

Material Safety Data Sheet

ARALDITE® 2021 A US

1. Product and company identification

Product name : ARALDITE® 2021 A US
Material uses : Acrylate adhesive
MSDS # : 00056637
Validation date : 6/28/2012.
Print date : 6/28/2012.

Supplier/Manufacturer : Huntsman Advanced Materials Americas LLC
P.O. Box 4980
The Woodlands, TX 77387

Non-Emergency phone: (800) 257-5547

E-Mail: MSDS@huntsman.com

In case of emergency : Chemtrec: (800) 424-9300 or (703) 527-3887

2. Hazards identification

Physical state : Liquid. [Viscous liquid.]
Odor : Pungent.
Color : Off-white.

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Emergency overview : **☒ DANGER!**
☒ FLAMMABLE LIQUID AND VAPOR. CAUSES SKIN BURNS. CAUSES RESPIRATORY TRACT AND EYE IRRITATION. MAY CAUSE ALLERGIC RESPIRATORY AND SKIN REACTION. MAY BE HARMFUL IF SWALLOWED. POSSIBLE CANCER HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE CANCER, BASED ON ANIMAL DATA.
☒ Flammable liquid. Keep away from heat, sparks and flame. Avoid exposure - obtain special instructions before use. Do not breathe vapor or mist. Do not ingest. Do not get in eyes or on skin or clothing. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.

See toxicological information (Section 11)

GENERAL INFORMATION : Read the entire MSDS for a more thorough evaluation of the hazards.

3. Composition/information on ingredients

<u>Name</u>	<u>CAS number</u>	<u>%</u>
☒ methyl methacrylate	80-62-6	30 - 60
Acrylate mixture		30 - 60
methacrylic acid	79-41-4	7 - 13
ethyl acrylate	140-88-5	0.1 - 1

4 . First aid measures

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
- Notes to physician** : Symptomatic and supportive therapy as needed. Following severe exposure medical follow-up should be monitored for at least 48 hours.

5 . Fire-fighting measures

- Flash point** : Closed cup: 10.6°C (51.1°F) [DIN 51758 EN 22719 (Pensky-Martens Closed Cup)]
- Flammable limits** : Lower: 2%
Upper: 12.5%
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
- Extinguishing media**
- Suitable** : Use dry chemical, CO₂, water spray (fog) or foam.
- Not suitable** : Do not use water jet.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 . Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- Methods for cleaning up** : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact

6 . Accidental release measures

information and section 13 for waste disposal.

7 . Handling and storage

Handling

- : Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Persons with a history of skin sensitization problems or asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

Storage

- : Flammable materials should be stored in a separate safety storage cabinet or room. Store between the following temperatures: 2 to 8°C (35.6 to 46.4°F). Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8 . Exposure controls/personal protection

Ingredient	Exposure limits
methyl methacrylate	ACGIH TLV (United States, 2/2010). Skin sensitizer. TWA: 50 ppm 8 hour(s). STEL: 100 ppm 15 minute(s). OSHA PEL (United States, 11/2006). TWA: 100 ppm 8 hour(s). TWA: 410 mg/m ³ 8 hour(s).
methacrylic acid	ACGIH TLV (United States, 2/2010). TWA: 20 ppm 8 hour(s). TWA: 70 mg/m ³ 8 hour(s).

Recommended monitoring procedures

- : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Engineering measures

- : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Hygiene measures

- : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

8 . Exposure controls/personal protection

Personal protection

- | | |
|--|--|
| Respiratory | : In case of inadequate ventilation wear respiratory protection. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. |
| Hands | : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. >8 hours (breakthrough time): butyl rubber, Ethyl Vinyl Alcohol Laminate (EVAL) |
| Eyes | : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. |
| Skin | : 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. |
| Environmental exposure controls | : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels. |

9 . Physical and chemical properties

General information

Appearance

- | | |
|-----------------------|-----------------------------|
| Physical state | : Liquid. [Viscous liquid.] |
| Color | : Off-white. |
| Odor | : Pungent. |

Important health, safety and environmental information

- | | |
|---|--|
| pH | : 7 |
| Boiling/condensation point | : 101°C (213.8°F) |
| Melting/freezing point | : Not available. |
| Flash point | : Closed cup: 10.6°C (51.1°F) [DIN 51758 EN 22719 (Pensky-Martens Closed Cup)] |
| Flammable limits | : Lower: 2%
Upper: 12.5% |
| Auto-ignition temperature | : Not available. |
| Decomposition temperature | : >200°C (>392°F) |
| Vapor pressure | : <3 kPa (<22.5 mm Hg) [20°C] |
| Specific gravity | : Not available. |
| Water solubility | : Insoluble |
| Partition coefficient: n-octanol/water (log Kow) | : Not available. |
| Viscosity | : Dynamic: 45000 mPa·s (45000 cP) |
| Density | : 1.03 g/cm³ [25°C (77°F)] |
| Vapor density | : Not available. |
| Evaporation rate (butyl acetate = 1) | : Not available. |
| VOC | : Not available. |

10 . Stability and reactivity

- Chemical stability** : The product is stable.
Under normal conditions of storage and use, hazardous reactions will not occur.
- Hazardous polymerization** : Under normal conditions of storage and use, hazardous polymerization will not occur.
- Conditions to avoid** : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
- Materials to avoid** : strong acids, strong bases, strong oxidising agents
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11 . Toxicological information

Potential acute health effects

- Inhalation** : Irritating to respiratory system. May cause sensitization by inhalation.
- Ingestion** : Harmful if swallowed. May cause burns to mouth, throat and stomach.
- Skin** : Corrosive to the skin. Causes burns. May cause sensitization by skin contact.
- Eyes** : Irritating to eyes.

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
methacrylic acid	LD50 Dermal	Rat	500 to 1000 mg/kg	-
	LD50 Oral	Rat	1320 mg/kg	-
	LC50 Inhalation Dusts and mists	Rat - Male, Female	7.1 ml/l	4 hours
methyl methacrylate	LD50 Dermal	Rabbit - Male	>5000 mg/kg	-
	LD50 Oral	Rat	7872 mg/kg	-
	LC50 Inhalation Vapor	Rat	7093 ppm	4 hours

Sensitizer

Product/ingredient name	Route of exposure	Species	Result
methyl methacrylate	skin	Not known	Sensitizing
	Respiratory	Not known	Sensitizing

Carcinogenic class

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
methyl methacrylate	A4	3	-	-	-	-
ethyl acrylate	A2	2B	-	+	-	-

Potential chronic health effects

- Chronic effects** : Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
- Target organs** : No known significant effects or critical hazards.
- Carcinogenicity** : Contains material which may cause cancer, based on animal data. Risk of cancer depends on duration and level of exposure.
- Mutagenicity** : No known significant effects or critical hazards.
- Teratogenicity** : No known significant effects or critical hazards.
- Fertility effects** : No known significant effects or critical hazards.
- Developmental effects** : No known significant effects or critical hazards.

11 . Toxicological information

Medical conditions aggravated by over-exposure

Pre-existing respiratory and skin disorders may be aggravated by over-exposure to this product.

12 . Ecological information

Environmental effects : No known significant effects or critical hazards.

Aquatic ecotoxicity

Biodegradability

Other ecological information

Biological Oxygen Demand (BOD 5 DAY) : Not Determined

Chemical Oxygen Demand (COD) : Not Determined

Other adverse effects : No known significant effects or critical hazards.

PBT : Not applicable.

Other information

13 . Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

14 . Transport information

Proper shipping name





DOT : ADHESIVES

TDG : ADHESIVES

IMDG : ADHESIVES

IATA : ADHESIVES

14 . Transport information


Regulatory information	UN number	Classes	PG*	Label	Additional information
DOT Classification	UN1133	3	II		-
TDG Classification	UN1133	3	II		-
IMDG Class	UN1133	3	II		Emergency schedules (EmS) F-E, S-D
IATA-DGR Class	UN1133	3	II		Passenger and Cargo Aircraft Quantity limitation: 5 L Packaging instructions: 353 Cargo Aircraft Only Quantity limitation: 60 L Packaging instructions: 364

PG* : Packing group

15 . Regulatory information

U.S. Federal regulations

HCS Classification

- :  Flammable liquid
- Corrosive material
- Sensitizing material
- Carcinogen

U.S. Federal regulations

- : **United States inventory (TSCA 8b):** All components are listed or exempted.

TSCA 5(a)2 final significant new use rule (SNUR)

- : None.

TSCA 5(e) substance consent order

- : None.

TSCA 12(b) one-time export notification:

- : None.


TSCA 12(b) annual export notification

- : None.

SARA 302/304/311/312 extremely hazardous substances

- : **SARA 302/304/311/312 extremely hazardous substances:** No Ingredient Listed

SARA 311/312 hazard identification

- :  **SARA 311/312 MSDS distribution - chemical inventory - hazard identification:** Fire hazard, reactive, Immediate (acute) health hazard, Delayed (chronic) health hazard

Clean Air Act Section 111 - Volatile Organic Compounds (VOC)

- : Not available.

15 . Regulatory information

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs) : **Product name** methyl methacrylate **CAS number** 80-62-6 **Concentration** 30 - 60

Clean Air Act - Ozone Depleting Substances (ODS) : This product does not contain nor is it manufactured with ozone depleting substances.

SARA 313 No ingredients listed.

CERCLA: Hazardous substances.

Components	Concentration %	Section 304 CERCLA Hazardous Substance	CERCLA Reportable Quantity (Lbs)	Product Reportable Quantity (Lbs)
methyl methacrylate	56.47	Listed	1000	1771

STATE REGULATIONS:

PENNSYLVANIA - RTK: None

California Prop 65 :

WARNING: This product contains a chemical known to the State of California to cause cancer.

<u>Ingredient name</u>	<u>Cancer</u>	<u>Reproductive</u>	<u>No significant risk level</u>	<u>Maximum acceptable dosage level</u>
ethyl acrylate	Yes.	No.	No.	No.
tetrachloromethane	Yes.	No.	Yes.	No.
isopropylbenzene	Yes.	No.	No.	No.

Canada

WHMIS (Canada) : ☒ Class B-2: Flammable liquid
Class D-1B: Material causing immediate and serious toxic effects (Toxic).
Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).
Class E: Corrosive material


CEPA DSL : All components are listed or exempted.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

International lists

: ☒ **Australia inventory (AICS):** All components are listed or exempted.
China inventory (IECSC): All components are listed or exempted.
Japan inventory: All components are listed or exempted.
Korea inventory: All components are listed or exempted.
New Zealand Inventory of Chemicals (NZIoC): At least one component is not listed.
Philippines inventory (PICCS): All components are listed or exempted.

16 . Other information

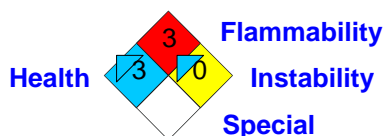
Label requirements :  LAMMABLE LIQUID AND VAPOR. CAUSES SKIN BURNS. CAUSES RESPIRATORY TRACT AND EYE IRRITATION. MAY CAUSE ALLERGIC RESPIRATORY AND SKIN REACTION. MAY BE HARMFUL IF SWALLOWED. POSSIBLE CANCER HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE CANCER, BASED ON ANIMAL DATA.

Hazardous Material Information System (U.S.A.) :

Health	*	2
Flammability		3
Physical hazards		1
Personal protection		

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.) :



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 Indicates information that has changed from previously issued version.

Notice to reader

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THE PRODUCT MAY PRESENT HAZARDS AND SHOULD BE USED WITH CAUTION. WHILE CERTAIN HAZARDS ARE DESCRIBED IN THIS PUBLICATION, NO GUARANTEE IS MADE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.

Hazards, toxicity and behaviour of the products may differ when used with other materials and are dependent upon the manufacturing circumstances or other processes. Such hazards, toxicity and behaviour should be determined by the user and made known to handlers, processors and end users.

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ARALDITE® 2021 A US

16 . Other information

MATERIAL FROM THIS DATA SHEET SHOULD BE DIRECTED TO HUNTSMAN, MANAGER, PRODUCT SAFETY AT THE ABOVE ADDRESS.