

1. PRODUCT AND COMPANY IDENTIFICATION**Company**

Arkema Inc.
900 First Avenue
King of Prussia, Pennsylvania 19406

Sartomer

Customer Service Telephone Number: (800) SARTOMER
(Monday through Friday, 8:00 AM to 5:00 PM EST)

Emergency Information

Transportation: CHEMTREC: (800) 424-9300
(24 hrs., 7 days a week)
Medical: Rocky Mountain Poison Center: (866) 767-5089
(24 hrs., 7 days a week)

Product Information

Product name: PRO14732
Synonyms: Urethane Oligomer / monomer mixture
Molecular formula: Proprietary Mixture
Chemical family: acrylic resin
Product use: 3D printing

2. HAZARDS IDENTIFICATION**Emergency Overview**

Color: green
Physical state: liquid
Odor: acrylic-like

***Classification of the substance or mixture:**

Oral: Acute toxicity, Category 4, H302
Inhalation: Acute toxicity, Category 4, H332
Serious eye damage, Category 1, H318
Skin sensitisation, Category 1, H317
Specific target organ toxicity - repeated exposure, Category 2, H373
Chronic aquatic toxicity, Category 2, H411

*For the full text of the H-Statements mentioned in this Section, see Section 16.

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GHS-Labeling

Hazard pictograms:



Signal word:

Danger**Hazard statements:**

H302 + H332 : Harmful if swallowed or if inhaled.

H317 : May cause an allergic skin reaction.

H318 : Causes serious eye damage.

H373 : May cause damage to organs through prolonged or repeated exposure.

H411 : Toxic to aquatic life with long lasting effects.

Supplemental Hazard Statements:

Specific target organ toxicity - repeated exposure:

unspecified target organ

Processing may release vapors and/or fumes which cause eye, skin and respiratory tract irritation.

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Precautionary statements:**Prevention:**

- P260 : Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
- P264 : Wash skin thoroughly after handling.
- P270 : Do not eat, drink or smoke when using this product.
- P271 : Use only outdoors or in a well-ventilated area.
- P272 : Contaminated work clothing should not be allowed out of the workplace.
- P273 : Avoid release to the environment.
- P280 : Wear eye protection and face protection.
- P280 : Wear protective gloves.

Response:

- P301 + P312 : IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.
- P302 + P352 : IF ON SKIN: Wash with plenty of soap and water.
- P304 + P340 : IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P305 + P351 + P338 : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P310 : Immediately call a POISON CENTER/doctor.
- P330 : Rinse mouth.
- P333 + P313 : If skin irritation or rash occurs: Get medical advice/ attention.
- P363 : Wash contaminated clothing before reuse.
- P391 : Collect spillage.

Disposal:

- P501 : Dispose of contents or container to an approved waste disposal plant.

Supplemental information:**Potential Health Effects:**

If swallowed, may cause severe irritation and injury to the mouth, throat and digestive tract. Possible cross sensitization with other acrylates and methacrylates. Effects due to processing releases or residual monomer: Irritating to eyes, respiratory system and skin. May cause allergic respiratory reaction. Prolonged or repeated exposure may cause: headache, drowsiness, nausea, weakness, (severity of effects depends on extent of exposure).

Medical conditions aggravated by overexposure:

Respiratory disease or diminished respiratory capacity. Asthma (Data for residual monomer that may be released during processing)

Other:

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Product not completely tested. Take maximum precautions when handling. This product may release fume and/or vapor of variable composition depending on processing time and temperature. Possible release of traces of residual monomer. Isocyanates may cause acute irritation and/or sensitisation of the respiratory system leading to tightness of the chest, wheeziness and an asthmatic condition.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Wt/Wt	GHS Classification**
Urethane oligomer	Proprietary*	>= 60 - <= 100 %	H317, H411
Acryloylmorpholine	5117-12-4	>= 30 - < 60 %	H302, H331, H318, H317, H373
Proprietary additive	Proprietary*	< 1 %	H317, H413

*The specific chemical identity is withheld because it is trade secret information of Arkema Inc.

**For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1. Description of necessary first-aid measures:

Inhalation:

If inhaled, remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Skin:

In case of contact, immediately flush skin with soap and plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eyes:

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.

Ingestion:

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If swallowed, DO NOT induce vomiting. Get medical attention immediately. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person.

4.2. Most important symptoms/effects, acute and delayed:

For most important symptoms and effects (acute and delayed), see Section 2 (Hazard Statements and Supplemental Information if applicable) and Section 11 (Toxicology Information) of this SDS.

4.3. Indication of immediate medical attention and special treatment needed, if necessary:

Unless otherwise noted in Notes to Physician, no specific treatment noted; treat symptomatically.

5. FIREFIGHTING MEASURES**Extinguishing media (suitable):**

Water spray, Carbon dioxide (CO₂), Foam, Dry chemical

Extinguishing media (unsuitable):

Do not use a solid water stream as it may scatter and spread fire.

Protective equipment:

Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand / NIOSH approved or equivalent).

Further firefighting advice:

Fight fire from a protected location.

Cool closed containers exposed to fire with water spray.

Closed containers of this material may explode when subjected to heat from surrounding fire.

Do not allow run-off from fire fighting to enter drains or water courses.

Fire fighting equipment should be thoroughly decontaminated after use.

Fire and explosion hazards:

When burned, the following hazardous products of combustion can occur:

Carbon oxides

Nitrogen oxides

Amines

hydrogen cyanide

phosphorous oxides

Isocyanates

Hazardous organic compounds

Polymerization is exothermic and can degenerate into an uncontrolled reaction.

PRO14732**6. ACCIDENTAL RELEASE MEASURES****Personal precautions, Emergency procedures, Methods and materials for containment/clean-up:**

Prevent further leakage or spillage if you can do so without risk. Evacuate area of all unnecessary personnel. Ventilate the area. Avoid generation of vapors. Contain and collect spillage with non-combustible absorbent material such as clean sand, earth, diatomaceous earth or non-acidic clay and place into suitable properly labeled containers for prompt disposal. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

Protective equipment:

Appropriate personal protective equipment is set forth in Section 8.

7. HANDLING AND STORAGE**Handling****General information on handling:**

Do not taste or swallow.
Do not get in eyes, on skin, or on clothing.
Do not breathe vapor or mist.
Keep container tightly closed.
Use only with adequate ventilation.
Wash thoroughly after handling.
Emptied container retains vapor and product residue.
Observe all labeled safeguards until container is cleaned, reconditioned or destroyed.

Storage**General information on storage conditions:**

Keep in a dry, cool place. Store in closed containers, in a secure area to prevent container damage and subsequent spillage. Store out of direct sunlight in a cool well-ventilated place. Keep stabilizer levels constant to avoid explosive polymerization. An air space is required above the liquid in all containers; avoid storage under an oxygen-free atmosphere.

Storage stability – Remarks:

Inhibitor levels should be maintained. The typical shelf-life for this product is 6 months.

Storage incompatibility – General:

Store separate from:
Strong oxidizing agents
Strong reducing agents
Free radical generators
Inert gas
Oxygen scavenger.
Peroxides
Strong alkalies

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Azo compounds
metal ions

Temperature tolerance – Do not store below:
32 °F (0 °C)

Temperature tolerance – Do not store above:
100 °F (38 °C)

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Airborne Exposure Guidelines:****Engineering controls:**

Investigate engineering techniques to reduce exposures below airborne exposure limits or to otherwise reduce exposures. Provide ventilation if necessary to minimize exposures or to control exposure levels to below airborne exposure limits (if applicable see above). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems.

Respiratory protection:

Do not breathe vapor or mist. Where airborne exposure is likely or airborne exposure limits are exceeded (if applicable, see above), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Full facepiece equipment is recommended and, if used, replaces need for face shield and/or chemical goggles. Consult respirator manufacturer to determine appropriate type equipment for a given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure or where exposure limit may be significantly exceeded, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

Skin protection:

Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type glove material for given application. Avoid natural rubber gloves. Wear chemical goggles, a face shield, and chemical resistant clothing such as a rubber apron when splashing may occur. Rinse immediately if skin is contaminated. Remove contaminated clothing immediately and wash before reuse. Clean protective equipment before reuse. Provide a safety shower at any location where skin contact can occur. Wash thoroughly after handling.

Eye protection:

Where there is potential for eye contact, wear a face shield, chemical goggles, and have eye flushing equipment immediately available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color: green

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Physical state:	liquid
Odor:	acrylic-like
Odor threshold:	No data available.
Flash point	No data available
Auto-ignition temperature:	No data available.
Lower flammable limit (LFL):	No data available.
Upper flammable limit (UFL):	No data available.
pH:	No data available.
Density:	No data available.
Specific Gravity (Relative density):	No data available
Vapor pressure:	No data available.
Vapor density:	No data available.
Boiling point/boiling range:	No data available.
Melting point/range:	No data available.
Freezing point:	No data available.
Evaporation rate:	No data available.
Solubility in water:	No data available.
Viscosity, dynamic:	670 CPS 77 °F (25 °C)
Oil/water partition coefficient:	No data available.
Thermal decomposition:	No data available.
Flammability:	See GHS Classification in Section 2 if applicable

10. STABILITY AND REACTIVITY

PRO14732**Stability:**

This material is chemically stable under normal and anticipated storage, handling and processing conditions. However, this material can undergo hazardous polymerization.

Hazardous reactions:

Hazardous polymerisation may occur.

Polymerization is exothermic and can degenerate into an uncontrolled reaction.

Materials to avoid:

Strong reducing agents
Free radical generators
Inert gas
Oxygen scavenger.
Peroxides
Strong oxidizing agents
Azo-compounds
metal ions
Strong alkalies

Conditions / hazards to avoid:

This material polymerizes exothermically in the presence of heat, contamination, oxygen free atmosphere, free radicals, peroxides and inhibitor depletion liberating heat. Avoid direct sunlight. Do NOT expose to ultraviolet light.

Hazardous decomposition products:

Thermal decomposition giving flammable and toxic products :

Carbon oxides
Methacrylates
Amines
Nitrogen oxides (NOx)
Isocyanates
Hazardous organic compounds
Hydrogen cyanide
phosphorous oxides

11. TOXICOLOGICAL INFORMATION

Data on this material and/or its components are summarized below.

Oral:

Acute toxicity estimate = 1,697 mg/kg.

Inhalation:

4 h Acute toxicity estimate = 2.4 mg/l. (dust/mist)

Data for Urethane oligomer (Proprietary)**Acute toxicity****Oral:**

Practically nontoxic. (rat) LD50 > 5,000 mg/kg.

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Dermal:

No deaths occurred. (rabbit) LD50 > 2,000 mg/kg.

Skin Irritation:

Not irritating. (rabbit) Irritation Index: 0/8. (4 h)

Eye Irritation:

Not irritating. (rabbit) Irritation Index: 0/110.

Skin Sensitization:

May cause allergic skin reaction. LLNA: Local Lymph Node Assay. (mouse) Skin allergy was observed.

Repeated dose toxicity

Subchronic Oral administration to rat / affected organ(s): Liver / signs: changes in organ weights
The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Genotoxicity**Assessment in Vitro:**

No genetic changes were observed in a laboratory test using: bacteria, animal cells

Reproductive effects

Reproductive/Developmental Effects Screening Assay. Oral (rat) / No effects on fertility

Data for Acryloylmorpholine (5117-12-4)**Acute toxicity****Oral:**

Harmful if swallowed. (rat) LD50 = 588 mg/kg.

Dermal:

May be harmful in contact with skin. (rat) LD50 > 2,000 mg/kg.

Inhalation:

Toxic if inhaled. (rat) 4 h LC50 = 0.83 mg/l. (dust/mist)

Skin Irritation:

Practically non-irritating. (rabbit)

Eye Irritation:

Causes serious eye damage. (rabbit) OECD Test Guideline 405

Skin Sensitization:

May cause an allergic skin reaction. Guinea pig maximization test. (guinea pig) Skin allergy was observed.

Repeated dose toxicity

Repeated oral administration to rat / affected organ(s): Unspecified target organ
May cause damage to organs through prolonged or repeated exposure.

PRO14732**Specific target organ toxicity - repeated exposure:**

May cause damage to organs through prolonged or repeated exposure. (Unspecified target organ)

Genotoxicity**Assessment in Vitro:**

No genetic changes were observed in a laboratory test using: bacteria

Genetic changes were observed in laboratory tests using: animal cells

Data for Proprietary additive (Proprietary)**Acute toxicity****Oral:**

No deaths occurred. (rat) LD0 > 2,000 mg/kg.

Dermal:

No deaths occurred. (rat) LD0 > 2,000 mg/kg.

Skin Irritation:

Not irritating. (rabbit) (72 h)

Eye Irritation:

Causes mild eye irritation. (rabbit) (72 h)

Skin Sensitization:

May cause allergic skin reaction. Guinea pig maximization test. (guinea pig) Skin allergy was observed. (Strong sensitizer)

Repeated dose toxicity

Repeated oral administration to rat / No adverse effects reported.

Genotoxicity**Assessment in Vitro:**

No genetic changes were observed in laboratory tests using: bacteria, animal cells, human cells

Developmental toxicity

Exposure during pregnancy. Oral (rat) / No effects on foetal development

12. ECOLOGICAL INFORMATION**Chemical Fate and Pathway**

Data on this material and/or its components are summarized below.

Data for Urethane oligomer (Proprietary)**Biodegradation:**

Not readily biodegradable. (28 d) biodegradation 22 %

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Octanol Water Partition Coefficient:
log Pow: = 3.4, at 68 °F (20 °C) pH = 7

Data for Acryloylmorpholine (5117-12-4)

Biodegradation:
Not readily biodegradable. (28 d) biodegradation 35 %

Octanol Water Partition Coefficient:
log Pow: -0.46, at 70 °F (21 °C)

Ecotoxicology

Data on this material and/or its components are summarized below.

Data for Urethane oligomer (Proprietary)

Aquatic toxicity data:
Harmful. Danio rerio (zebra fish) 96 h LC50 = 10.1 mg/l

Aquatic invertebrates:
No effect up to the limit of solubility. Daphnia magna (Water flea) 24 h EC50 > 1.2 mg/l

Algae:
No effect up to the limit of solubility. Desmodesmus subspicatus (green algae) 72 h EC50 > 0.68 mg/l

Chronic toxicity to aquatic plants:
Toxic. Desmodesmus subspicatus (green algae) 72 h NOEC r = 0.21 mg/l

Data for Acryloylmorpholine (5117-12-4)

Aquatic toxicity data:
Practically nontoxic. Oncorhynchus kisutch (coho salmon) 96 h LC50 > 220 mg/l

Aquatic invertebrates:
Practically nontoxic. Crustaceans 48 h EC50 > 120 mg/l

Algae:
Practically nontoxic. Pseudokirchneriella subcapitata 72 h EC50 > 120 mg/l

Microorganisms:
Practically nontoxic. 3 h IC50 > 100 mg/l

Chronic toxicity to aquatic plants:
Practically nontoxic. Pseudokirchneriella subcapitata 72 h EC10 > 120 mg/l

13. DISPOSAL CONSIDERATIONS**Waste disposal:**

Disposal via incineration is recommended. Dispose of in accordance with federal, state and local regulations. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in

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waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits. Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations.

Take appropriate measures to prevent release to the environment.

14. TRANSPORT INFORMATION

US Department of Transportation (DOT): not regulated

Special Shipping Information: Not regulated due to package size as per 49 CFR 171.4 (c)(2).

International Maritime Dangerous Goods Code (IMDG): not regulated

Special Shipping Information: Not regulated due to package size as per IMDG 2.10.2.7.

15. REGULATORY INFORMATION

Chemical Inventory Status

US. Toxic Substances Control Act	TSCA	This product complies with the TSCA inventory requirements. 2-Propen-1-one, 1-(4-morpholinyl)- is subject to the provisions of a Significant New Use Rule (SNUR) published by the Environmental Protection Agency (EPA) in 40 CFR Part SNUR 721.5185. This SNUR applies not only to Arkema Inc., but also to all customers and processors.
Canadian Domestic Substances List (DSL)	DSL	This product contains one or several components that are not on the Canadian DSL nor NDSL lists.
China. Inventory of Existing Chemical Substances in China (IECSC)	IECSC (CN)	Does not conform
Japan. ENCS - Existing and New Chemical Substances Inventory	ENCS (JP)	Does not conform
Japan. ISHL - Inventory of Chemical Substances	ISHL (JP)	Does not conform
Korea. Korean Existing Chemicals Inventory (KECI)	KECI (KR)	Does not conform
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	PICCS (PH)	Does not conform

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Australia Inventory of Chemical Substances (AICS) AICS Does not conform

United States – Federal Regulations**SARA Title III – Section 302 Extremely Hazardous Chemicals:**

The components in this product are either not SARA Section 302 regulated or regulated but present in negligible concentrations.

SARA Title III - Section 311/312 Hazard Categories:

Reactivity Hazard, Acute Health Hazard, Chronic Health Hazard

SARA Title III – Section 313 Toxic Chemicals:

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) - Reportable Quantity (RQ):

The components in this product are either not CERCLA regulated, regulated but present in negligible concentrations, or regulated with no assigned reportable quantity.

Toxic Substances Control Act – Section 12(b):

<u>Chemical name</u>	<u>CAS-No.</u>
Acryloylmorpholine	(5117-12-4)

United States – State Regulations**New Jersey Right to Know**

No components are subject to the New Jersey Right to Know Act.

Pennsylvania Right to Know

<u>Chemical name</u>	<u>CAS-No.</u>
Urethane oligomer	Proprietary
Acryloylmorpholine	5117-12-4
2-Propenoic acid, 2-phenoxyethyl ester	48145-04-6

Pennsylvania Right to Know – Environmentally Hazardous Substance(s)

<u>Chemical name</u>	<u>CAS-No.</u>
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2-Propenoic acid, 2-phenoxyethyl ester

48145-04-6

California Prop. 65

This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive defects.

16. OTHER INFORMATION**Full text of H-Statements referred to under sections 2 and 3.**

H302	Harmful if swallowed.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H331	Toxic if inhaled.
H332	Harmful if inhaled.
H373	May cause damage to organs through prolonged or repeated exposure.
H411	Toxic to aquatic life with long lasting effects.
H413	May cause long lasting harmful effects to aquatic life.

Latest Revision(s):

Reference number:	200020148
Date of Revision:	02/15/2021
Date Printed:	02/15/2021

The statements, technical information and recommendations contained herein are believed to be accurate as of the date hereof. Since the conditions and methods of use of the product and of the information referred to herein are beyond our control, ARKEMA expressly disclaims any and all liability as to any results obtained or arising from any use of the product or reliance on such information; **NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE CONCERNING THE GOODS DESCRIBED OR THE INFORMATION PROVIDED HEREIN.** The information provided herein relates only to the specific product designated and may not be applicable when such product is used in combination with other materials or in any process. The user should thoroughly test any application before commercialization. Nothing contained herein constitutes a license to practice under any patent and it should not be construed as an inducement to infringe any patent and the user is advised to take appropriate steps to be sure that any proposed use of the product will not result in patent infringement. See SDS for Health & Safety Considerations.

Arkema has implemented a Medical Policy regarding the use of Arkema products in Medical Devices applications that are in contact with the body or circulating bodily fluids (<http://www.arkema.com/en/social-responsibility/responsible-product-management/medical-device-policy/index.html>) Arkema has designated Medical grades to be used for such Medical Device applications. Products that have not been designated as Medical grades are not authorized by Arkema for use in Medical Device applications that are in contact with the body or circulating bodily fluids. In addition, Arkema strictly prohibits the use of any Arkema products in Medical Device applications that are implanted in the body or in contact with bodily fluids or tissues for greater than 30 days. The Arkema trademarks and the Arkema name shall not be used in conjunction with customers' medical devices, including without limitation, permanent or temporary implantable devices, and customers shall not represent to anyone else, that Arkema allows, endorses or permits the use of Arkema products in such medical devices.

It is the sole responsibility of the manufacturer of the medical device to determine the suitability (including biocompatibility) of all raw materials, products and components, including any medical grade Arkema products, in order to ensure that the final end-use product is safe for its end use; performs or functions as intended; and complies with all applicable legal and regulatory requirements (FDA or other national drug agencies) It is the sole responsibility of the manufacturer of the medical device to conduct all necessary tests and inspections and to evaluate the medical device under actual end-use requirements and to adequately advise and warn purchasers, users, and/or learned intermediaries (such as physicians) of pertinent risks and fulfill any postmarket surveillance obligations. Any decision regarding the appropriateness of a particular Arkema material in a particular medical device should be based on the judgment of the manufacturer, seller, the competent authority, and the treating physician.