

SECTION 1: Identification

1.1. Identification

Product form : Mixture
Name : Magnolia 77-4-A
Product code : 77-4-A

1.2. Recommended use and restrictions on use

Use of the substance/mixture : Industrial use
Epoxy resin
Adhesive: component
Recommended use : Adhesives, sealants

1.3. Supplier

Manufacturer

Magnolia Advanced Materials, Inc.
4360 Northeast Expressway
Atlanta, GA , 30340
USA
T 770-451-2777 [8:00 am - 4:30 pm US eastern time zone]
SDS@magnolia-adv-mat.com - www.magnolia-adv-mat.com

1.4. Emergency telephone number

Emergency number : INFOTRAC 1-352-323-3500 (International) | 1-800-535-5053 (North America) | Account 79439

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS US classification

| | | |
|---|------|---|
| Skin corrosion/irritation Category 2 | H315 | Causes skin irritation |
| Serious eye damage/eye irritation Category 2 | H319 | Causes serious eye irritation |
| Skin sensitization, Category 1 | H317 | May cause an allergic skin reaction. |
| Germ cell mutagenicity Category 2 | H341 | Suspected of causing genetic defects |
| Specific target organ toxicity (repeated exposure) Category 2 | H373 | May cause damage to organs through prolonged or repeated exposure |

Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS US labeling

Hazard pictograms (GHS US) :



Signal word (GHS US) : Warning
Hazard statements (GHS US) : H315 - Causes skin irritation
H317 - May cause an allergic skin reaction.
H319 - Causes serious eye irritation
H341 - Suspected of causing genetic defects
H373 - May cause damage to organs through prolonged or repeated exposure

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Precautionary statements (GHS US) : P260 - Do not breathe dust/fume/gas/mist/vapors/spray.
P264 - Wash hands, forearms and face thoroughly after handling.
P272 - Contaminated work clothing must not be allowed out of the workplace.
P280 - Wear protective gloves.
P302+P352 - If on skin: Wash with plenty of 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+P364 - Take off contaminated clothing and wash it before reuse.
P405 - Store locked up.
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

| Name | Product identifier | % | GHS US classification |
|-----------------------------------|---------------------|-------|---|
| Epoxy phenol novolac resin | CAS-No.: 28064-14-4 | 25-35 | Skin Irrit. 2, H315 Eye Irrit. 2, H319 Skin Sens. 1B, H317 |
| Mutifunctional epoxy resin | CAS-No.: 5026-74-4 | 5-15 | Acute Tox. 4 (Oral), H302 Skin Irrit. 2, H315 Skin Sens. 1, H317 Muta. 2, H341 STOT RE 2, H373 Aquatic Chronic 2, H411 |
| Neopentyl Glycol Diglycidyl Ether | CAS-No.: 17557-23-2 | 1-10 | Skin Irrit. 2, H315 Skin Sens. 1, H317 |
| Epoxy Resin | CAS-No.: 25068-38-6 | 1-10 | Skin Irrit. 2, H315 Eye Irrit. 2, H319 Skin Sens. 1, H317 Aquatic Chronic 2, H411 |

Full text of hazard classes and H-statements : see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general : IF exposed or concerned: Get medical advice/attention.
First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing.
First-aid measures after skin contact : Wash skin with plenty of water. Take off contaminated clothing. If skin irritation or rash occurs: Get medical advice/attention.

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| | |
|--------------------------------------|--|
| First-aid measures after eye contact | : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. |
| First-aid measures after ingestion | : Call a poison center/doctor/physician if you feel unwell. |

4.2. Most important symptoms and effects (acute and delayed)

| | |
|-------------------------------------|--|
| Symptoms/effects after skin contact | : Irritation. May cause an allergic skin reaction. |
| Symptoms/effects after eye contact | : Eye irritation. |

4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

| | |
|------------------------------|--|
| Suitable extinguishing media | : Water spray. Dry powder. Foam. Carbon dioxide. |
|------------------------------|--|

5.2. Specific hazards arising from the chemical

| | |
|--|--------------------------------|
| Hazardous decomposition products in case of fire | : Toxic fumes may be released. |
|--|--------------------------------|

5.3. Special protective equipment and precautions for fire-fighters

| | |
|--------------------------------|--|
| Protection during firefighting | : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing. |
|--------------------------------|--|

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

| | |
|----------------------|--|
| Emergency procedures | : Ventilate spillage area. Do not breathe dust/fume/gas/mist/vapors/spray. Avoid contact with skin and eyes. |
|----------------------|--|

6.1.2. For emergency responders

| | |
|----------------------|---|
| Protective equipment | : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection". |
|----------------------|---|

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

| | |
|-------------------------|---|
| For containment | : Collect spillage. |
| Methods for cleaning up | : Take up liquid spill into absorbent material. Notify authorities if product enters sewers or public waters. |
| Other information | : Dispose of materials or solid residues at an authorized site. |

6.4. Reference to other sections

For further information refer to section 13.

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SECTION 7: Handling and storage

7.1. Precautions for safe handling

| | |
|-------------------------------|--|
| Precautions for safe handling | : Ensure good ventilation of the work station. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust/fume/gas/mist/vapors/spray. Avoid contact with skin and eyes. Wear personal protective equipment. |
| Hygiene measures | : Wash contaminated clothing before reuse. Contaminated work clothing should not be allowed out of the workplace. Do not eat, drink or smoke when using this product. Always wash hands after handling the product. |

7.2. Conditions for safe storage, including any incompatibilities

| | |
|--------------------|---|
| Storage conditions | : Store locked up. Store in a well-ventilated place. Keep cool. |
|--------------------|---|

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

8.2. Appropriate engineering controls

| | |
|----------------------------------|--|
| Appropriate engineering controls | : Ensure good ventilation of the work station. |
| Environmental exposure controls | : Avoid release to the environment. |

8.3. Individual protection measures/Personal protective equipment

| |
|-----------------------------------|
| Hand protection: |
| nitrile rubber gloves |
| Eye protection: |
| Safety glasses |
| Skin and body protection: |
| Wear suitable protective clothing |
| Respiratory protection: |
| Wear respiratory protection. |

Personal protective equipment symbol(s):



SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|----------------|---------------------|
| Physical state | : Liquid |
| Appearance | : Paste. |
| Color | : Red brown |
| Odor | : slightly ethereal |
| Odor threshold | : No data available |

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| | |
|---|---------------------|
| pH | : No data available |
| Melting point | : Not applicable |
| Freezing point | : No data available |
| Boiling point | : > 107.3 °C |
| Flash point | : > 93.4 °C |
| Relative evaporation rate (butyl acetate=1) | : No data available |
| Flammability (solid, gas) | : Not applicable. |
| Vapor pressure | : No data available |
| Relative vapor density at 20 °C | : No data available |
| Relative density | : ≈ 0.45 |
| Solubility | : No data available |
| Partition coefficient n-octanol/water (Log Pow) | : No data available |
| Auto-ignition temperature | : No data available |
| Decomposition temperature | : No data available |
| Viscosity, kinematic | : No data available |
| Viscosity, dynamic | : No data available |
| Explosion limits | : No data available |
| Explosive properties | : No data available |
| Oxidizing properties | : No data available |

9.2. Other information

VOC content : Negligible

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

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

SECTION 11: Toxicological information

11.1. Information on toxicological effects

| | |
|-----------------------------|------------------|
| Acute toxicity (oral) | : Not classified |
| Acute toxicity (dermal) | : Not classified |
| Acute toxicity (inhalation) | : Not classified |

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| Multifunctional epoxy resin (5026-74-4) | |
|---|---|
| LD50 oral rat | 1037 mg/kg body weight (Equivalent or similar to OECD 401, Rat, Male / female, Experimental value, Oral, 14 day(s)) |
| LD50 dermal rat | > 4000 mg/kg (Equivalent or similar to OECD 402, 24 h, Rat, Male / female, Experimental value, Dermal, 14 day(s)) |

| Neopentyl Glycol Diglycidyl Ether (17557-23-2) | |
|--|--|
| LD50 oral rat | 4500 mg/kg (Rat, Literature study, Oral) |
| LD50 dermal rat | > 2100 mg/kg body weight (Rat, Literature study, Dermal) |

| | |
|-----------------------------------|--|
| Skin corrosion/irritation | : Causes skin irritation. |
| Serious eye damage/irritation | : Causes serious eye irritation. |
| Respiratory or skin sensitization | : May cause an allergic skin reaction. |
| Germ cell mutagenicity | : Suspected of causing genetic defects. |
| Carcinogenicity | : Not classified |
| Reproductive toxicity | : Not classified |
| STOT-single exposure | : Not classified |
| STOT-repeated exposure | : May cause damage to organs through prolonged or repeated exposure. |

| Multifunctional epoxy resin (5026-74-4) | |
|---|--|
| STOT-repeated exposure | May cause damage to organs through prolonged or repeated exposure. |

| | |
|-------------------------------------|--|
| Aspiration hazard | : Not classified |
| Viscosity, kinematic | : No data available |
| Symptoms/effects after skin contact | : Irritation. May cause an allergic skin reaction. |
| Symptoms/effects after eye contact | : Eye irritation. |

SECTION 12: Ecological information

12.1. Toxicity

| | |
|-------------------|--|
| Ecology - general | : Toxic to aquatic life with long lasting effects. |
|-------------------|--|

| Multifunctional epoxy resin (5026-74-4) | |
|---|--|
| EC50 - Crustacea [1] | 18 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Experimental value, Locomotor effect) |
| ErC50 algae | 13 mg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Pseudokirchneriella subcapitata, Static system, Fresh water, Experimental value, GLP) |

| Neopentyl Glycol Diglycidyl Ether (17557-23-2) | |
|--|---|
| LC50 - Fish [1] | 100 mg/l (96 h, Pisces, QSAR) |
| EC50 - Crustacea [1] | 39 – 57 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Experimental value) |

| Epoxy Resin (25068-38-6) | |
|--------------------------|---|
| ErC50 algae | 11 mg/l (EPA 660/3 - 75/009, 72 h, Scenedesmus sp., Static system, Fresh water, Experimental value) |

12.2. Persistence and degradability

| Epoxy phenol novolac resin (28064-14-4) | |
|---|--|
| Persistence and degradability | Biodegradability in soil: no data available. |

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| Multifunctional epoxy resin (5026-74-4) | |
|--|-------------------------------------|
| Persistence and degradability | Not readily biodegradable in water. |
| Neopentyl Glycol Diglycidyl Ether (17557-23-2) | |
| Persistence and degradability | Readily biodegradable in water. |
| Epoxy Resin (25068-38-6) | |
| Persistence and degradability | Not readily biodegradable in water. |

12.3. Bioaccumulative potential

| Epoxy phenol novolac resin (28064-14-4) | |
|---|--|
| Bioaccumulative potential | No bioaccumulation data available. |
| Multifunctional epoxy resin (5026-74-4) | |
| Partition coefficient n-octanol/water (Log Pow) | 0.87 (Estimated value, KOWWIN, 25 °C) |
| Bioaccumulative potential | Low potential for bioaccumulation (Log Kow < 4). |
| Neopentyl Glycol Diglycidyl Ether (17557-23-2) | |
| Partition coefficient n-octanol/water (Log Pow) | 0.47 (QSAR, KOWWIN, 20 °C) |
| Bioaccumulative potential | Low potential for bioaccumulation (Log Kow < 4). |
| Epoxy Resin (25068-38-6) | |
| BCF - Other aquatic organisms [1] | 31 (Estimated value, Fresh weight) |
| Partition coefficient n-octanol/water (Log Pow) | 3 (Estimated value, 25 °C) |
| Bioaccumulative potential | Low potential for bioaccumulation (BCF < 500). |

12.4. Mobility in soil

| Multifunctional epoxy resin (5026-74-4) | |
|--|--|
| Organic Carbon Normalized Adsorption Coefficient (Log Koc) | 1.93 (log Koc, OECD 121: Estimation of the Adsorption Coefficient (Koc) on Soil and on Sewage Sludge using High Performance Liquid Chromatography (HPLC), Experimental value, GLP) |
| Ecology - soil | Highly mobile in soil. |
| Neopentyl Glycol Diglycidyl Ether (17557-23-2) | |
| Organic Carbon Normalized Adsorption Coefficient (Log Koc) | 1.22 (log Koc, QSAR) |
| Ecology - soil | Highly mobile in soil. |
| Epoxy Resin (25068-38-6) | |
| Surface tension | 59 mN/m (20 °C, 0.09 g/l) |
| Organic Carbon Normalized Adsorption Coefficient (Log Koc) | 2.65 (log Koc, SRC PCKOCWIN v2.0, QSAR) |
| Ecology - soil | Low potential for adsorption in soil. |

12.5. Other adverse effects

No additional information available

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SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

SECTION 14: Transport information

In accordance with DOT / TDG / IMDG / IATA

14.1. UN number

DOT NA No : UN3082
UN-No. (TDG) : Not applicable
UN-No. (IMDG) : 3082
UN-No. (IATA) : 3082

14.2. UN proper shipping name

Proper Shipping Name (DOT) : Environmentally hazardous substances, liquid, n.o.s. (Epoxy resin)
Proper Shipping Name (TDG) : Not applicable
Proper Shipping Name (IMDG) : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Epoxy resin)
Proper Shipping Name (IATA) : Environmentally hazardous substance, liquid, n.o.s. (Epoxy resin)
Transport document description (DOT) : UN3082 Environmentally hazardous substances, liquid, n.o.s. (Epoxy resin), 9, III
Transport document description (IMDG) : UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Epoxy resin), 9, III
Transport document description (IATA) : UN 3082 Environmentally hazardous substance, liquid, n.o.s. (Epoxy resin), 9, III

14.3. Transport hazard class(es)

DOT

Transport hazard class(es) (DOT) : 9
Hazard labels (DOT) : 9



TDG

Transport hazard class(es) (TDG) : Not applicable

IMDG

Transport hazard class(es) (IMDG) : 9
Hazard labels (IMDG) : 9



IATA

Transport hazard class(es) (IATA) : 9
Hazard labels (IATA) : 9



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14.4. Packing group

| | |
|----------------------|------------------|
| Packing group (DOT) | : III |
| Packing group (TDG) | : Not applicable |
| Packing group (IMDG) | : III |
| Packing group (IATA) | : III |

14.5. Environmental hazards

| | |
|-------------------|---|
| Other information | : No supplementary information available. |
|-------------------|---|

14.6. Special precautions for user

DOT

| | |
|--|---|
| UN-No.(DOT) | : UN3082 |
| DOT Special Provisions (49 CFR 172.102) | : 8 - A hazardous substance that is not a hazardous waste may be shipped under the shipping description "Other regulated substances, liquid or solid, n.o.s.", as appropriate. In addition, for solid materials, special provision B54 applies. 146 - This description may be used for a material that poses a hazard to the environment but does not meet the definition for a hazardous waste or a hazardous substance, as defined in 171.8 of this subchapter, or any hazard class as defined in Part 173 of this subchapter, if it is designated as environmentally hazardous by the Competent Authority of the country of origin, transit or destination. 173 - An appropriate generic entry may be used for this material. 335 - Mixtures of solids that are not subject to this subchapter and environmentally hazardous liquids or solids may be classified as "Environmentally hazardous substances, solid, n.o.s.," UN3077 and may be transported under this entry, provided there is no free liquid visible at the time the material is loaded or at the time the packaging or transport unit is closed. Each transport unit must be leak-proof when used as bulk packaging. IB3 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1 and 31HA2, 31HB2, 31HN2, 31HD2 and 31HH2). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized, except for UN2672 (also see Special Provision IP8 in Table 2 for UN2672). T4 - 2.65 178.274(d)(2) Normal..... 178.275(d)(3) TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = $97 / 1 + a (tr - tf)$ Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees celsius of the liquid during filling. TP29 - A portable tank having a minimum test pressure of 1.5 bar (150.0 kPa) may be used provided the calculated test pressure is 1.5 bar or less based on the MAWP of the hazardous materials, as defined in 178.275 of this subchapter, where the test pressure is 1.5 times the MAWP. |
| DOT Packaging Exceptions (49 CFR 173.xxx) | : 155 |
| DOT Packaging Non Bulk (49 CFR 173.xxx) | : 203 |
| DOT Packaging Bulk (49 CFR 173.xxx) | : 241 |
| DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) | : No limit |
| DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) | : No limit |
| DOT Vessel Stowage Location | : A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel. |

TDG

| | |
|---------------------------------------|-------|
| Emergency Response Guide (ERG) Number | : 171 |
|---------------------------------------|-------|

IMDG

| | |
|-----------------------------|-----------------|
| Special provision (IMDG) | : 274, 335, 969 |
| Limited quantities (IMDG) | : 5 L |
| Excepted quantities (IMDG) | : E1 |
| Packing instructions (IMDG) | : LP01, P001 |

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| | |
|---------------------------------|---|
| Packing provisions (IMDG) | : PP1 |
| IBC packing instructions (IMDG) | : IBC03 |
| Tank instructions (IMDG) | : T4 |
| Tank special provisions (IMDG) | : TP1, TP29 |
| EmS-No. (Fire) | : F-A - FIRE SCHEDULE Alfa - GENERAL FIRE SCHEDULE |
| EmS-No. (Spillage) | : S-F - SPILLAGE SCHEDULE Foxtrot - WATER-SOLUBLE MARINE POLLUTANTS |
| Stowage category (IMDG) | : A |

IATA

| | |
|--|-------------------|
| PCA Excepted quantities (IATA) | : E1 |
| PCA Limited quantities (IATA) | : Y964 |
| PCA limited quantity max net quantity (IATA) | : 30kgG |
| PCA packing instructions (IATA) | : 964 |
| PCA max net quantity (IATA) | : 450L |
| CAO packing instructions (IATA) | : 964 |
| CAO max net quantity (IATA) | : 450L |
| Special provision (IATA) | : A97, A158, A197 |
| ERG code (IATA) | : 9L |

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

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

All components of this product are present and listed as Active on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

Contains chemical(s) subject to TSCA 12b export notification if product is shipped outside the U.S

| | | |
|----------------------------|-------------------|-------|
| Mutifunctional epoxy resin | CAS-No. 5026-74-4 | 5-15% |
|----------------------------|-------------------|-------|

15.2. International regulations

CANADA

Epoxy phenol novolac resin (28064-14-4)

Listed on the Canadian DSL (Domestic Substances List)

Mutifunctional epoxy resin (5026-74-4)

Listed on the Canadian DSL (Domestic Substances List)

Neopentyl Glycol Diglycidyl Ether (17557-23-2)

Listed on the Canadian DSL (Domestic Substances List)

Epoxy Resin (25068-38-6)

Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

No additional information available

National regulations

No additional information available

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15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Revision date : 09/29/2022

Other information : © 2020 Magnolia Advanced Materials Inc. All rights reserved.

Full text of H-phrases

| | |
|------|---|
| H302 | Harmful if swallowed |
| H315 | Causes skin irritation |
| H317 | May cause an allergic skin reaction. |
| H319 | Causes serious eye irritation |
| H341 | Suspected of causing genetic defects |
| H373 | May cause damage to organs through prolonged or repeated exposure |
| H411 | Toxic to aquatic life with long lasting effects |

Abbreviations and acronyms

| | |
|---------|---|
| ADN | European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways |
| ADR | European Agreement concerning the International Carriage of Dangerous Goods by Road |
| ATE | Acute Toxicity Estimate |
| BLV | Biological limit value |
| CAS-No. | Chemical Abstract Service number |
| CLP | Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008 |
| DMEL | Derived Minimal Effect level |
| DNEL | Derived-No Effect Level |
| EC50 | Median effective concentration |
| EC-No. | European Community number |
| EN | European Standard |
| IATA | International Air Transport Association |
| IMDG | International Maritime Dangerous Goods |
| LC50 | Median lethal concentration |
| LD50 | Median lethal dose |
| LOAEL | Lowest Observed Adverse Effect Level |
| NOAEC | No-Observed Adverse Effect Concentration |
| NOAEL | No-Observed Adverse Effect Level |
| NOEC | No-Observed Effect Concentration |
| OEL | Occupational Exposure Limit |

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| Abbreviations and acronyms | |
|----------------------------|---|
| PBT | Persistent Bioaccumulative Toxic |
| PNEC | Predicted No-Effect Concentration |
| REACH | Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006 |
| RID | Regulations concerning the International Carriage of Dangerous Goods by Rail |
| SDS | Safety Data Sheet |
| vPvB | Very Persistent and Very Bioaccumulative |
| WGK | Water Hazard Class |

Safety Data Sheet (SDS), USA

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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SECTION 1: Identification

1.1. Identification

Product form : Mixture
Name : Magnolia 77-4-B
Product code : 77-4-B

1.2. Recommended use and restrictions on use

Use of the substance/mixture : Industrial use
Epoxy resin: hardener
Adhesive: component
Recommended use : Adhesives, sealants

1.3. Supplier

Manufacturer

Magnolia Advanced Materials, Inc.
4360 Northeast Expressway
Atlanta, GA 30340 - USA
T 770-451-2777 [8:00 am - 4:30 pm US eastern time zone]
SDS@magnolia-adv-mat.com - www.magnolia-adv-mat.com

1.4. Emergency telephone number

Emergency number : INFOTRAC 1-352-323-3500 (International) | 1-800-535-5053 (North America) | Account 79439

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS US classification

| | | |
|--|------|--|
| Skin corrosion/irritation Category 1B | H314 | Causes severe skin burns and eye damage. |
| Serious eye damage/eye irritation Category 1 | H318 | Causes serious eye damage |
| Skin sensitization, Category 1 | H317 | May cause an allergic skin reaction. |

Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS US labeling

Hazard pictograms (GHS US) :



Signal word (GHS US) : Danger

Hazard statements (GHS US) : H314 - Causes severe skin burns and eye damage.
H317 - May cause an allergic skin reaction.
H318 - Causes serious eye damage

Precautionary statements (GHS US) : P260 - Do not breathe dust/fume/gas/mist/vapours/spray.
P264 - Wash hands, forearms and face thoroughly after handling.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
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 - If inhaled: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 - If in eyes: rinse cautiously with water for several minutes. remove contact lenses, if present and easy to do. continue rinsing
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

2.3. Other hazards which do not result in classification

No additional information available

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2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

| Name | Product identifier | % | GHS US classification |
|---|----------------------|-------|---|
| Triethylenetetramine, propylene-oxide polymer | (CAS-No.) 26950-63-0 | 45-55 | Eye Irrit. 2, H319 |
| Trientine | (CAS-No.) 112-24-3 | 30-40 | Acute Tox. 4 (Dermal), H312 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 Aquatic Chronic 3, H412 |
| Tetraethylene pentamine | (CAS-No.) 112-57-2 | 1-10 | Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Dermal), H312 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 |
| Pentaethylenehexamine | (CAS-No.) 4067-16-7 | 1-5 | Acute Tox. 4 (Oral), H302 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 |
| Polyethylene polyamine | (CAS-No.) 68131-73-7 | 1-5 | Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Dermal), H312 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 |

Full text of hazard classes and H-statements : see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures

- First-aid measures general : Call a physician immediately.
- First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing.
- First-aid measures after skin contact : Rinse skin with water/shower. Remove/Take off immediately all contaminated clothing. Call a physician immediately.
- First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician immediately.
- First-aid measures after ingestion : Rinse mouth. Do not induce vomiting. Call a physician immediately.

4.2. Most important symptoms and effects (acute and delayed)

- Symptoms/effects after skin contact : Burns. May cause an allergic skin reaction.
- Symptoms/effects after eye contact : Serious damage to eyes.
- Symptoms/effects after ingestion : Burns.

4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

- Suitable extinguishing media : Water spray. Dry powder. Foam. Carbon dioxide.

5.2. Specific hazards arising from the chemical

- Reactivity : The product is non-reactive under normal conditions of use, storage and transport.

5.3. Special protective equipment and precautions for fire-fighters

- Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Emergency procedures : Ventilate spillage area. Avoid contact with skin and eyes. Do not breathe dust/fume/gas/mist/vapours/spray.

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6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

For containment : Collect spillage.
Methods for cleaning up : Take up liquid spill into absorbent material.
Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Ensure good ventilation of the work station. Avoid contact with skin and eyes. Do not breathe dust/fume/gas/mist/vapours/spray. Wear personal protective equipment.
Hygiene measures : Wash contaminated clothing before reuse. Contaminated work clothing should not be allowed out of the workplace. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store locked up. Store in a well-ventilated place. Keep cool.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Triethylenetetramine, propylene-oxide polymer (26950-63-0)

Not applicable

Trientine (112-24-3)

Not applicable

Tetraethylene pentamine (112-57-2)

Not applicable

Polyethylene polyamine (68131-73-7)

Not applicable

Pentaethylenhexamine (4067-16-7)

Not applicable

8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure good ventilation of the work station.
Environmental exposure controls : Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Hand protection:

nitrile rubber gloves

Eye protection:

Safety glasses

Skin and body protection:

Wear suitable protective clothing

Respiratory protection:

In case of insufficient ventilation, wear suitable respiratory equipment

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Other information:

Do not eat, drink or smoke when using this product.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|---|---------------------|
| Physical state | : Liquid |
| Color | : white |
| Odor | : Amine-like |
| Odor threshold | : No data available |
| pH | : No data available |
| Melting point | : Not applicable |
| Freezing point | : No data available |
| Boiling point | : > 107.3 °C |
| Flash point | : > 93.4 °C |
| Relative evaporation rate (butyl acetate=1) | : No data available |
| Flammability (solid, gas) | : Not applicable. |
| Vapor pressure | : No data available |
| Relative vapor density at 20 °C | : No data available |
| Relative density | : ≈ 0.95 |
| Solubility | : No data available |
| Log Pow | : No data available |
| Auto-ignition temperature | : No data available |
| Decomposition temperature | : No data available |
| Viscosity, kinematic | : No data available |
| Viscosity, dynamic | : No data available |
| Explosion limits | : No data available |
| Explosive properties | : No data available |
| Oxidizing properties | : No data available |

9.2. Other information

| | |
|-------------|--------------|
| VOC content | : Negligible |
|-------------|--------------|

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

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

SECTION 11: Toxicological information

11.1. Information on toxicological effects

| | |
|-----------------------------|------------------|
| Acute toxicity (oral) | : Not classified |
| Acute toxicity (dermal) | : Not classified |
| Acute toxicity (inhalation) | : Not classified |

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| | |
|--|---|
| Trientine (112-24-3) | |
| LD50 oral rat | 2500 mg/kg (Rat, Literature, Oral) |
| LD50 dermal rabbit | 805 mg/kg (Rabbit, Literature, Dermal) |
| ATE US (dermal) | 1100 mg/kg body weight |
| Tetraethylene pentamine (112-57-2) | |
| LC50 inhalation rat (mg/l) | > 9.9 mg/l air (8 h, Rat, Male, Literature study, Inhalation) |
| ATE US (oral) | 500 mg/kg body weight |
| ATE US (dermal) | 660 mg/kg body weight |
| Polyethylene polyamine (68131-73-7) | |
| ATE US (oral) | 500 mg/kg body weight |
| ATE US (dermal) | 1100 mg/kg body weight |
| Pentaethylenehexamine (4067-16-7) | |
| ATE US (oral) | 1600 mg/kg body weight |
| Skin corrosion/irritation | : Causes severe skin burns and eye damage. |
| Serious eye damage/irritation | : Causes serious eye damage. |
| Respiratory or skin sensitization | : May cause an allergic skin reaction. |
| Germ cell mutagenicity | : Not classified |
| Carcinogenicity | : Not classified |
| Reproductive toxicity | : Not classified |
| STOT-single exposure | : Not classified |
| STOT-repeated exposure | : Not classified |
| Aspiration hazard | : Not classified |
| Viscosity, kinematic | : No data available |
| Symptoms/effects after skin contact | : Burns. May cause an allergic skin reaction. |
| Symptoms/effects after eye contact | : Serious damage to eyes. |
| Symptoms/effects after ingestion | : Burns. |

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Toxic to aquatic life with long lasting effects.

| | |
|---|---|
| Trientine (112-24-3) | |
| LC50 fish 1 | 495 mg/l (96 h, Pimephales promelas, Fresh water, Literature study) |
| EC50 Daphnia 1 | 31.1 mg/l (Equivalent or similar to OECD 202, 48 h, Daphnia magna, Literature study) |
| ErC50 (algae) | 100 mg/l (DIN 38412-9, 72 h, Scenedesmus subspicatus, Literature study) |
| Tetraethylene pentamine (112-57-2) | |
| LC50 fish 1 | 420 mg/l (EU Method C.1, 96 h, Poecilia reticulata, Semi-static system, Fresh water, Experimental value, GLP) |
| EC50 Daphnia 1 | 24.1 mg/l (EU Method C.2, 48 h, Daphnia magna, Static system, Experimental value, GLP) |
| ErC50 (algae) | 6.8 mg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Selenastrum capricornutum, Experimental value) |
| Pentaethylenehexamine (4067-16-7) | |
| EC50 Daphnia 1 | 8 mg/l |
| ErC50 (algae) | 0.42 mg/l |
| NOEC chronic algae | 0.072 mg/l |

12.2. Persistence and degradability

| | |
|-------------------------------|-------------------------------------|
| Trientine (112-24-3) | |
| Persistence and degradability | Not readily biodegradable in water. |

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| Tetraethylene pentamine (112-57-2) | |
|------------------------------------|-------------------------------------|
| Persistence and degradability | Not readily biodegradable in water. |

| Pentaethylenhexamine (4067-16-7) | |
|----------------------------------|-------------------------------------|
| Persistence and degradability | Not readily biodegradable in water. |

12.3. Bioaccumulative potential

| Trientine (112-24-3) | |
|-------------------------------|--|
| BCF other aquatic organisms 1 | 3.162 (BCFBAF v3.01, Calculated value) |
| Log Pow | -2.65 (Estimated value, KOWWIN) |
| Bioaccumulative potential | Not bioaccumulative. |

| Tetraethylene pentamine (112-57-2) | |
|------------------------------------|--|
| BCF fish 1 | 3.162 l/kg (BCFBAF v3.01, Estimated value, Fresh weight) |
| Log Pow | -3.16 (Estimated value, KOWWIN) |
| Bioaccumulative potential | Low potential for bioaccumulation (BCF < 500). |

| Pentaethylenhexamine (4067-16-7) | |
|----------------------------------|----------------------|
| Log Pow | -1.6 (QSAR) |
| Bioaccumulative potential | Not bioaccumulative. |

12.4. Mobility in soil

| Trientine (112-24-3) | |
|----------------------|--|
| Log Koc | 1.885 (log Koc, SRC PCKOCWIN v2.0, Calculated value) |
| Ecology - soil | Highly mobile in soil. |

| Tetraethylene pentamine (112-57-2) | |
|------------------------------------|-------------------------------------|
| Log Koc | 3.04 (log Koc, Calculated value) |
| Ecology - soil | Low potential for mobility in soil. |

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Transport document description : UN3267 Corrosive liquid, basic, organic, n.o.s. (TRIETHYLENETETRAMINE SOLUTION, TETRAETHYLENEPENTAMINE SOLUTION), 8, III

UN-No.(DOT) : UN3267

Proper Shipping Name (DOT) : Corrosive liquid, basic, organic, n.o.s.
TRIETHYLENETETRAMINE SOLUTION, TETRAETHYLENEPENTAMINE SOLUTION

Class (DOT) : 8 - Class 8 - Corrosive material 49 CFR 173.136

Packing group (DOT) : III - Minor Danger

Hazard labels (DOT) : 8 - Corrosive



DOT Packaging Non Bulk (49 CFR 173.xxx) : 203

DOT Packaging Bulk (49 CFR 173.xxx) : 241

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| | |
|--|---|
| DOT Symbols | : G - Identifies PSN requiring a technical name |
| DOT Special Provisions (49 CFR 172.102) | : IB3 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1 and 31HA2, 31HB2, 31HN2, 31HD2 and 31HH2). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized, except for UN2672 (also see Special Provision IP8 in Table 2 for UN2672). T7 - 4 178.274(d)(2) Normal..... 178.275(d)(3) TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = $97 / 1 + a (tr - tf)$ Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees celsius of the liquid during filling. TP28 - A portable tank having a minimum test pressure of 2.65 bar (265 kPa) may be used provided the calculated test pressure is 2.65 bar or less based on the MAWP of the hazardous material, as defined in 178.275 of this subchapter, where the test pressure is 1.5 times the MAWP. |
| DOT Packaging Exceptions (49 CFR 173.xxx) | : 154 |
| DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) | : 5 L |
| DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) | : 60 L |
| DOT Vessel Stowage Location | : A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel. |
| DOT Vessel Stowage Other | : 40 - Stow "clear of living quarters", 52 - Stow "separated from" acids |
| Emergency Response Guide (ERG) Number | : 153 |
| Other information | : No supplementary information available. |

Transportation of Dangerous Goods

Not applicable

Transport by sea

| | |
|---------------------------------------|---|
| Transport document description (IMDG) | : UN 3267 CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (TRIETHYLENETETRAMINE SOLUTION, TETRAETHYLENEPENTAMINE SOLUTION), 8, III, MARINE POLLUTANT/ENVIRONMENTALLY HAZARDOUS |
| UN-No. (IMDG) | : 3267 |
| Proper Shipping Name (IMDG) | : CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. |
| Class (IMDG) | : 8 - Corrosive substances |
| Packing group (IMDG) | : III - substances presenting low danger |

Air transport

| | |
|---------------------------------------|---|
| Transport document description (IATA) | : UN 3267 Corrosive liquid, basic, organic, n.o.s. (TRIETHYLENETETRAMINE SOLUTION, TETRAETHYLENEPENTAMINE SOLUTION), 8, III |
| UN-No. (IATA) | : 3267 |
| Proper Shipping Name (IATA) | : Corrosive liquid, basic, organic, n.o.s. |
| Class (IATA) | : 8 - Corrosives |
| Packing group (IATA) | : III - Minor Danger |

SECTION 15: Regulatory information

15.1. US Federal regulations

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

Triethylenetetramine, propylene-oxide polymer (26950-63-0)

| | |
|--------------------------|---|
| EPA TSCA Regulatory Flag | XU - XU - indicates a substance exempt from reporting under the Chemical Data Reporting Rule, (40 CFR 711). |
|--------------------------|---|

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Polyethylene polyamine (68131-73-7)

EPA TSCA Regulatory Flag

XU - XU - indicates a substance exempt from reporting under the Chemical Data Reporting Rule, (40 CFR 711).

15.2. International regulations

CANADA

Triethylenetetramine, propylene-oxide polymer (26950-63-0)

Listed on the Canadian DSL (Domestic Substances List)

Trientine (112-24-3)

Listed on the Canadian DSL (Domestic Substances List)

Tetraethylene pentamine (112-57-2)

Listed on the Canadian DSL (Domestic Substances List)

Polyethylene polyamine (68131-73-7)

Listed on the Canadian DSL (Domestic Substances List)

Pentaethylenhexamine (4067-16-7)

Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

No additional information available

National regulations

No additional information available

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

| Component | State or local regulations |
|-----------------------------------|--|
| Trientine(112-24-3) | U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) List |
| Tetraethylene pentamine(112-57-2) | U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) List |

SECTION 16: Other information

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Revision date : 04/30/2020

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Full text of H-phrases:

| | |
|------|---|
| H302 | Harmful if swallowed |
| H312 | Harmful in contact with skin |
| H314 | Causes severe skin burns and eye damage. |
| H317 | May cause an allergic skin reaction. |
| H318 | Causes serious eye damage |
| H319 | Causes serious eye irritation |
| H412 | Harmful to aquatic life with long lasting effects |

SDS US (GHS HazCom 2012)

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Disclaimer

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