

SECTION 1 Identification

1.1. Product identifier

Product form : Mixture
Trade name : X280-A
Product code : 1-X280

1.2. Other means of identification

No additional information available

1.3. Recommended use of the chemical and restrictions on use

Recommended use : Adhesive

1.4. Supplier's details

Hottinger Brüel & Kjaer
19 Bartlett St.
Marlborough, MA 01590
USA
T 1-508-804-3268
support.@hbm.com

1.5. Emergency phone number

Emergency number : For Hazardous Materials or Dangerous Goods Incident Spill, Leak, Fire, Exposure, or Accident
Call CHEMTREC Day or Night: 1-800-424-9300 (Toll Free, USA) / 703-527-3887 (Virginia, USA)
CCN 1015295
Back-up Emergency Number: +1 703-741-5970 (Washington, DC)

SECTION 2 Hazard Identification

2.1. Classification of the substance or mixture

GHS US classification

| | | |
|----------------------------------------------------------------|------|---------------------------------------------------------------------------------------------------------------------------|
| 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 (Gastrointestinal tract, stomach, reproductive organs) through prolonged or repeated exposure. |

Full text of H statements : see section 16

2.2. Label elements

GHS US labeling

Hazard pictograms (GHS US) :



Signal word (GHS US) : Warning
Hazard statements (GHS US) : H317 - May cause an allergic skin reaction
H341 - Suspected of causing genetic defects.
H373 - May cause damage to organs (Gastrointestinal tract, stomach, reproductive organs) through prolonged or repeated exposure
Precautionary statements (GHS US) : Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.

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Do not breathe mist, spray, vapors.
Contaminated work clothing must not be allowed out of the workplace.
Wear protective gloves, eye protection, protective clothing.
If on skin: Wash with plenty of soap and water.
If skin irritation or rash occurs: Get medical advice or attention.
Take off contaminated clothing and wash it before reuse.
Get medical advice or attention if you feel unwell.
Store locked up.
Dispose of contents and/or container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulations.

2.3. Hazards associated with known or reasonably anticipated uses

No additional information available

2.4. Hazards not otherwise classified

No additional information available

2.5. Unknown acute toxicity

No additional information available

SECTION 3 Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

| Name | Product identifier | % | GHS US classification |
|----------------------------------------------------|---------------------|---------|------------------------------------------------------------------------------------------------------------------------------------------|
| 4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline] | CAS-No.: 28768-32-3 | 30 – 60 | Skin Sens. 1, H317 Muta. 2, H341 Aquatic Acute 2, H401 Aquatic Chronic 2, H411 |
| Triglycidylaminophenol | CAS-No.: 5026-74-4 | 30 – 60 | Acute Tox. 4 (Oral), H302 Skin Sens. 1A, H317 Muta. 2, H341 STOT RE 2, H373 Aquatic Acute 2, H401 Aquatic Chronic 2, H411 |

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

SECTION 4 First aid measures

4.1. Description of necessary first-aid measures

First-aid measures general : IF exposed or concerned: Get medical advice/attention. First aider: Pay attention to self-protection. Never give anything by mouth to an unconscious person. Give artificial respiration if necessary. Induce artificial respiration with mask fitted with one-way valve or other suitable device but not mouth-to-mouth.

First-aid measures after inhalation : If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If experiencing respiratory symptoms: Call a poison center or a doctor.

First-aid measures after skin contact : Remove affected clothing and wash all exposed skin areas with mild soap and water, followed by warm water rinse. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

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According to 29 CFR § 1910.1200, Hazard Communication Standard (HCS)

| | |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| First-aid measures after eye contact | : Rinse eyes with water as a precaution. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. |
| First-aid measures after ingestion | : Rinse mouth. Do NOT induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Call a poison center/doctor/physician if you feel unwell. |

4.2. Most important symptoms/effects, acute and delayed

| | |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Symptoms/effects after inhalation | : Not expected to present a significant hazard under anticipated conditions of normal use. |
| Symptoms/effects after skin contact | : May cause an allergic skin reaction. |
| Symptoms/effects after eye contact | : May cause slight irritation. |
| Symptoms/effects after ingestion | : May cause irritation to the digestive tract. |
| Most Important Symptoms/Effects | : May cause an allergic skin reaction. |
| Chronic symptoms | : May cause damage to organs (gastro-intestinal tract, stomach, reproductive organs) through prolonged or repeated exposure. |

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

| | |
|-----------------------------------|----------------------------------------------------------|
| Other medical advice or treatment | : IF exposed or concerned: Get medical advice/attention. |
|-----------------------------------|----------------------------------------------------------|

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

| | |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Suitable extinguishing media | : Dry chemical, CO ₂ , or water spray or regular foam. Use extinguishing agent suitable for surrounding fire. |
| Unsuitable extinguishing media | : Do not use a heavy water stream. |

5.2. Specific hazards arising from the chemical

| | |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Fire hazard | : No fire hazard. |
| Explosion hazard | : Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries. |
| Hazardous decomposition products in case of fire | : Toxic fumes may be released. Carbon dioxide. Carbon monoxide. Nitrogen oxides. |

5.3. Special protective equipment and precautions for fire-fighters

| | |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Firefighting instructions | : Fight fire from safe distance and protected location. Do not enter fire area without proper protective equipment, including respiratory protection. Move containers from fire area if it can be done without personal risk. Cool affected containers with flooding quantities of water. Prevent fire-fighting water from entering environment. |
| 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

| | |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| General measures | : Avoid all personal contact including breathing in the mist, spray, vapors. Do not take actions involving personal risks. Absorb spillage to prevent material-damage. Stop leak if safe to do so. Notify authorities if product enters sewers or public waters. |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

For non-emergency personnel

| | |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Protective equipment | : Wear recommended personal protective equipment. |
| Emergency procedures | : Evacuate the danger area. If outdoors, move to an area upwind of the danger area. Do not breathe mist, spray, vapors. Avoid contact with skin and eyes. If possible without taking personal risks, Remove ignition sources, ventilate area. Prevent other non-emergency personnel from entering the danger area. |

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According to 29 CFR § 1910.1200, Hazard Communication Standard (HCS)

For emergency responders

- Protective equipment : Wear the recommended personal protective equipment. Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
- Emergency procedures : Evacuate unnecessary personnel. Do not touch spilled material. Stop leak if safe to do so.
- Environmental precautions : Do not let the product reach soil, drains, sewers, or surface and ground water.

6.2. Methods and materials for containment and cleaning up

- For containment : Collect spillage. Contain with non-combustible inert absorbent. Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. Stop leak, if possible without risk.
- Methods for cleaning up : Take up in non-combustible inert absorbent and place into container for disposal. Contaminated absorbent material may pose the same hazard as the spilt product. Decontaminate surfaces and equipment with water. Until a sufficient level of dilution is achieved, the decontamination water may pose the same hazards as the product. Notify authorities if product enters sewers or public waters. Dispose of collected material as soon as possible in accordance with applicable local/regional/national/international regulations.

For further information refer to section 8: "Exposure controls/personal protection", 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. Use only outdoors or in a well-ventilated area. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear personal protective equipment. Do not breathe mist, spray, vapors. Avoid contact with skin, eyes and clothing. Take precautionary measures against static discharge.
- Hygiene measures : Do not eat, drink or smoke when using this product. Always wash hands after handling the product. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse.
- Additional hazards when processed : Not expected to present a significant hazard under anticipated conditions of normal use.

7.2. Conditions for safe storage, including incompatibilities

- Storage conditions : Store in a cool, dry and well-ventilated area away from incompatible substances. Store locked up. Protect from sunlight. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.
- Incompatible materials : Strong acids. Strong bases. Strong oxidizing agents.
- Packaging materials : Store always product in container of same material as original container.

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. Handle in accordance with good industrial hygiene and safety procedures. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.
- Environmental exposure controls : Avoid release to the environment. Take measures to reduce or limit air emissions and releases to soil and the aquatic environment.

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According to 29 CFR § 1910.1200, Hazard Communication Standard (HCS)

8.3. Individual protection measures, such as personal protective equipment

Personal protective equipment:

Personal protective equipment should be chosen according to national standards and in discussion with the supplier of the protective equipment. Wear recommended personal protective equipment.

Hand protection:

Wear protective gloves. The following materials are suitable for protective gloves: Butyl rubber, Ethyl Vinyl Alcohol Laminate (EVAL)

Eye protection:

Wear safety glasses which protect from splashes

Skin and body protection:

Wear suitable protective clothing. Body protection should be chosen depending on activity and possible exposure

Respiratory protection:

Use NIOSH approved respirator if ventilation is inadequate. SCBA for emergency responders. Must be used in accordance with an OSHA compliant respiratory protection program.

Personal protective equipment symbol(s):



SECTION 9 Physical and chemical properties

9.1. Basic physical and chemical properties

| | |
|-------------------------------------------------|---------------------|
| Physical state | : Liquid |
| Color | : Yellow |
| Odor | : No data available |
| Odor threshold | : No data available |
| pH | : No data available |
| Melting point | : Not applicable |
| Freezing point | : No data available |
| Boiling point | : No data available |
| Flash point | : No data available |
| Flammability (solid, gas) | : Not applicable. |
| Vapor pressure | : No data available |
| Relative vapor density at 20°C | : No data available |
| Relative density | : No data available |
| 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 |
| Explosion limits | : No data available |
| Particle characteristics | : No data available |

9.2. Data relevant with regard to physical hazard classes (supplemental)

No additional information available

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According to 29 CFR § 1910.1200, Hazard Communication Standard (HCS)

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 of use.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Incompatible materials.

10.5. Incompatible materials

Strong acids. Strong bases. Strong oxidizing agents.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced. Thermal decomposition generates: Carbon dioxide. Carbon monoxide. Nitrogen oxides.

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

4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline]

| | |
|-----------------------|--------------------------|
| LD50 oral rat | > 5000 mg/kg body weight |
| LD50 oral | > 5000 mg/kg body weight |
| LD50 dermal rabbit | > 3000 mg/kg body weight |
| LC50 Inhalation - Rat | > 0.03 mg/l air |

Triglycidylaminophenol

| | |
|---------------|--------------------------|
| LD50 oral rat | ≈ 1037 mg/kg body weight |
|---------------|--------------------------|

Skin corrosion/irritation : Not classified

4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline]

| | |
|----|--------------------------------------------------|
| pH | 7.1 – 7.3 Temp.: 20 °C Concentration: (≥)10 mg/L |
|----|--------------------------------------------------|

Serious eye damage/irritation : Not classified

4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline]

| | |
|----|--------------------------------------------------|
| pH | 7.1 – 7.3 Temp.: 20 °C Concentration: (≥)10 mg/L |
|----|--------------------------------------------------|

Respiratory or skin sensitization : May cause an allergic skin reaction.

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According to 29 CFR § 1910.1200, Hazard Communication Standard (HCS)

| 4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline] | |
|------------------------------------------------------------------|-----------------------------------------|
| OECD Method 429, Skin Sensitization, Mice | Sensitizing |
| Triglycidylaminophenol | |
| OECD Method 429 Skin Sensitisation: Local Lymph Node Assay, Mice | Sensitizing |
| Germ cell mutagenicity | : Suspected of causing genetic defects. |
| 4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline] | |
| OECD Method 488, Rodents | Positive for mutagenicity |

| | |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Carcinogenicity | : Not classified |
| Reproductive toxicity | : Not classified |
| STOT-single exposure | : Not classified |
| STOT-repeated exposure | : May cause damage to organs (Gastrointestinal tract, stomach, reproductive organs) through prolonged or repeated exposure. |

| 4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline] | |
|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| NOAEL (oral, rat, 90 days) | 50 mg/kg body weight |
| Aspiration hazard | : Not classified |
| Symptoms/effects after inhalation | : Not expected to present a significant hazard under anticipated conditions of normal use. |
| Symptoms/effects after skin contact | : May cause an allergic skin reaction. |
| Symptoms/effects after eye contact | : May cause slight irritation. |
| Symptoms/effects after ingestion | : May cause irritation to the digestive tract. |
| Most Important Symptoms/Effects | : May cause an allergic skin reaction. |
| Chronic symptoms | : May cause damage to organs (gastro-intestinal tract, stomach, reproductive organs) through prolonged or repeated exposure. |

SECTION 12 Ecological information

12.1. Ecotoxicity

| | |
|-----------------------------------------------------------|----------------------------------------------------|
| Ecology - general | : Toxic to aquatic life with long lasting effects. |
| Hazardous to the aquatic environment, short-term (acute) | : Not classified |
| Hazardous to the aquatic environment, long-term (chronic) | : Not classified |

| 4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline] | |
|-----------------------------------------------------------|------------|
| LC50 - Fish [1] | 6 – 8 mg/l |
| EC50 - Crustacea [1] | ≈ 6.7 mg/l |
| EC50 72h - Algae [1] | ≈ 4.8 mg/l |
| Triglycidylaminophenol | |
| LC50 - Fish [1] | 4.2 mg/l |
| EC50 - Crustacea [1] | 18 mg/l |
| EC50 72h - Algae [1] | 13 mg/l |
| EC50 72h - Algae [2] | 7 mg/l |
| NOEC chronic crustacea | 0.42 mg/l |

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According to 29 CFR § 1910.1200, Hazard Communication Standard (HCS)

12.2. Persistence and degradability

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| | |
|-------------------------------|------------------------|
| Persistence and degradability | Not rapidly degradable |
|-------------------------------|------------------------|

4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline]

| | |
|-------------------------------|------------------------|
| Persistence and degradability | Not rapidly degradable |
|-------------------------------|------------------------|

Triglycidylaminophenol

| | |
|-------------------------------|------------------------|
| Persistence and degradability | Not rapidly degradable |
|-------------------------------|------------------------|

12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

| | |
|------------------------------|------------------|
| Ozone | : Not classified |
| Fluorinated greenhouse gases | : No |

SECTION 13 Disposal considerations

| | |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Regional waste regulation | : Disposal must be done according to official regulations. |
| Waste treatment methods | : Dispose of contents/container in accordance with licensed collector's sorting instructions. |
| Sewage disposal recommendations | : Disposal must be done according to official regulations. |
| Product/Packaging disposal recommendations | : Disposal must be done according to official regulations. Dispose of this material and its container at hazardous or special waste collection point. Refer to all applicable national, international and local regulations or provisions. |
| Additional information | : Do not re-use empty containers. |
| Ecological waste information | : Avoid release to the environment. |

SECTION 14 Transport information

In accordance with DOT / IMDG / IATA

| DOT | IMDG | IATA |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| 14.1. UN number | | |
| Not regulated | 3082 | 3082 |
| 14.2. Proper Shipping Name | | |
| Not regulated | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline] and Triglycidylaminophenol) | Environmentally hazardous substance, liquid, n.o.s. (4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline] and Triglycidylaminophenol) |
| 14.3. Transport hazard class(es) | | |
| Not regulated | 9 | 9 |
| 14.4. Packing group | | |
| Not regulated | III | III |

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According to 29 CFR § 1910.1200, Hazard Communication Standard (HCS)

| DOT | IMDG | IATA |
|----------------------------------------|------------------------------------------------------------|------|
| 14.5. Environmental hazards | | |
| | Dangerous for the environment: No Marine pollutant: Yes | |
| No supplementary information available | | |

14.6. Transport in bulk

Not applicable

14.7. Special precautions for user

DOT

Not regulated

IMDG

| | |
|---------------------------------|---------------------------------------------------------------------|
| Special provision (IMDG) | : 274, 335, 969 |
| Limited quantities (IMDG) | : 5 L |
| Excepted quantities (IMDG) | : E1 |
| Packing instructions (IMDG) | : LP01, P001 |
| 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 |
| ERG code (IATA) | : 9L |

SECTION 15 Regulatory information

15.1. 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

| | | |
|------------------------|-------------------|----------|
| Triglycidylaminophenol | CAS-No. 5026-74-4 | 30 – 60% |
|------------------------|-------------------|----------|

This product or mixture is not known to contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

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According to 29 CFR § 1910.1200, Hazard Communication Standard (HCS)

15.2. International regulations

CANADA

4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline] (28768-32-3)

Listed on the Canadian DSL (Domestic Substances List)

Triglycidylaminophenol (5026-74-4)

Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

No additional information available

National regulations

No additional information available

15.3. 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 29 CFR § 1910.1200, Hazard Communication Standard (HCS)

Revision date : 7/11/2025

Issue date : 12/13/2024

Full text of hazard classes and H-statements

| | |
|------|-------------------------------------------------------------------|
| H302 | Harmful if swallowed |
| H317 | May cause an allergic skin reaction |
| H341 | Suspected of causing genetic defects. |
| H373 | May cause damage to organs through prolonged or repeated exposure |
| H401 | Toxic to aquatic life |
| H411 | Toxic to aquatic life with long lasting effects |

Indication of changes:

HazCom 2024.

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.