

**Safety data sheet**  
according to Regulation (EC) No 1907/2006, Article 31

Printing date 19.01.2026

Version number 1

Revision: 21.08.2025

**SECTION 1: Identification of the substance/mixture and of the company/  
undertaking**

· **1.1 Product identifier**

- **Trade name:** X280-A
- **UFI:** 9D10-80TC-P00W-E9X5

· **1.2 Relevant identified uses of the substance or mixture and uses advised against**

- **Product category** PC1 Adhesives, sealants
- **Application of the substance / the mixture**  
Adhesives  
Sealants

· **1.3 Details of the supplier of the safety data sheet**

- **Manufacturer/Supplier:**  
HOTTINGER BRUËL & KJAER UK LTD  
Advanced Manufacturing Park Technology Centre  
Brunel Way, Catcliffe, Rotherham  
South Yorkshire, S60 5WG  
United Kingdom  
Phone: +44 (0) 1145 512230  
Email: info@uk.hbm.com

· **Informing department:**

Tel. +49(0)6131 19240  
EMail support-esa@hbkworl.com

· **1.4 Emergency telephone number:**

Gift-Informationszentrum Nord, Göttingen  
Poison Information Center, Göttingen  
Tel.: +49 (0)551 19240  
(German and English only)

United Kingdom:

National Poisons Information Service  
Emergency number: +44 844 892 0111

Poisons Information Centre of Ireland:

+353 1 837 9964 for medical professionals  
+353 1 809 2166 for public inquiries  
CHEMTREC: +44 20 3807 3798 (24h emergency call).  
Outside continental USA please call CHEMTREC at +1-703-527-3887 (R-calls are accepted).

**SECTION 2: Hazards identification**

- **2.1 Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**



GHS08 health hazard

Muta. 2

H341 Suspected of causing genetic defects.

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GHS09 environment

Aquatic Chronic 2 H411 Toxic to aquatic life with long lasting effects.



GHS07

Skin Sens. 1 H317 May cause an allergic skin reaction.

### 2.2 Label elements

#### Labelling according to Regulation (EC) No 1272/2008

The product is classified and labelled according to the CLP regulation.

#### Hazard pictograms



GHS07



GHS08



GHS09

#### Signal word Warning

#### Hazard-determining components of labelling:

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

#### Hazard statements

H317 May cause an allergic skin reaction.

H341 Suspected of causing genetic defects.

H411 Toxic to aquatic life with long lasting effects.

#### Precautionary statements

P261 Avoid breathing mist/vapours/spray.

P273 Avoid release to the environment.

P280 Wear protective gloves / eye protection / face protection.

P302+P352 IF ON SKIN: Wash with plenty of water.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

#### Additional information:

Please refer to further labelling elements in section 15 of this safety data sheet, if applicable.

#### 2.3 Other hazards

#### Results of PBT and vPvB assessment

PBT: Not applicable

vPvB: Not applicable

#### Determination of endocrine-disrupting properties

The product does not contain substances with endocrine disrupting properties.

## SECTION 3: Composition/information on ingredients

### 3.2 Mixtures

**Description:** Mixture of the substances listed below, possibly with undeclared additives.

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**· Dangerous components:**

CAS: 28768-32-3	4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline]	25 - 50%
EINECS: 249-204-3	☠ Muta. 2, H341; ☠ Aquatic Chronic 2, H411; ☠ Skin	
Reg.nr.: 01-2119472303-45-X	Sens. 1, H317	

· **Additional information** For the wording of the listed hazard phrases refer to section 16.

### SECTION 4: First aid measures

- **4.1 Description of first aid measures**
- **General information**  
Personal protection for the First Aider.  
If symptoms occur or in case of doubt consult a doctor.
- **After inhalation** Supply fresh air and call for doctor for safety reasons.
- **After skin contact**  
Instantly wash with water and soap and rinse thoroughly.  
Remove contaminated clothing immediately.  
In case of permanent aches and pains please go and see the doctor.
- **After eye contact**  
Rinse opened eye for several minutes under running water.  
Remove contact lenses if possible.  
In case of permanent aches and pains please go and see the doctor.
- **After swallowing**  
Rinse out mouth and then drink plenty of water.  
Do not induce vomiting.  
In case of persistent symptoms consult doctor.
- **4.2 Most important symptoms and effects, both acute and delayed**  
No further relevant information available.
- **4.3 Indication of any immediate medical attention and special treatment needed**  
No further relevant information available.

### SECTION 5: Firefighting measures

- **5.1 Extinguishing media**
- **Suitable extinguishing agents**  
Use fire fighting measures that suit the environment.  
Alcohol-resistant foam, extinguishing powder or carbon dioxide. Fight larger fire with water spray.
- **For safety reasons unsuitable extinguishing agents** Water with a full water jet.
- **5.2 Special hazards arising from the substance or mixture**  
Inhalation of combustion gases may cause serious health hazards.  
Can be released in case of fire:  
Carbon monoxide and carbon dioxide  
Nitrogen oxides (NOx)
- **5.3 Advice for firefighters**
- **Protective equipment:** Wear self-contained breathing apparatus.
- **Additional information** Remove goods in stock from incendiary zone, if possible.

### SECTION 6: Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**  
Use breathing protection against the effects of fumes/dust/aerosol.

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Ensure adequate ventilation

Wear protective equipment. Keep unprotected persons away.

- **For non-emergency personnel** Avoid contact with the product.
- **For emergency responders** Put on suitable personal protective equipment.
- **6.2 Environmental precautions:** Do not allow to enter drainage system, ground/soil and water bodies.
- **6.3 Methods and material for containment and cleaning up:**  
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders).  
Dispose of the material collected according to regulations.  
Ensure adequate ventilation.
- **6.4 Reference to other sections**  
See Section 7 for information on safe handling  
See Section 8 for information on personal protection equipment.  
See Section 13 for information on disposal.

### SECTION 7: Handling and storage

- **7.1 Precautions for safe handling**  
Ensure good ventilation/exhaustion at the workplace.  
Prevent formation of aerosols.
- **Information about protection against explosions and fires:** No special measures required.
- **Handling**  
Do not eat, drink or smoke while working.  
Avoid contact with the eyes and skin.  
Take off all contaminated clothing immediately.  
Wash contaminated clothing before re-use.
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage**  
· **Requirements to be met by storerooms and containers:**  
Store container tightly sealed at a cool place.
- **Information about storage in one common storage facility:** Not required
- **Further information about storage conditions:** None.
- **7.3 Specific end use(s)** No further relevant information available.

### SECTION 8: Exposure controls/personal protection

- **8.1 Control parameters**
- **Components with limit values that require monitoring at the workplace:**  
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

#### · DNELs

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

Dermal	DNEL (worker, long-term, systemic)	0.5 mg/kg bw/day (.)
Inhalative	DNEL (worker, long-term, systemic)	3.5 mg/m <sup>3</sup> (.)

- **Additional information:** The lists that were valid during the compilation were used as basis.
- **8.2 Exposure controls**
- **Individual protection measures, such as personal protective equipment**
- **General protective and hygienic measures**  
Keep away from foodstuffs, beverages and food.  
Take off all contaminated clothing immediately.

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Wash hands during breaks and at the end of the work.

Do not eat, drink or smoke while working.

Wash contaminated clothing before re-use.

· **Breathing equipment:**

In case of brief exposure or low pollution use breathing filter apparatus. In case of intensive or longer exposure use breathing apparatus that is independent of circulating air.

· **Hand protection**



Protective gloves.

Only use chemical-protective gloves with CE-labelling of category III (EN 374).

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

Nitrile rubber, NBR

Recommended material thickness: 0.33 mm, breakthrough time: 480 min.

· **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye/face protection** Safety glasses recommended if possibility of liquid splashes exists.

### SECTION 9: Physical and chemical properties

· **9.1 Information on basic physical and chemical properties**

· **General Information**

· **Physical state**

Liquid

· **Colour:**

colourless

· **Odour:**

Characteristic

· **Odour threshold:**

Not determined

· **Melting point/freezing point:**

Not determined

· **Boiling point or initial boiling point and boiling range**

Not determined

· **Flammability**

Not applicable

· **Lower and upper explosion limit**

· **Lower:**

Not determined

· **Upper:**

Not determined

· **Flash point:**

228 °C (28768-32-3 4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline])

· **Auto-ignition temperature:**

Product is not selfigniting.

· **Decomposition temperature:**

Not determined

· **SADT**

· **pH**

Not determined

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- **Viscosity:**
- **Kinematic viscosity** Not determined
- **dynamic:** Not determined
- **Solubility**
- **Water:** Fully miscible
- **Partition coefficient n-octanol/water (log value)** Not determined
- **Vapour pressure at 20 °C:** < 0.1 hPa
- **Density and/or relative density**
- **Density at 20 °C** 1.17 g/cm<sup>3</sup>
- **Relative density** Not determined
- **Vapour density** Not determined
- **Particle characteristics** No further details.

- **9.2 Other information**
- **Appearance:**
- **Form:** Liquid
- **Important information on protection of health and environment, and on safety.**
- **Self-inflammability:** Product is not selfigniting.
- **Explosive properties:** Product is not explosive.
- **VOC EU**
- **Solids content:** 0.0 %
- **Change in condition**
- **Evaporation rate** Not determined

- **Information with regard to physical hazard classes**
- **Explosives** Void
- **Flammable gases** Void
- **Aerosols** Void
- **Oxidising gases** Void
- **Gases under pressure** Void
- **Flammable liquids** Void
- **Flammable solids** Void
- **Self-reactive substances and mixtures** Void
- **Pyrophoric liquids** Void
- **Pyrophoric solids** Void
- **Self-heating substances and mixtures** Void
- **Substances and mixtures, which emit flammable gases in contact with water** Void
- **Oxidising liquids** Void
- **Oxidising solids** Void
- **Organic peroxides** Void
- **Corrosive to metals** Void
- **Desensitised explosives** Void

### SECTION 10: Stability and reactivity

- **10.1 Reactivity** No further relevant information available.
- **10.2 Chemical stability**
- **Information on the shelf life** The product is stable.

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- **Thermal decomposition / conditions to be avoided:**  
No decomposition if used according to specifications.
- **10.3 Possibility of hazardous reactions** No dangerous reactions known
- **10.4 Conditions to avoid** No further relevant information available.
- **10.5 Incompatible materials:** No further relevant information available.
- **10.6 Hazardous decomposition products:**  
None in case of intended use and storage in compliance with instructions.

### SECTION 11: Toxicological information

- **11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008**
- **Acute toxicity** Based on available data, the classification criteria are not met.
- **Primary irritant effect:**
- **Skin corrosion/irritation** Based on available data, the classification criteria are not met.
- **Serious eye damage/irritation** Based on available data, the classification criteria are not met.
- **Respiratory or skin sensitisation** May cause an allergic skin reaction.
- **Germ cell mutagenicity** Suspected of causing genetic defects.
- **Carcinogenicity** Based on available data, the classification criteria are not met.
- **Reproductive toxicity** Based on available data, the classification criteria are not met.
- **STOT-single exposure** Based on available data, the classification criteria are not met.
- **STOT-repeated exposure** Based on available data, the classification criteria are not met.
- **Aspiration hazard** Based on available data, the classification criteria are not met.
- **Additional toxicological information:**
- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**  
Muta. 2
- **11.2 Information on other hazards**

#### · Endocrine disrupting properties

None of the ingredients is listed.

### SECTION 12: Ecological information

- **12.1 Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **12.2 Persistence and degradability** No further relevant information available.
- **Other information:** There are no data available about the preparation.
- **12.3 Bioaccumulative potential** No further relevant information available.
- **12.4 Mobility in soil** No further relevant information available.
- **12.5 Results of PBT and vPvB assessment**
- **PBT:** Not applicable
- **vPvB:** Not applicable
- **12.6 Endocrine disrupting properties**  
The product does not contain substances with endocrine disrupting properties.
- **12.7 Other adverse effects**
- **Additional ecological information:**
- **General notes:**  
Do not allow product to reach ground water, water bodies or sewage system.  
Danger to drinking water if even small quantities leak into soil.  
Also poisonous for fish and plankton in water bodies.

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Toxic for aquatic organisms

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### SECTION 13: Disposal considerations

- **13.1 Waste treatment methods**

- **Recommendation**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

The waste code numbers mentioned are recommendations based on the probable use of the product.

- **European waste catalogue**

08 00 00	WASTES FROM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS), ADHESIVES, SEALANTS AND PRINTING INKS
08 04 00	wastes from MFSU of adhesives and sealants (including waterproofing products)
08 04 09*	waste adhesives and sealants containing organic solvents or other hazardous substances
HP11	Mutagenic
HP13	Sensitising
HP14	Ecotoxic

- **Uncleaned packagings:**

- **Recommendation:**

Dispose of packaging according to regulations on the disposal of packagings.

Non contaminated packagings can be used for recycling.

Packagings that cannot be cleaned are to be disposed of in the same manner as the product.

### SECTION 14: Transport information

- **14.1 UN number or ID number**

- **ADR/RID, IMDG, IATA**

UN3082

- **14.2 UN proper shipping name**

- **ADR/RID**

3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

- **IMDG, IATA**

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (4,4'-methylenebis[N,N-bis(2,3-epoxypropyl)aniline])

- **14.3 Transport hazard class(es)**

- **ADR/RID**



- **Class**

9 (M6) Miscellaneous dangerous substances and articles.

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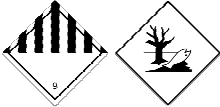
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· <b>Label</b>	9
· <b>IMDG, IATA</b>	
	
· <b>Class</b>	9 Miscellaneous dangerous substances and articles.
· <b>Label</b>	9
· <b>14.4 Packing group</b>	
· <b>ADR/RID, IMDG, IATA</b>	III
· <b>14.5 Environmental hazards:</b>	
· <b>Marine pollutant:</b>	Symbol (fish and tree)
· <b>Special marking (ADR/RID):</b>	Symbol (fish and tree)
· <b>Special marking (IATA):</b>	Symbol (fish and tree)
· <b>14.6 Special precautions for user</b>	Warning: Miscellaneous dangerous substances and articles.
· <b>Kemler Number:</b>	90
· <b>EMS Number:</b>	F-A,S-F
· <b>Stowage Category</b>	A
· <b>14.7 Maritime transport in bulk according to IMO instruments</b>	Not applicable
· <b>Transport/Additional information:</b>	
· <b>Quantity limitations</b>	On passenger aircraft/rail: No limit On cargo aircraft only: No limit
· <b>ADR/RID</b>	
· <b>Limited quantities (LQ)</b>	5L
· <b>Excepted quantities (EQ)</b>	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· <b>Transport category</b>	3
· <b>Tunnel restriction code</b>	(-)
· <b>IMDG</b>	
· <b>Limited quantities (LQ)</b>	5L
· <b>Excepted quantities (EQ)</b>	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· <b>UN "Model Regulation":</b>	UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. 9, III

### SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Directive 2012/18/EU**
- **Named dangerous substances - ANNEX I** None of the ingredients is listed.
- **Seveso category E2** Hazardous to the Aquatic Environment

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- **Qualifying quantity (tonnes) for the application of lower-tier requirements** 200 t
- **Qualifying quantity (tonnes) for the application of upper-tier requirements** 500 t
- **REGULATION (EC) No 1907/2006 ANNEX XVII**

Taking into account the intended use as specified in section 1, the relevant entries from Annex XVII are carried out.

Conditions of restriction: 3

- **DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II**

None of the ingredients is listed.

- **REGULATION (EU) 2019/1148**

- **Annex I - RESTRICTED EXPLOSIVES PRECURSORS (Upper limit value for the purpose of licensing under Article 5(3))**

None of the ingredients is listed.

- **Annex II - REPORTABLE EXPLOSIVES PRECURSORS**

None of the ingredients is listed.

- **Regulation (EC) No 273/2004 on drug precursors**

None of the ingredients is listed.

- **Regulation (EC) No 111/2005 laying down rules for the monitoring of trade between the Community and third countries in drug precursors**

None of the ingredients is listed.

- **National regulations**

- **Water hazard class:**

- **Substances of very high concern (SVHC) according to REACH, Article 57**

None of the ingredients is contained.

- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

### SECTION 16: Other information

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

This safety data sheet meets the requirements of Regulation (EU) 2015/830 and 2020/878 amending Annex II of Regulation (EC) 1907/2006.

- **Relevant phrases**

The phrases specified here are no labelling elements for the product but repeat the properties of the ingredients from section 3.

H317 May cause an allergic skin reaction.

H341 Suspected of causing genetic defects.

H411 Toxic to aquatic life with long lasting effects.

- **Classification according to Regulation (EC) No 1272/2008** Calculation method

- **Department issuing data specification sheet:**



This Safety Data Sheet has been drawn up in cooperation with:

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**· Abbreviations and acronyms:**

*ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)*

*IMDG: International Maritime Code for Dangerous Goods*

*IATA: International Air Transport Association*

*GHS: Globally Harmonised System of Classification and Labelling of Chemicals*

*EINECS: European Inventory of Existing Commercial Chemical Substances*

*ELINCS: European List of Notified Chemical Substances*

*CAS: Chemical Abstracts Service (division of the American Chemical Society)*

*DNEL: Derived No-Effect Level (REACH)*

*PBT: Persistent, Bioaccumulative and Toxic*

*SVHC: Substances of Very High Concern*

*vPvB: very Persistent and very Bioaccumulative*

*Skin Sens. 1: Skin sensitisation – Category 1*

*Muta. 2: Germ cell mutagenicity – Category 2*

*Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2*

**· \* Data compared to the previous version altered.**

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