

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 GB RESIN

Version	Revision Date:	SDS Number:	Date of last issue: 12/10/2020
2.1	12/28/2023	400001015903	Date of first issue: 09/13/2017

Print Date 04/12/2025

SECTION 1. IDENTIFICATION

Product name : ARALDITE® 2011 GB RESIN

Manufacturer or supplier's details

Company name of supplier : Huntsman Advanced Materials Americas LLC
Address : P.O. Box 4980
The Woodlands,
TX 77387
United States of America (USA)
Telephone : Non-Emergency: (800) 257-5547
E-mail address : Global_Product_EHS_AdMat@huntsman.com
Emergency telephone number : Chemtrec: (800) 424-9300 or (703) 527-3887

Recommended use of the chemical and restrictions on use

Recommended use : Adhesives

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin irritation : Category 2
Eye irritation : Category 2A
Skin sensitisation : Category 1
Short-term (acute) aquatic hazard : Category 2
Long-term (chronic) aquatic hazard : Category 2

GHS label elements

Hazard pictograms : 

Signal word : Warning

Hazard statements : 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.

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 GB RESIN

Version	Revision Date:	SDS Number:	Date of last issue: 12/10/2020
2.1	12/28/2023	400001015903	Date of first issue: 09/13/2017

Print Date 04/12/2025

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

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	1675-54-3	70 - 90
Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol	9003-36-5	5 - 10
bisphenol A - epoxy resins, number average MW >700 - <1100	25068-38-6	1 - 5

The specific chemical identity and/or exact percentage (concentration) of composition may be withheld as a trade secret.

Both 25068-38-6 and 1675-54-3 can be used to describe the epoxy resin which is produced through the reaction of bisphenol A and epichlorohydrin

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 GB RESIN

Version	Revision Date:	SDS Number:	Date of last issue: 12/10/2020
2.1	12/28/2023	400001015903	Date of first issue: 09/13/2017

Print Date 04/12/2025

SECTION 4. FIRST AID MEASURES

- | | |
|---|---|
| General advice | : Move out of dangerous area.
Show this safety data sheet to the doctor in attendance.
Treat symptomatically.
Get medical attention if symptoms occur. |
| If inhaled | : If inhaled, remove to fresh air.
Get medical attention if symptoms occur. |
| In case of skin contact | : If skin irritation persists, call a physician.
If on skin, rinse well with water.
If on clothes, remove clothes. |
| In case of eye contact | : Immediately flush eye(s) with plenty of water.
Remove contact lenses.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist. |
| If swallowed | : Keep respiratory tract clear.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician. |
| Most important symptoms and effects, both acute and delayed | : Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye irritation. |
| Protection of first-aiders | : First Aid responders should pay attention to self-protection and use the recommended protective clothing
If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Avoid inhalation, ingestion and contact with skin and eyes.
No action shall be taken involving any personal risk or without suitable training.
It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. |
| Notes to physician | : Treat symptomatically. |

SECTION 5. FIREFIGHTING MEASURES

- | | |
|--------------------------------------|--|
| Suitable extinguishing media | : Water spray
Alcohol-resistant foam
Carbon dioxide (CO ₂)
Dry chemical |
| Unsuitable extinguishing media | : Exercise caution when using a high volume water jet as it may scatter and spread fire |
| Specific hazards during firefighting | : Do not allow run-off from fire fighting to enter drains or water courses. |

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 GB RESIN

Version	Revision Date:	SDS Number:	Date of last issue: 12/10/2020
2.1	12/28/2023	400001015903	Date of first issue: 09/13/2017

Print Date 04/12/2025

Hazardous combustion products	:	Carbon oxides Phenolics
Specific extinguishing methods	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Further information	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Special protective equipment for firefighters	:	Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Use personal protective equipment. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	:	Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods and materials for containment and cleaning up	:	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion	:	Normal measures for preventive fire protection.
Advice on safe handling	:	Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitisation of susceptible persons. Persons suffering from asthma, eczema or skin problems should avoid contact, including dermal contact, with this product. Do not breathe vapours/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Dispose of rinse water in accordance with local and national regulations.
Conditions for safe storage	:	Keep container tightly closed in a dry and well-ventilated

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 GB RESIN

Version	Revision Date:	SDS Number:	Date of last issue:
2.1	12/28/2023	400001015903	12/10/2020
			Date of first issue: 09/13/2017

Print Date 04/12/2025

place.

Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Keep in properly labelled containers.

Materials to avoid : For incompatible materials please refer to Section 10 of this SDS.

Recommended storage temperature : 36 - 104 °F / 2 - 40 °C

Further information on storage stability : Stable under normal conditions.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Personal protective equipment

Respiratory protection : General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

Hand protection

Material : butyl-rubber
Break through time : > 8 h

Material : Solvent-resistant gloves (butyl-rubber)
Material : Nitrile rubber
Break through time : 10 - 480 min

Material : Neoprene gloves

Remarks : 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.
The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection : Eye wash bottle with pure water
Tightly fitting safety goggles
Wear face-shield and protective suit for abnormal processing

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 GB RESIN

Version	Revision Date:	SDS Number:	Date of last issue: 12/10/2020
2.1	12/28/2023	400001015903	Date of first issue: 09/13/2017

Print Date 04/12/2025

problems.

Skin and body protection : Impervious clothing
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures : When using do not eat or drink.
When using do not smoke.
Wash hands before breaks and at the end of workday.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: paste
Colour	: transparent
Odour	: slight
Odour Threshold	: No data is available on the product itself.
pH	: ca. 6 (68 °F / 20 °C) Concentration: 500 g/l
Melting point/freezing point	: No data available
Boiling point	: > 392 °F / > 200 °C
Flash point	: 410 °F / 210 °C Method: Pensky-Martens closed cup 500 °F / 260 °C Method: Cleveland open cup
Evaporation rate	: No data is available on the product itself.
Flammability (solid, gas)	: No data is available on the product itself.
Flammability (liquids)	: No data is available on the product itself.
Upper explosion limit / Upper flammability limit	: No data is available on the product itself.
Lower explosion limit / Lower flammability limit	: No data is available on the product itself.
Vapour pressure	: < 0.001 hPa (68 °F / 20 °C)
Relative vapour density	: No data is available on the product itself.
Relative density	: No data is available on the product itself.
Density	: 1.15 g/cm ³ (77 °F / 25 °C)

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 GB RESIN

Version	Revision Date:	SDS Number:	Date of last issue: 12/10/2020
2.1	12/28/2023	400001015903	Date of first issue: 09/13/2017

Print Date 04/12/2025

Solubility(ies)	
Water solubility	: practically insoluble (68 °F / 20 °C)
Solubility in other solvents	: No data is available on the product itself.
Partition coefficient: n-octanol/water	: No data is available on the product itself.
Auto-ignition temperature	: No data is available on the product itself.
Decomposition temperature	: > 392 °F / > 200 °C
Self-Accelerating decomposition temperature (SADT)	: No data is available on the product itself.
Viscosity	
Viscosity, dynamic	: 30,000 - 50,000 mPa.s (77 °F / 25 °C)
Explosive properties	: No data is available on the product itself.
Oxidizing properties	: No data is available on the product itself.
Molecular weight	: No data available
Particle size	: No data is available on the product itself.

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: No dangerous reaction known under conditions of normal use.
Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: No hazards to be specially mentioned.
Conditions to avoid	: None known.
Incompatible materials	: Strong acids Strong bases Strong oxidizing agents

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Not classified due to lack of data.

Components:

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Acute oral toxicity	: LD50 (Rat, female): > 2,000 mg/kg Method: OECD Test Guideline 420
---------------------	--

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 GB RESIN

Version	Revision Date:	SDS Number:	Date of last issue:
2.1	12/28/2023	400001015903	12/10/2020
			Date of first issue: 09/13/2017

Print Date 04/12/2025

Assessment: The substance or mixture has no acute oral toxicity

Remarks: No mortality observed at this dose.

Acute dermal toxicity : LD50 (Rat, male and female): > 2,000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol:

Acute oral toxicity : LD50 (Rat, male and female): > 5,000 mg/kg
Method: OECD Test Guideline 401

Acute dermal toxicity : LD50 (Rat, male and female): > 2,000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

bisphenol A - epoxy resins, number average MW >700 - <1100:

Acute oral toxicity : LD50 (Rat, female): > 2,000 mg/kg
Method: OECD Test Guideline 420
Assessment: The substance or mixture has no acute oral toxicity

Acute dermal toxicity : LD50 (Rat, male and female): > 2,000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

Skin corrosion/irritation

Causes skin irritation.

Components:

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Species : Rabbit
Exposure time : 4 h
Assessment : Irritating to skin.
Method : OECD Test Guideline 404
Result : Irritating to skin.

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol:

Species : Rabbit
Method : OECD Test Guideline 404
Result : Irritating to skin.

bisphenol A - epoxy resins, number average MW >700 - <1100:

Method : OECD Test Guideline 404
Result : Skin irritation

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 GB RESIN

Version	Revision Date:	SDS Number:	Date of last issue: 12/10/2020
2.1	12/28/2023	400001015903	Date of first issue: 09/13/2017

Print Date 04/12/2025

Serious eye damage/eye irritation

Causes serious eye irritation.

Components:

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Species	: Rabbit
Result	: Irritating to eyes.
Assessment	: Irritating to eyes.
Method	: OECD Test Guideline 405

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol:

Species	: Rabbit
Result	: No eye irritation
Method	: OECD Test Guideline 405

bisphenol A - epoxy resins, number average MW >700 - <1100:

Species	: Rabbit
Result	: Eye irritation
Method	: OECD Test Guideline 405

Respiratory or skin sensitisation

Skin sensitisation

May cause an allergic skin reaction.

Respiratory sensitisation

Not classified due to lack of data.

Components:

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Test Type	: Local lymph node assay (LLNA)
Exposure routes	: Skin
Species	: Mouse
Method	: OECD Test Guideline 429
Result	: The product is a skin sensitiser, sub-category 1B.

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol:

Exposure routes	: Skin
Species	: Mouse
Method	: OECD Test Guideline 429
Result	: May cause sensitisation by skin contact.

bisphenol A - epoxy resins, number average MW >700 - <1100:

Exposure routes	: Skin
Species	: Guinea pig
Method	: OECD Test Guideline 406
Result	: May cause sensitisation by skin contact.

Germ cell mutagenicity

Not classified due to lack of data.

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 GB RESIN

Version	Revision Date:	SDS Number:	Date of last issue: 12/10/2020
2.1	12/28/2023	400001015903	Date of first issue: 09/13/2017

Print Date 04/12/2025

Components:

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Genotoxicity in vitro	:	Test Type: In vitro mammalian cell gene mutation test Test system: mouse lymphoma cells Metabolic activation: without metabolic activation Result: positive
		Test Type: reverse mutation assay Test system: Salmonella typhimurium Metabolic activation: with and without metabolic activation Method: Mutagenicity (Salmonella typhimurium - reverse mutation assay) Result: negative
Genotoxicity in vivo	:	Test Type: in vivo assay Species: Mouse (male) Cell type: Germ Application Route: Oral Dose: 3333, 10000 mg/kg Result: negative
		Test Type: gene mutation test Species: Rat (male) Cell type: Somatic Application Route: Oral Dose: 50,250,500,1000 mg/kg bw/day Method: OECD Test Guideline 488 Result: negative

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol:

Genotoxicity in vitro	:	Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471 Result: positive
		Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 473 Result: positive
		Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 476 Result: positive
Genotoxicity in vivo	:	Cell type: Somatic Application Route: Oral Exposure time: 48 h Dose: 2000 mg/kg Method: OECD Test Guideline 474 Result: negative
		Cell type: Somatic Application Route: Oral Dose: 2000 mg/kg Method: OECD Test Guideline 486

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 GB RESIN

Version	Revision Date:	SDS Number:	Date of last issue: 12/10/2020
2.1	12/28/2023	400001015903	Date of first issue: 09/13/2017

Print Date 04/12/2025

Result: negative

bisphenol A - epoxy resins, number average MW >700 - <1100:

Genotoxicity in vitro : Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: Positive results were obtained in some in vitro tests.

Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Genotoxicity in vivo : Cell type: Germ
Application Route: Oral
Method: OECD Test Guideline 478
Result: negative

Cell type: Somatic
Application Route: Oral
Dose: 0 - 5000 mg/kg
Method: OPPTS 870.5395
Result: negative

Carcinogenicity

Not classified due to lack of data.

Components:

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Species : Rat, male
Application Route : Oral
Exposure time : 24 month(s)
Dose : 0, 2, 15, or 100 mg/kg bw/day
Frequency of Treatment : 7 days/week
NOAEL : 15 mg/kg bw/day
Method : OECD Test Guideline 453
Result : negative
Target Organs : Digestive organs

Species : Mouse, male
Application Route : Dermal
Exposure time : 24 month(s)
Dose : 0, 0.1, 10, 100 mg/kg bw/day
Frequency of Treatment : 3 days/week
NOEL : 0.1 mg/kg body weight
Method : OECD Test Guideline 453
Result : negative
Target Organs : Digestive organs

Species : Rat, female
Application Route : Dermal
Exposure time : 24 month(s)
Dose : 0.1, 100, 1000 mg/kg bw/day
Frequency of Treatment : 5 days/week
NOEL : 100 mg/kg body weight

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 GB RESIN

Version	Revision Date:	SDS Number:	Date of last issue: 12/10/2020
2.1	12/28/2023	400001015903	Date of first issue: 09/13/2017

Print Date 04/12/2025

Method	:	OECD Test Guideline 453
Result	:	negative
Species	:	Rat, female
Application Route	:	Oral
Exposure time	:	24 month(s)
Dose	:	0, 2, 15, or 100 mg/kg bw/day
Frequency of Treatment	:	7 days/week
NOAEL	:	100 mg/kg bw/day
Method	:	OECD Test Guideline 453
Result	:	negative
Target Organs	:	Digestive organs

Species	:	Rat, females
Application Route	:	Oral
Exposure time	:	24 month(s)
Dose	:	0, 2, 15, or 100 mg/kg bw/day
Frequency of Treatment	:	7 days/week
NOEL	:	2 mg/kg bw/day
Method	:	OECD Test Guideline 453
Result	:	negative
Target Organs	:	Digestive organs

bisphenol A - epoxy resins, number average MW >700 - <1100:

Species	:	Rat, male and female
Application Route	:	Oral
Exposure time	:	24 month(s)
Dose	:	15 mg/kg
Frequency of Treatment	:	7 daily
Method	:	OECD Test Guideline 453
Result	:	negative

IARC No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

Not classified due to lack of data.

Components:

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Effects on fertility	:	Test Type: Two-generation study
	:	Species: Rat, male and female
	:	Application Route: Oral
	:	Dose: 0, 50, 180, 540 or 750 milligram per kilogram
	:	Duration of Single Treatment: 238 d
	:	Frequency of Treatment: 1 daily
	:	General Toxicity - Parent: NOEL: 540 mg/kg body weight

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 GB RESIN

Version	Revision Date:	SDS Number:	Date of last issue: 12/10/2020
2.1	12/28/2023	400001015903	Date of first issue: 09/13/2017

Print Date 04/12/2025

General Toxicity F1: NOEL: 750 mg/kg body weight

Symptoms: No adverse effects

Method: OECD Test Guideline 416

Result: No effects on fertility and early embryonic development were detected.

Effects on foetal development

: Species: Rabbit, female
Application Route: Dermal
Dose: 0, 30, 100 or 300 milligram per kilogram
Duration of Single Treatment: 28 d
Frequency of Treatment: 1 daily
General Toxicity Maternal: NOAEL: 30 mg/kg body weight
Developmental Toxicity: NOAEL: 300 mg/kg body weight
Method: Other guidelines
Result: No teratogenic effects

Test Type: Pre-natal

Species: Rabbit, female

Application Route: Oral

Dose: 0, 20, 60 or 180 milligram per kilogram

Duration of Single Treatment: 13 d

Frequency of Treatment: 1 daily

General Toxicity Maternal: NOAEL: 60 mg/kg body weight

Developmental Toxicity: NOAEL: 180 mg/kg body weight

Method: OECD Test Guideline 414

Result: No teratogenic effects

Test Type: Pre-natal

Species: Rat, female

Application Route: Oral

Dose: 0, 60, 180 and 540 milligram per kilogram

Duration of Single Treatment: 10 d

Frequency of Treatment: 1 daily

General Toxicity Maternal: NOAEL: 180 mg/kg body weight

Developmental Toxicity: NOAEL: > 540 mg/kg body weight

Method: OECD Test Guideline 414

Result: No teratogenic effects

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol:

Effects on fertility : Species: Rat, male and female
Application Route: Oral
Method: OECD Test Guideline 416
Result: No effects on fertility and early embryonic development were detected.

Effects on foetal development

: Species: Rabbit, female
Application Route: Dermal
General Toxicity Maternal: NOAEL: 30 mg/kg body weight
Result: No teratogenic effects

bisphenol A - epoxy resins, number average MW >700 - <1100:

Effects on fertility : Species: Rat, male and female
Application Route: Oral

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 GB RESIN

Version	Revision Date:	SDS Number:	Date of last issue: 12/10/2020
2.1	12/28/2023	400001015903	Date of first issue: 09/13/2017

Print Date 04/12/2025

General Toxicity - Parent: NOEL: 750 mg/kg body weight
General Toxicity F1: NOEL: 750 mg/kg body weight
Method: OECD Test Guideline 416
Result: No effects on fertility and early embryonic development were detected.

Effects on foetal development

: Species: Rabbit, female
Application Route: Dermal
General Toxicity Maternal: NOAEL: 30 mg/kg body weight
Method: Other guidelines
Result: No teratogenic effects

Species: Rabbit, female
Application Route: Oral
General Toxicity Maternal: NOAEL: 60 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

Species: Rat, female
Application Route: Oral
General Toxicity Maternal: NOAEL: 180 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

STOT - single exposure

Not classified due to lack of data.

STOT - repeated exposure

Not classified due to lack of data.

Repeated dose toxicity

Components:

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Species	: Rat, male and female
NOAEL	: 50 mg/kg
Application Route	: oral (gavage)
Exposure time	: 14 Weeks
Number of exposures	: 7 d
Dose	: 0, 50, 250, 1000 mg/kg/day
Method	: OECD Test Guideline 408

Species	: Rat, male and female
NOAEL	: >= 10 mg/kg
Application Route	: Skin contact
Exposure time	: 13 Weeks
Number of exposures	: 5 d
Dose	: 0, 10, 100, 1000 mg/kg/day
Method	: OECD Test Guideline 411

Species	: Mouse, male
NOAEL	: 100 mg/kg
Application Route	: Skin contact
Exposure time	: 13 Weeks

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 GB RESIN

Version	Revision Date:	SDS Number:	Date of last issue: 12/10/2020
2.1	12/28/2023	400001015903	Date of first issue: 09/13/2017

Print Date 04/12/2025

Number of exposures	: 3 d
Dose	: 0, 1, 10, 100 mg/kg/day
Method	: OECD Test Guideline 411

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol:

Species	: Rat, male and female
NOAEL	: 250 mg/kg
Application Route	: Ingestion
Exposure time	: 13 Weeks
Number of exposures	: 7 d
Method	: Subchronic toxicity

bisphenol A - epoxy resins, number average MW >700 - <1100:

Species	: Rat, male and female
NOAEL	: 50 mg/kg
Application Route	: Ingestion
Exposure time	: 14 Weeks
Number of exposures	: 7 d
Method	: Subchronic toxicity

Species	: Rat, male and female
NOEL	: 10 mg/kg
Application Route	: Skin contact
Exposure time	: 13 Weeks
Number of exposures	: 5 d
Method	: Subchronic toxicity

Aspiration toxicity

Not classified due to lack of data.

Experience with human exposure

No data available

Toxicology, Metabolism, Distribution

No data available

Neurological effects

No data available

Further information

No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

2,2'-(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Toxicity to fish	: LC50 (Oncorhynchus mykiss (rainbow trout)): 2 mg/l
	Exposure time: 96 h
	Method: OECD Test Guideline 203

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 GB RESIN

Version	Revision Date:	SDS Number:	Date of last issue: 12/10/2020
2.1	12/28/2023	400001015903	Date of first issue: 09/13/2017

Print Date 04/12/2025

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 1.8 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EC50: 11 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: EPA-660/3-75-009

NOEC: 4.2 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: EPA-660/3-75-009

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.3 mg/l
Exposure time: 21 d
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 211

Toxicity to microorganisms : IC50 (activated sludge): > 100 mg/l
Exposure time: 3 h
Test Type: static test
Test substance: Fresh water

Ecotoxicology Assessment

Chronic aquatic toxicity : Toxic to aquatic life with long lasting effects.

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol:

Toxicity to fish : LC50 (Fish): 2.54 mg/l
Exposure time: 96 h
Method: Calculation method

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 2.55 mg/l
Exposure time: 48 h
Method: Calculation method

Toxicity to algae/aquatic plants : EC50 (Selenastrum capricornutum (green algae)): 1.8 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.3 mg/l
Exposure time: 21 d
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 211
Remarks: Information given is based on data obtained from

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 GB RESIN

Version	Revision Date:	SDS Number:	Date of last issue: 12/10/2020
2.1	12/28/2023	400001015903	Date of first issue: 09/13/2017

Print Date 04/12/2025

similar substances.

Toxicity to microorganisms : IC50 (activated sludge): > 100 mg/l
Exposure time: 3 h
Test Type: static test
Test substance: Fresh water

bisphenol A - epoxy resins, number average MW >700 - <1100:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 100 mg/l
Exposure time: 96 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 100 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EgC50 (Selenastrum capricornutum (green algae)): > 100 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

Persistence and degradability

Components:

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Biodegradability : aerobic
Inoculum: activated sludge, non-adapted
Concentration: 20 mg/l
Result: Not readily biodegradable.
Biodegradation: 5 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

Stability in water : Degradation half life (DT50): 4.83 d (25 °C) pH: 4
Method: OECD Test Guideline 111
Remarks: Fresh water

Degradation half life (DT50): 7.1 d (25 °C) pH: 9
Method: OECD Test Guideline 111
Remarks: Fresh water

Degradation half life (DT50): 3.58 d (25 °C) pH: 7
Method: OECD Test Guideline 111
Remarks: Fresh water

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol:

Biodegradability : Inoculum: activated sludge
Concentration: 3 mg/l

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 GB RESIN

Version	Revision Date:	SDS Number:	Date of last issue:
2.1	12/28/2023	400001015903	12/10/2020
			Date of first issue: 09/13/2017

Print Date 04/12/2025

Result: Not biodegradable
Biodegradation: ca. 0 %
Exposure time: 28 d
Method: Directive 67/548/EEC Annex V, C.4.E.

bisphenol A - epoxy resins, number average MW >700 - <1100:

Biodegradability : aerobic
Inoculum: Sewage (STP effluent)
Concentration: 20 mg/l
Result: Not biodegradable
Biodegradation: 5 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

Stability in water : Degradation half life (DT50): 4.83 d (25 °C) pH: 4
Method: OECD Test Guideline 111
Remarks: Fresh water

Degradation half life (DT50): 7.1 d (25 °C) pH: 9
Method: OECD Test Guideline 111
Remarks: Fresh water

Degradation half life (DT50): 3.58 d (25 °C) pH: 7
Method: OECD Test Guideline 111
Remarks: Fresh water

Bioaccumulative potential

Components:

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Bioaccumulation : Bioconcentration factor (BCF): 31
Remarks: Does not bioaccumulate.

Partition coefficient: n-octanol/water : log Pow: 3.242 (77 °F / 25 °C)
pH: 7.1
Method: OECD Test Guideline 117

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol:

Bioaccumulation : Species: Fish
Bioconcentration factor (BCF): 150
Remarks: Does not bioaccumulate.

Partition coefficient: n-octanol/water : log Pow: 2.7 - 3.6
Method: OECD Test Guideline 117

bisphenol A - epoxy resins, number average MW >700 - <1100:

Bioaccumulation : Species: Fish
Bioconcentration factor (BCF): 31
Remarks: Does not bioaccumulate.

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 GB RESIN

Version	Revision Date:	SDS Number:	Date of last issue: 12/10/2020
2.1	12/28/2023	400001015903	Date of first issue: 09/13/2017

Print Date 04/12/2025

Mobility in soil

Components:

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Distribution among : Koc: 445
environmental compartments

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol:

Distribution among : Koc: 4460
environmental compartments Method: OECD Test Guideline 121

bisphenol A - epoxy resins, number average MW >700 - <1100:

Distribution among : Koc: 445
environmental compartments

Other adverse effects

Product:

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82
Protection of Stratospheric Ozone - CAA Section 602 Class I
Substances
Remarks: This product neither contains, nor was
manufactured with a Class I or Class II ODS as defined by the
U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A +
B).

Additional ecological : An environmental hazard cannot be excluded in the event of
information unprofessional handling or disposal.
Toxic to aquatic life with long lasting effects.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Dispose of contents and container in accordance with all local,
regional, national and international regulations.
Do not dispose of waste into sewer.
Do not contaminate ponds, waterways or ditches with
chemical or used container.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number : UN 3082
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 GB RESIN

Version	Revision Date:	SDS Number:	Date of last issue: 12/10/2020
2.1	12/28/2023	400001015903	Date of first issue: 09/13/2017

Print Date 04/12/2025

N.O.S.
(BISPHENOL A EPOXY RESIN, BISPHENOL F EPOXY RESIN)

Class	:	9
Packing group	:	III
Labels	:	9
Environmentally hazardous	:	yes

IATA-DGR

UN/ID No.	:	UN 3082
Proper shipping name	:	Environmentally hazardous substance, liquid, n.o.s. (BISPHENOL A EPOXY RESIN, BISPHENOL F EPOXY RESIN)
Class	:	9
Packing group	:	III
Labels	:	Miscellaneous
Packing instruction (cargo aircraft)	:	964
Packing instruction (passenger aircraft)	:	964
Environmentally hazardous	:	yes

IMDG-Code

UN number	:	UN 3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (BISPHENOL A EPOXY RESIN, BISPHENOL F EPOXY RESIN)
Class	:	9
Packing group	:	III
Labels	:	9
EmS Code	:	F-A, S-F
Marine pollutant	:	yes

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

National Regulations

49 CFR

UN/ID/NA number	:	UN 3082
Proper shipping name	:	Environmentally hazardous substance, liquid, n.o.s. (BISPHENOL A EPOXY RESIN, BISPHENOL F EPOXY RESIN)
Class	:	9
Packing group	:	III
Labels	:	CLASS 9
ERG Code	:	171
Marine pollutant	:	yes
Remarks	:	Shipment by ground under DOT is non-regulated; however it may be shipped per the applicable hazard classification to facilitate multi-modal transport involving ICAO (IATA) or IMO.

Special precautions for user

Remarks	:	49CFR: no dangerous good in non-bulk packaging
---------	---	--

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 GB RESIN

Version	Revision Date:	SDS Number:	Date of last issue: 12/10/2020
2.1	12/28/2023	400001015903	Date of first issue: 09/13/2017

Print Date 04/12/2025

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 311/312 Hazards : Respiratory or skin sensitisation
Skin corrosion or irritation
Serious eye damage or eye irritation

SARA 313 : 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.

This product does not contain any hazardous air pollutants (HAP) $\geq 0.1\%$, as defined by the U.S. Clean Air Act Section 112 (40 CFR 61)

California Prop. 65

WARNING: This product can expose you to chemicals including 4,4'-isopropylidenediphenol, 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.

The components of this product are reported in the following inventories:

DSL	: All components of this product are on the Canadian DSL
AIIC	: On the inventory, or in compliance with the inventory
ENCS	: On the inventory, or in compliance with the inventory
KECI	: On the inventory, or in compliance with the inventory
PICCS	: On the inventory, or in compliance with the inventory
IECSC	: On the inventory, or in compliance with the inventory
TCSI	: On the inventory, or in compliance with the inventory
TSCA	: All substances listed as active on the TSCA inventory

Inventories

AIIC (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TECI (Thailand), TSCA (USA)

TSCA - 5(a) Significant New Use Rule List of Chemicals

No substances are subject to a Significant New Use Rule.

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 GB RESIN

Version	Revision Date:	SDS Number:	Date of last issue: 12/10/2020
2.1	12/28/2023	400001015903	Date of first issue: 09/13/2017

Print Date 04/12/2025

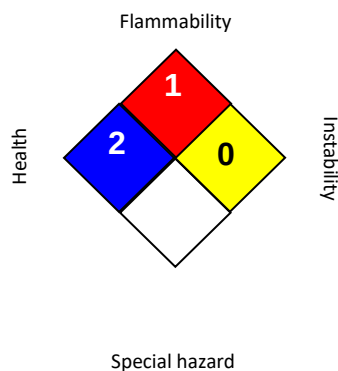
US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)

No substances are subject to TSCA 12(b) export notification requirements.

SECTION 16. OTHER INFORMATION

Further information

NFPA 704:



HMIS® IV:

HEALTH		2
FLAMMABILITY		1
PHYSICAL HAZARD		0

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard

Revision Date : 12/28/2023

The information and recommendations in this publication are to the best of our knowledge, information and belief accurate at the date of publication, NOTHING HEREIN IS TO BE CONSTRUED AS A WARRANTY, EXPRESS OR OTHERWISE.

IN ALL CASES, IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE THE APPLICABILITY OF SUCH INFORMATION AND RECOMMENDATIONS AND THE SUITABILITY OF ANY PRODUCT FOR ITS OWN PARTICULAR PURPOSE.

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.

The trademarks above are the property of Huntsman Corporation or an affiliate thereof.

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



Enriching lives through innovation

ARALDITE® 2011 GB RESIN

Version	Revision Date:	SDS Number:	Date of last issue: 12/10/2020
2.1	12/28/2023	400001015903	Date of first issue: 09/13/2017

Print Date 04/12/2025

NO PERSON OR ORGANIZATION EXCEPT A DULY AUTHORIZED HUNTSMAN EMPLOYEE IS AUTHORIZED TO PROVIDE OR MAKE AVAILABLE DATA SHEETS FOR HUNTSMAN PRODUCTS. DATA SHEETS FROM UNAUTHORIZED SOURCES MAY CONTAIN INFORMATION THAT IS NO LONGER CURRENT OR ACCURATE.

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 HARDENER US

Version	Revision Date:	SDS Number:	Date of last issue: 08/17/2022
1.5	03/09/2026	400001010612	Date of first issue: 08/16/2016

Print Date 06/30/2026

SECTION 1. IDENTIFICATION

Product name : ARALDITE® 2011 HARDENER US

Manufacturer or supplier's details

Company name of supplier : Huntsman Advanced Materials Americas LLC
Address : P.O. Box 4980
The Woodlands,
TX 77387
United States of America (USA)
Telephone : Non-Emergency: (800) 257-5547
E-mail address : Global_Product_EHS_AdMat@huntsman.com
Emergency telephone : Chemtrec: (800) 424-9300 or (703) 527-3887

Recommended use of the chemical and restrictions on use

Recommended use : Hardener
Restrictions on use : For industrial use only.

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Hazards for the product as supplied

Skin corrosion : Sub-category 1C
Serious eye damage : Category 1
Skin sensitisation : Category 1
Short-term (acute) aquatic hazard : Category 3

Other hazards

None known.

GHS label elements

Hazard pictograms :



Signal Word : Danger

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 HARDENER US

Version 1.5 Revision Date: 03/09/2026 SDS Number: 400001010612 Date of last issue: 08/17/2022
Date of first issue: 08/16/2016

Print Date 06/30/2026

Hazard Statements : H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H402 Harmful to aquatic life.

Supplemental Hazard Statements : Corrosive to the respiratory tract.

Precautionary Statements : **Prevention:**
P261 Avoid breathing mist or vapors.
P264 Wash skin thoroughly after handling.
P272 Contaminated work clothing must not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves, protective clothing, eye protection and face protection.
Response:
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
P305 + P351 + P338 + P310 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.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P362 + P364 Take off contaminated clothing and wash it before reuse.
Storage:
P405 Store locked up.
Disposal:
P501 Dispose of contents/container to an approved facility in accordance with local, regional, national and international regulations.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture
Chemical nature : Hardener

Hazardous ingredients

Chemical name	CAS-No.	Concentration (% w/w)
N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine	10563-29-8	5 - 10
Triethylenetetramine	112-24-3	1 - 5

The specific chemical identity and/or exact percentage (concentration) of composition may be withheld as a trade secret.

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 HARDENER US

Version
1.5

Revision Date:
03/09/2026

SDS Number:
400001010612

Date of last issue: 08/17/2022
Date of first issue: 08/16/2016

Print Date 06/30/2026

SECTION 4. FIRST AID MEASURES

- | | | |
|---|---|---|
| General advice | : | Move out of dangerous area.
Consult a physician.
Show this material safety data sheet to the doctor in attendance.
Treat symptomatically.
Get medical attention if symptoms occur. |
| If inhaled | : | If inhaled, remove to fresh air.
Get medical attention if symptoms occur. |
| In case of skin contact | : | Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.
If on skin, rinse well with water.
If on clothes, remove clothes. |
| In case of eye contact | : | Small amounts splashed into eyes can cause irreversible tissue damage and blindness.
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Continue rinsing eyes during transport to hospital.
Remove contact lenses.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist. |
| If swallowed | : | Keep respiratory tract clear.
Do NOT induce vomiting.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.
Take victim immediately to hospital. |
| Most important symptoms and effects, both acute and delayed | : | May cause an allergic skin reaction.
Causes serious eye damage.
Causes severe burns.
Corrosive to the respiratory tract. |
| Protection of first-aiders | : | First Aid responders should pay attention to self-protection and use the recommended protective clothing
If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Avoid inhalation, ingestion and contact with skin and eyes.
No action shall be taken involving any personal risk or without suitable training.
It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. |
| Notes to physician | : | Treat symptomatically. |

SECTION 5. FIRE-FIGHTING MEASURES

- | | | |
|------------------------------|---|---|
| Suitable extinguishing media | : | Water spray
Alcohol-resistant foam
Carbon dioxide (CO2)
Dry chemical |
|------------------------------|---|---|

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 HARDENER US

Version	Revision Date:	SDS Number:	Date of last issue:
1.5	03/09/2026	400001010612	08/17/2022
			Date of first issue: 08/16/2016

Print Date 06/30/2026

- | | | |
|--|---|---|
| Unsuitable extinguishing media | : | Exercise caution when using a high volume water jet as it may scatter and spread fire |
| Specific hazards during firefighting | : | Do not allow run-off from fire fighting to enter drains or water courses. |
| Hazardous combustion products | : | No hazardous combustion products are known |
| Specific extinguishing methods | : | Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. |
| Further information | : | Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. |
| Special protective equipment for fire-fighters | : | Wear self-contained breathing apparatus for firefighting if necessary. |

SECTION 6. ACCIDENTAL RELEASE MEASURES

- | | | |
|---|---|---|
| Personal precautions, protective equipment and emergency procedures | : | Use personal protective equipment.
Refer to protective measures listed in sections 7 and 8. |
| Environmental precautions | : | Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities. |
| Methods and materials for containment and cleaning up | : | Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Keep in suitable, closed containers for disposal. |

SECTION 7. HANDLING AND STORAGE

- | | | |
|---|---|---|
| Advice on protection against fire and explosion | : | Normal measures for preventive fire protection. |
| Advice on safe handling | : | Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitization of susceptible persons.
Persons suffering from asthma, eczema or skin problems should avoid contact, including dermal contact, with this product.
Do not breathe vapors/dust.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes. |

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 HARDENER US

Version	Revision Date:	SDS Number:	Date of last issue:
1.5	03/09/2026	400001010612	08/17/2022
			Date of first issue: 08/16/2016

Print Date 06/30/2026

For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
To avoid spills during handling keep bottle on a metal tray.
Dispose of rinse water in accordance with local and national regulations.

Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Observe label precautions.
Keep in properly labeled containers.

Materials to avoid : For incompatible materials please refer to Section 10 of this SDS.

Recommended storage temperature : 36 - 104 °F / 2 - 40 °C

Further information on storage stability : Stable under normal conditions.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Contains no substances with occupational exposure limit values.

Personal protective equipment

Respiratory protection : General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

Hand protection

Material : butyl-rubber

Break through time : > 8 h

Material : Nitrile rubber

Break through time : 10 - 480 min

Material : Ethyl Vinyl Alcohol Laminate (EVAL)

Break through time : > 8 h

Remarks : Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).

Eye protection : Eye wash bottle with pure water
Tightly fitting safety goggles

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 HARDENER US

Version	Revision Date:	SDS Number:	Date of last issue: 08/17/2022
1.5	03/09/2026	400001010612	Date of first issue: 08/16/2016

Print Date 06/30/2026

Skin and body protection	: Wear face-shield and protective suit for abnormal processing problems.
	: Impervious clothing
	: Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Hygiene measures	: When using do not eat or drink.
	: When using do not smoke.
	: Wash hands before breaks and at the end of workday.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: liquid
Color	: light yellow
Odor	: slight
Odor Threshold	: No data is available on the product itself.
pH	: substance/mixture is non-soluble (in water)
Melting point/freezing point	: No data is available on the product itself.
Boiling point	: > 392 °F / > 200 °C
Flash point	: 230 °F / 110 °C Method: Pensky-Martens closed cup
Evaporation rate	: No data is available on the product itself.
Flammability (solid, gas)	: No data is available on the product itself.
Flammability (liquids)	: No data is available on the product itself.
Upper explosion limit / Upper flammability limit	: No data is available on the product itself.
Lower explosion limit / Lower flammability limit	: No data is available on the product itself.
Vapor pressure	: 0.04 hPa (68 °F / 20 °C)
Relative vapor density	: No data is available on the product itself.
Relative density	: 0.95 (77 °F / 25 °C)
Density	: 0.95 g/cm3 (77 °F / 25 °C)
Solubility(ies)	
Water solubility	: practically insoluble (68 °F / 20 °C)
Solubility in other solvents	: No data is available on the product itself.
Partition coefficient: n-octanol/water	: No data is available on the product itself.
Autoignition temperature	: No data is available on the product itself.

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 HARDENER US

Version	Revision Date:	SDS Number:	Date of last issue: 08/17/2022
1.5	03/09/2026	400001010612	Date of first issue: 08/16/2016

Print Date 06/30/2026

Decomposition temperature : > 392 °F / > 200 °C

Self-Accelerating decomposition temperature (SADT) : No data is available on the product itself.

Viscosity

Viscosity, dynamic : 20,000 - 35,000 mPa.s (77 °F / 25 °C)

Explosive properties : No data is available on the product itself.

Oxidizing properties : No data is available on the product itself.

Particle size : No data is available on the product itself.

SECTION 10. STABILITY AND REACTIVITY

Reactivity : No dangerous reaction known under conditions of normal use.

Chemical stability : Stable under normal conditions.

Possibility of hazardous reactions : No hazards to be specially mentioned.

Conditions to avoid : None known.

Incompatible materials : None known.

Hazardous decomposition products : No hazardous decomposition products are known.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Not classified due to lack of data.

Product:

Acute oral toxicity : Acute toxicity estimate: > 5,000 mg/kg
Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate: > 5,000 mg/kg
Method: Calculation method

Components:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Acute oral toxicity : LD50 (Rat, male and female): 1,669 mg/kg
Method: OECD Test Guideline 401
GLP: no
Assessment: The component/mixture is moderately toxic after single ingestion.

Triethylenetetramine:

Acute oral toxicity : LD50 (Rat, male and female): 1,716.2 mg/kg
Method: OECD Test Guideline 401

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 HARDENER US

Version	Revision Date:	SDS Number:	Date of last issue: 08/17/2022
1.5	03/09/2026	400001010612	Date of first issue: 08/16/2016

Print Date 06/30/2026

Assessment: The component/mixture is moderately toxic after single ingestion.

Acute inhalation toxicity : Assessment: Corrosive to the respiratory tract.

Acute dermal toxicity : LD50 (Rabbit, male and female): 1,465.4 mg/kg
Method: OECD Test Guideline 402
Assessment: The component/mixture is moderately toxic after single contact with skin.

Skin corrosion/irritation

Causes severe burns.

Product:

Result : Corrosive after 1 to 4 hours of exposure

Components:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Species : Rabbit
Assessment : Causes severe burns.
Method : OECD Test Guideline 404
Result : Extremely corrosive and destructive to tissue.
GLP : yes

Triethylenetetramine:

Species : reconstructed human epidermis (RhE)
Assessment : Causes burns.
Method : OECD Test Guideline 435
Result : Corrosive after 3 minutes to 1 hour of exposure

Species : Rabbit
Assessment : Causes burns.
Method : OECD Test Guideline 404
Result : Corrosive after 3 minutes to 1 hour of exposure

Serious eye damage/eye irritation

Causes serious eye damage.

Components:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Result : Risk of serious damage to eyes.
Assessment : Risk of serious damage to eyes.
GLP : no

Triethylenetetramine:

Species : Rabbit
Result : Irreversible effects on the eye
Assessment : Risk of serious damage to eyes.
Method : OECD Test Guideline 405

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 HARDENER US

Version	Revision Date:	SDS Number:	Date of last issue: 08/17/2022
1.5	03/09/2026	400001010612	Date of first issue: 08/16/2016

Print Date 06/30/2026

Respiratory or skin sensitisation

Skin sensitisation

May cause an allergic skin reaction.

Respiratory sensitisation

Not classified due to lack of data.

Components:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Test Type	:	Maximisation Test
Exposure routes	:	Skin
Species	:	Guinea pig
Assessment	:	Probability or evidence of low to moderate skin sensitisation rate in humans
Method	:	OECD Test Guideline 406
Result	:	Probability or evidence of low to moderate skin sensitisation rate in humans
GLP	:	yes

Triethylenetetramine:

Exposure routes	:	Skin
Species	:	Guinea pig
Assessment	:	Probability or evidence of skin sensitisation in humans
Method	:	OECD Test Guideline 406
Result	:	Probability or evidence of skin sensitisation in humans

Germ cell mutagenicity

Not classified due to lack of data.

Components:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Genotoxicity in vitro	:	Test Type: Chromosome aberration test in vitro Test system: Human lymphocytes Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 487 Result: negative GLP: yes
	:	Test Type: reverse mutation assay Test system: Salmonella typhimurium Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471 Result: negative
	:	Test Type: In vitro mammalian cell gene mutation test Test system: mouse lymphoma cells Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 476 Result: negative GLP: yes
	:	Test Type: reverse mutation assay

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 HARDENER US

Version	Revision Date:	SDS Number:	Date of last issue: 08/17/2022
1.5	03/09/2026	400001010612	Date of first issue: 08/16/2016

Print Date 06/30/2026

Test system: Salmonella tryphimurium and E. coli
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Triethylenetetramine:

Genotoxicity in vitro : Test Type: reverse mutation assay
Test system: Salmonella tryphimurium and E. coli
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: positive
GLP: yes

Test Type: Micronucleus test
Test system: Human lymphocytes
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 487
Result: negative

Genotoxicity in vivo : Test Type: In vivo micronucleus test
Species: Mouse (male and female)
Cell type: Bone marrow
Application Route: Intraperitoneal injection
Dose: 0 - 600 mg/kg
Method: OECD Test Guideline 474
Result: negative

Carcinogenicity

Not classified due to lack of data.

Components:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Species : Mouse, male
Application Route : Dermal
Exposure time : 20 month(s)
Dose : 1.25/56.3 mg/animal
Frequency of Treatment : 3 daily
NOAEL : ≥ 56.3 mg/kg body weight
Result : negative
Remarks : Information given is based on data obtained from similar substances.

Triethylenetetramine:

Species : Mouse, male
Application Route : Dermal
NOAEL : ≥ 50 mg/kg bw/day
Method : OECD Test Guideline 451
Result : negative

Species : Mouse, male
Application Route : Dermal
Exposure time : 104 weeks

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 HARDENER US

Version	Revision Date:	SDS Number:	Date of last issue: 08/17/2022
1.5	03/09/2026	400001010612	Date of first issue: 08/16/2016

Print Date 06/30/2026

NOAEL : ≥ 20 mg/kg bw/day
Method : OECD Test Guideline 451
Result : negative

IARC No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

Not classified due to lack of data.

Components:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Effects on fertility : Test Type: Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test
Species: Rat, male and female
Application Route: Oral
Dose: 5, 15 and 50 mg/kg bw/d
General Toxicity Parent: NOAEL: 15 mg/kg body weight
General Toxicity F1: NOAEL: 15 mg/kg body weight
Method: OECD Test Guideline 422
Result: Animal testing did not show any effects on fertility.
GLP: yes

Test Type: Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test
Species: Rat, male and female
Application Route: Oral
Dose: 0, 100, 200 and 400 milligram per kilogram
Frequency of Treatment: 7 days/week
General Toxicity Parent: NOAEL: > 400 mg/kg body weight
General Toxicity F1: NOAEL: 400 mg/kg body weight
Method: OECD Test Guideline 422

Effects on fetal development : Test Type: reproductive and developmental toxicity study
Species: Rat, male and female
Application Route: Oral
Dose: 5, 15 and 50 mg/kg bw/d
General Toxicity Maternal: NOAEL: 15 mg/kg body weight
Developmental Toxicity: NOAEL: 15 mg/kg body weight
Method: OECD Test Guideline 422
Result: Not classified
GLP: yes
Remarks: Information given is based on data obtained from similar substances.

Reproductive toxicity - : No evidence of adverse effects on sexual function and fertility,

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 HARDENER US

Version	Revision Date:	SDS Number:	Date of last issue: 08/17/2022
1.5	03/09/2026	400001010612	Date of first issue: 08/16/2016

Print Date 06/30/2026

Assessment or on development, based on animal experiments.

Triethylenetetramine:

Effects on fetal development : Test Type: Pre-natal
Species: Rat
Application Route: Oral
Dose: 75/325/750 mg/kg bw/day
Duration of Single Treatment: 10 d
General Toxicity Maternal: NOAEL: $\geq$ 750 mg/kg body weight
Developmental Toxicity: NOAEL: $\geq$ 750 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

Test Type: Pre-natal
Species: Rabbit
Application Route: Dermal
Dose: 5/50/125 mg/kg bw/day
Duration of Single Treatment: 13 d
General Toxicity Maternal: NOAEL: 50 mg/kg body weight
Developmental Toxicity: NOAEL: $\geq$ 125 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

STOT-single exposure

Corrosive to the respiratory tract.

STOT-repeated exposure

Not classified due to lack of data.

Repeated dose toxicity

Components:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Species : Rat, male and female
: 500 mg/m³
Application Route : Inhalation
Test atmosphere : vapor
Exposure time : 21 d 6 h
Number of exposures : 5 days/week
Dose : 550 mg/m³
Method : Subchronic toxicity
Remarks : Based on data from similar materials

Species : Mouse, male
NOAEL : $\geq$ 56.3 mg/kg/d
Application Route : Skin contact
Number of exposures : 3 d
Method : Chronic toxicity
Remarks : Based on data from similar materials

Species : Rat, male and female
NOAEL : 41 mg/kg
NOAEL : 1,000 mg/l, ppm

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 HARDENER US

Version	Revision Date:	SDS Number:	Date of last issue: 08/17/2022
1.5	03/09/2026	400001010612	Date of first issue: 08/16/2016

Print Date 06/30/2026

Application Route : oral (feed)
Exposure time : 20 months
Number of exposures : 3 times/week
Dose : 1000/7500/15000 ppm
Method : OECD Test Guideline 408

Species : Rat, male and female
NOAEL : 200 mg/kg
Application Route : Oral
Exposure time : 51 d
Number of exposures : 7 days/week
Dose : 0, 100, 200 mg/kg bw/day
Method : OECD Test Guideline 422

Triethylenetetramine:

Species : Rat, male and female
NOAEL : 350 mg/kg
Application Route : Oral
Exposure time : 28 d
Number of exposures : 7 d
Dose : 100/350/1000 mg/kg bw/day
Method : OECD Test Guideline 407
Target Organs : Lungs
Remarks : Information given is based on data obtained from similar substances.

Species : Dog, male and female
NOAEL : 125 mg/kg
Application Route : Oral
Target Organs : Lungs
Remarks : Information given is based on data obtained from similar substances.

Species : Dog, male and female
NOAEL : 50 mg/kg
Application Route : Oral
Method : Subchronic toxicity
Remarks : Information given is based on data obtained from similar substances.

Species : Rat, male and female
NOAEL : 50 mg/kg
Application Route : Oral
Exposure time : 26 weeks
Dose : 50/175/600 mg/kg bw/day
Method : OECD Test Guideline 408
Target Organs : Lungs
Remarks : Information given is based on data obtained from similar substances.

Species : Mouse, male and female
NOAEL : 92 mg/kg, 600 ppm
Application Route : Oral
Exposure time : 120/600/3000 ppm

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 HARDENER US

Version	Revision Date:	SDS Number:	Date of last issue: 08/17/2022
1.5	03/09/2026	400001010612	Date of first issue: 08/16/2016

Print Date 06/30/2026

Method : OECD Test Guideline 408
Remarks : Information given is based on data obtained from similar substances.

Aspiration toxicity

Not classified due to lack of data.

Experience with human exposure

No data available

Toxicology, Metabolism, Distribution

No data available

Neurological effects

No data available

Further information

No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): > 100 mg/l
End point: mortality
Exposure time: 96 h
Test Type: static test
Analytical monitoring: yes
Test substance: Fresh water
Method: OECD Test Guideline 203
GLP: yes

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 9.2 mg/l
End point: Immobilization
Exposure time: 48 h
Test Type: static test
Analytical monitoring: no
Test substance: Fresh water
Method: OECD Test Guideline 202
GLP: yes

Toxicity to algae/aquatic plants : ErC50 (Selenastrum capricornutum (green algae)): 21 mg/l
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Test substance: Fresh water
Method: OECD Test Guideline 201
GLP: yes

NOEC (Selenastrum capricornutum (green algae)): 5.7 mg/l
Exposure time: 72 h
Test Type: static test

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 HARDENER US

Version	Revision Date:	SDS Number:	Date of last issue: 08/17/2022
1.5	03/09/2026	400001010612	Date of first issue: 08/16/2016

Print Date 06/30/2026

Analytical monitoring: yes
Test substance: Fresh water
Method: OECD Test Guideline 201
GLP: yes

Toxicity to microorganisms : EC50 (*Pseudomonas putida*): 181 mg/l
Exposure time: 16 h
Test Type: static test
Analytical monitoring: no
Test substance: Fresh water
Method: DIN 38 412 Part 8
GLP: no

Triethylenetetramine:

Toxicity to fish : LC50 (*Poecilia reticulata* (guppy)): 570 mg/l
Exposure time: 96 h
Test Type: semi-static test
Test substance: Fresh water
Method: Directive 67/548/EEC, Annex V, C.1.

LC50 (*Leuciscus idus* (Golden orfe)): 200 - 500 mg/l
Exposure time: 96 h

LC50 (*Pimephales promelas* (fathead minnow)): 330 mg/l
End point: mortality
Exposure time: 96 h
Test Type: static test
Test substance: Fresh water
Method: Fish Acute Toxicity Test

Toxicity to daphnia and other aquatic invertebrates : EC50 (*Daphnia magna* (Water flea)): 31.1 mg/l
End point: Immobilization
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: Directive 67/548/EEC, Annex V, C.2.

Toxicity to algae/aquatic plants : ErC50 (*Selenastrum capricornutum* (green algae)): 20 mg/l
Exposure time: 72 h
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 201

EC10 (*Selenastrum capricornutum* (green algae)): 1.34 mg/l
Exposure time: 72 h
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 201

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : EC10 (*Daphnia magna* (Water flea)): 1.9 mg/l
Exposure time: 21 d
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 202

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 HARDENER US

Version	Revision Date:	SDS Number:	Date of last issue:
1.5	03/09/2026	400001010612	08/17/2022
			Date of first issue: 08/16/2016

Print Date 06/30/2026

Toxicity to microorganisms : NOEC (Bacteria): ≥ 100 mg/l
Exposure time: 28 d
Method: OECD Test Guideline 216

EC50 (Bacteria): > 100 mg/l
Exposure time: 28 h
Method: OECD Test Guideline 216

EC50 (Bacteria): 15.7 mg/l
Exposure time: 2 h
Test Type: static test
Test substance: Fresh water

NOEC (Bacteria): 1.3 mg/l
Exposure time: 2 h
Test Type: static test
Test substance: Fresh water

Toxicity to soil dwelling organisms : NOEC (Eisenia fetida (earthworms)): ca. 62.5 mg/kg
Exposure time: 56 d
Method: OECD Test Guideline 222

EC50 (Eisenia fetida (earthworms)): $> 1,000$ mg/kg
Exposure time: 56 d
Method: OECD Test Guideline 222

Ecotoxicology Assessment

Chronic aquatic toxicity : Harmful to aquatic life with long lasting effects.

Persistence and degradability

Components:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Biodegradability : aerobic
Dissolved organic carbon (DOC)
Result: Readily biodegradable.
Biodegradation: 100 %
Exposure time: 28 d
Method: OECD Test Guideline 301A
Test substance: Fresh water
GLP: yes

Triethylenetetramine:

Biodegradability : Inoculum: activated sludge
Result: Not readily biodegradable.
Biodegradation: 0 %
Exposure time: 162 d
Method: OECD Test Guideline 301D
Test substance: Fresh water

aerobic

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 HARDENER US

Version	Revision Date:	SDS Number:	Date of last issue: 08/17/2022
1.5	03/09/2026	400001010612	Date of first issue: 08/16/2016

Print Date 06/30/2026

Inoculum: activated sludge
Dissolved organic carbon (DOC)
Result: Not inherently biodegradable.
Biodegradation: 20 %
Exposure time: 84 d
Method: OECD Test Guideline 302A
Test substance: Fresh water

Bioaccumulative potential

Components:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Partition coefficient: n-octanol/water : log Pow: -0.56 (77 °F / 25 °C)
pH: 11.6
Method: OECD Test Guideline 107

Triethylenetetramine:

Partition coefficient: n-octanol/water : log Pow: -2.08 - 2.90 (68 °F / 20 °C)
Method: QSAR

Mobility in soil

Components:

Triethylenetetramine:

Distribution among environmental compartments : Koc: 3162.28, log Koc: 3.5
Method: OECD Test Guideline 106

Other adverse effects

Product:

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82
Protection of Stratospheric Ozone - CAA Section 602 Class I Substances
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Harmful to aquatic life.

Components:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Results of PBT and vPvB assessment : Not persistent, bioaccumulative, and toxic (PBT).

Triethylenetetramine:

Results of PBT and vPvB assessment : Not persistent, bioaccumulative, and toxic (PBT).

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 HARDENER US

Version	Revision Date:	SDS Number:	Date of last issue: 08/17/2022
1.5	03/09/2026	400001010612	Date of first issue: 08/16/2016

Print Date 06/30/2026

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	:	Dispose of contents and container in accordance with all local, regional, national and international regulations. Do not contaminate ponds, waterways or ditches with chemical or used container. Do not dispose of waste into sewer.
Contaminated packaging	:	Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number	:	UN 2735
Proper shipping name	:	POLYAMINES, LIQUID, CORROSIVE, N.O.S. (DIMETHYL DIPROPYL TRIAMINE, TRIETHYLENETETRAMINE)
Class	:	8
Packing group	:	III
Labels	:	8
Environmentally hazardous	:	no

IATA-DGR

UN/ID No.	:	UN 2735
Proper shipping name	:	Polyamines, liquid, corrosive, n.o.s. (DIMETHYL DIPROPYL TRIAMINE, TRIETHYLENETETRAMINE)
Class	:	8
Packing group	:	III
Labels	:	Corrosive
Packing instruction (cargo aircraft)	:	856
Packing instruction (passenger aircraft)	:	852

IMDG-Code

UN number	:	UN 2735
Proper shipping name	:	POLYAMINES, LIQUID, CORROSIVE, N.O.S. (DIMETHYL DIPROPYL TRIAMINE, TRIETHYLENETETRAMINE)
Class	:	8
Packing group	:	III
Labels	:	8
EmS Code	:	F-A, S-B
Marine pollutant	:	no

Transport in bulk according to IMO instruments

Not applicable for product as supplied.

Domestic regulation

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 HARDENER US

Version	Revision Date:	SDS Number:	Date of last issue: 08/17/2022
1.5	03/09/2026	400001010612	Date of first issue: 08/16/2016

Print Date 06/30/2026

49 CFR

UN/ID/NA number	:	UN 2735
Proper shipping name	:	Polyamines, liquid, corrosive, n.o.s. (DIMETHYL DIPROPYL TRIAMINE, TRIETHYLENETETRAMINE)
Class	:	8
Packing group	:	III
Labels	:	CORROSIVE
ERG Code	:	153
Marine pollutant	:	no

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 311/312 Hazards	:	Respiratory or skin sensitization Skin corrosion or irritation Serious eye damage or eye irritation
-----------------------------	---	---

SARA 313	:	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.
-----------------	---	---

This product does not contain any hazardous air pollutants (HAP) $\geq 0.1\%$, as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

California Prop. 65

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

CA. DSL	:	This product contains one or several components listed in the Canadian NDSL.
---------	---	--

US TSCA	:	All substances listed as active on the TSCA inventory
---------	---	---

TSCA - 5(a) Significant New Use Rule List of Chemicals

No substances are subject to a Significant New Use Rule.

US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)

No substances are subject to TSCA 12(b) export notification requirements.

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 HARDENER US

Version
1.5

Revision Date:
03/09/2026

SDS Number:
400001010612

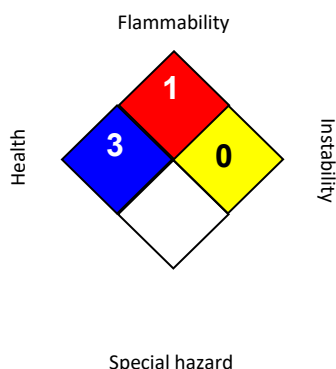
Date of last issue: 08/17/2022
Date of first issue: 08/16/2016

Print Date 06/30/2026

SECTION 16. OTHER INFORMATION

Further information

NFPA 704:



HMIS® IV / CED:

HEALTH		3
FLAMMABILITY		1
PHYSICAL HAZARD		0

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard

Revision Date : 03/09/2026

The information and recommendations in this publication are to the best of our knowledge, information and belief accurate at the date of publication, NOTHING HEREIN IS TO BE CONSTRUED AS A WARRANTY, EXPRESS OR OTHERWISE.

IN ALL CASES, IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE THE APPLICABILITY OF SUCH INFORMATION AND RECOMMENDATIONS AND THE SUITABILITY OF ANY PRODUCT FOR ITS OWN PARTICULAR PURPOSE.

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.

The trademarks above are the property of Huntsman Corporation or an affiliate thereof.

NO PERSON OR ORGANIZATION EXCEPT A DULY AUTHORIZED HUNTSMAN EMPLOYEE IS AUTHORIZED TO PROVIDE OR MAKE AVAILABLE DATA SHEETS FOR HUNTSMAN PRODUCTS. DATA SHEETS FROM UNAUTHORIZED SOURCES MAY CONTAIN INFORMATION THAT IS NO LONGER CURRENT OR ACCURATE.

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2011 HARDENER US

Version
1.5

Revision Date:
03/09/2026

SDS Number:
400001010612

Date of last issue: 08/17/2022
Date of first issue: 08/16/2016

Print Date 06/30/2026