 | Skin irritation, category 2 |
| Skin Sens. 1 | Skin sensitization, category 1 |
| Eye Irrit. 2 | Eye Irritation, category 2 |
| Aquatic Chronic 2 | Chronic aquatic hazard, category 2 |
| Skin Sens. 1B | Skin sensitization, category 1B |
| Acute Tox. 4 (Oral) | Acute toxicity (oral), category 4 |
| Aquatic Chronic 3 | Chronic aquatic hazard, category 3 |

Summary of hazard statements in section 3:

| | |
|------|---|
| H315 | Causes skin irritation |
| H317 | May cause an allergic skin reaction |
| H319 | Causes serious eye irritation |
| H411 | Toxic to aquatic life with long lasting effects |
| H302 | Harmful if swallowed |
| H412 | Harmful to aquatic life with long lasting effects |

Disclaimer:

This product has been classified in accordance with EC No. 1272/2008 (CLP), as amended by Commission Regulation (EU) 2019/521 and Commission Delegated Regulation (EU) 2020/217, and EC No. 1907/2006 (REACH), as amended by Commission Regulation (EU) 2020/878. The information provided in this SDS is correct, to the best of our knowledge, based on information available. The information given is designed only as a guidance for safe handling, use, storage, transportation, and disposal and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials, unless specified in the text. The responsibility to provide a safe workplace remains with the user.

Initial preparation date: 2024-02-28

End of Safety Data Sheet