

SAFETY DATA SHEET

ARALDITE® AV 5308

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

1.1 Product identifier

Product name : ARALDITE® AV 5308
Product code : 00047858
Product description :

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

Product use : Resin for adhesive systems

1.3 Details of the supplier of the safety data sheet

Supplier : Huntsman Advanced Materials (Europe)BVBA
Everslaan 45
3078 Everberg / Belgium
Tel.: +41 61 299 20 41
Fax: +41 61 299 20 40

e-mail address of person responsible for this SDS : Global_Product_EHS_AdMat@huntsman.com

1.4 Emergency telephone number

Supplier

Telephone number : EUROPE: +32 35 75 1234
France ORFILA: +33(0)145425959
ASIA: +65 6336-6011
China: +86 20 39377888
Australia: 1800 786 152
New Zealand: 0800 767 437
USA: +1/800/424.9300



SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : Mixture

Classification according to Directive 1999/45/EC [DPD]

The product is classified as dangerous according to Directive 1999/45/EC and its amendments.

Classification : Xi; R36/38
R43
N; R51/53

Human health hazards : Irritating to eyes and skin. May cause sensitisation by skin contact.

Environmental hazards : Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

See Section 16 for the full text of the R phrases or H statements declared above.

See Section 11 for more detailed information on health effects and symptoms.

2.2 Label elements

Hazard symbol or symbols :



| | | | |
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SECTION 2: Hazards identification

- Indication of danger** : Irritant, Dangerous for the environment
- Risk phrases** : R36/38- Irritating to eyes and skin.
R43- May cause sensitisation by skin contact.
R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
- Safety phrases** : S24- Avoid contact with skin.
S37- Wear suitable gloves.
S61- Avoid release to the environment. Refer to special instructions/safety data sheet.
- Hazardous ingredients** : reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)
bisphenol F-epoxy resin
butanedioldiglycidyl ether
bisphenol A - epoxy resins, number average MW >700 - <1100
- Supplemental label elements** : Not applicable.
- Supplemental label elements** : Contains epoxy constituents. See information supplied by the manufacturer.
- Special packaging requirements**
 - Containers to be fitted with child-resistant fastenings** : Not applicable.
 - Tactile warning of danger** : Not applicable.

2.3 Other hazards

- Other hazards which do not result in classification** : Not available.

SECTION 3: Composition/information on ingredients

Substance/mixture : Mixture

| Product/ingredient name | Identifiers | % | Classification | | Type |
|-------------------------|-------------|---|----------------|-------------------------------------|------|
| | | | 67/548/EEC | Regulation (EC) No. 1272/2008 [CLP] | |
| | | | | | |

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SECTION 3: Composition/information on ingredients

| | | | | | |
|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|-------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-----|
| reaction product: bisphenol A- (epichlorhydrin); epoxy resin (number average molecular weight < 700) | CAS: 25068-38-6 EC: 500-033-5 RRN: 01-2119456619- 26 | 30-60 | Xi; R36/38 R43 N; R51/53 | Skin Irrit. 2, H315 Eye Irrit. 2, H319 Skin Sens. 1, H317 Aquatic Chronic 2, H411 | [1] |
| bisphenol F-epoxy resin | CAS: 9003-36-5 EC: 500-006-8 RRN: 01-2119454392- 40 | 13-30 | Xi; R38 R43 N; R51/53 | Skin Irrit. 2, H315 Skin Sens. 1, H317 Aquatic Chronic 2, H411 | [1] |
| butanedioldiglycidyl ether | CAS: 2425-79-8 EC: 219-371-7 RRN: 01-2119494060- 45 | 3-7 | Xn; R20/21 Xi; R36/38 R43 R52/53 | Acute Tox. 4, H312 Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Skin Sens. 1, H317 | [1] |
| bisphenol A - epoxy resins, number average MW >700 - <1100 | CAS: 25068-38-6 | 3-7 | Xi; R36/38 R43 | Skin Irrit. 2, H315 Eye Irrit. 2, H319 Skin Sens. 1, H317 | [1] |
| dipentaerythritol pentaacrylate | CAS: 60506-81-2 EC: 262-270-8 | 1-3 | Xi; R36 | Eye Irrit. 2, H319 | [1] |
| | | | See Section 16 for the full text of the R- phrases declared above. | See Section 16 for the full text of the H statements declared above. | |

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Type

- [1] Substance classified with a health or environmental hazard
- [2] Substance with a workplace exposure limit
- [3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII
- [4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4: First aid measures

4.1 Description of first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

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SECTION 4: First aid measures

- Ingestion** : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

4.2 Most important symptoms and effects, both acute and delayed

Potential acute health effects

- Eye contact** : Irritating to eyes.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : Irritating to skin. May cause sensitisation by skin contact.
- Ingestion** : Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
irritation
watering
redness
- Inhalation** : No specific data.
- Skin contact** : Adverse symptoms may include the following:
irritation
redness
- Ingestion** : No specific data.

4.3 Indication of any immediate medical attention and special treatment needed

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Specific treatments** : Symptomatic treatment and supportive therapy as indicated. Following severe exposure the patient should be kept under medical review for at least 48 hours.

SECTION 5: Firefighting measures

5.1 Extinguishing media

- Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None known.

5.2 Special hazards arising from the substance or mixture

- Hazards from the substance or mixture** : In a fire or if heated, a pressure increase will occur and the container may burst.

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SECTION 5: Firefighting measures

Hazardous thermal decomposition products : Decomposition products may include the following materials:
 carbon dioxide
 carbon monoxide
 metal oxide/oxides

5.3 Advice for firefighters

Special precautions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. This material is toxic to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also Section 8 for additional information on hygiene measures.

6.2 Environmental precautions

: Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

6.3 Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product.

6.4 Reference to other sections

: See Section 1 for emergency contact information.
 See Section 8 for information on appropriate personal protective equipment.
 See Section 13 for additional waste treatment information.

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SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

7.1 Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapour or mist. Avoid release to the environment. Refer to special instructions/safety data sheet. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities : Store between the following temperatures: 2 to 40°C (35.6 to 104°F). Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

Storage hazard class : Storage class 10, Environmentally hazardous liquids
Huntsman Advanced Materials

7.3 Specific end use(s)

Recommendations : Not available.

Industrial sector specific solutions : Not available.

SECTION 8: Exposure controls/personal protection

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

8.1 Control parameters

Occupational exposure limits

No exposure limit value known.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to European Standard EN 689 for methods for the assessment of exposure by inhalation to chemical agents and national guidance documents for methods for the determination of hazardous substances.

Derived effect levels

No DELs available.

Predicted effect concentrations

No PECs available.

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SECTION 8: Exposure controls/personal protection

8.2 Exposure controls

Appropriate engineering controls : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits.

Individual protection measures

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

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Material of gloves for long term application (BTT>480min): : Ethyl Vinyl Alcohol Laminate (EVAL), butyl rubber

Material of gloves for short term/splash application (10min<BTT<480min): : neoprene, nitrile rubber
(BTT = Break Through Time)

Use gloves approved to relevant standards e.g. EN 374 (Europe), F739 (US). Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material and dexterity. Always seek advice from glove suppliers. Additional information can be found for instance at www.gisbau.de.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : In case of inadequate ventilation wear respiratory protection. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

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SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

| | |
|-------------------------------------------------------------------|-------------------------------|
| Physical state | : Liquid. [Paste.] |
| Colour | : Beige. |
| Odour | : Slight |
| Odour threshold | : Not available. |
| pH | : 6 to 7 [Conc. (% w/w): 50%] |
| Melting point/freezing point | : Not available. |
| Initial boiling point and boiling range | : >200°C |
| Flash point | : Closed cup: >150°C |
| Evaporation rate | : Not available. |
| Flammability (solid, gas) | : Not available. |
| Burning time | : Not applicable. |
| Burning rate | : Not applicable. |
| Upper/lower flammability or explosive limits | : Not available. |
| Vapour pressure | : <0.0002 kPa [20°C] |
| Vapour density | : Not available. |
| Relative density | : Not available. |
| Solubility(ies) | |
| Water solubility | : practically insoluble |
| | 20 deg C |
| Partition coefficient: n-octanol/water (LogK_{ow}) | : Not available. |
| Auto-ignition temperature | : Not available. |
| Decomposition temperature | : >200°C |
| Viscosity | : Not available. |
| Explosive properties | : Not available. |
| Oxidising properties | : Not available. |

9.2 Other information

| | |
|----------------|---------------------------------------|
| Density | : 1.4 g/cm ³ [25°C (77°F)] |
|----------------|---------------------------------------|

SECTION 10: Stability and reactivity

| | |
|------------------------------------------------|----------------------------------------------------------------------------------------------|
| 10.1 Reactivity | : No specific test data related to reactivity available for this product or its ingredients. |
| 10.2 Chemical stability | : The product is stable. |
| 10.3 Possibility of hazardous reactions | : Under normal conditions of storage and use, hazardous reactions will not occur. |
| 10.4 Conditions to avoid | : No specific data. |
| 10.5 Incompatible materials | : strong acids, strong bases, strong oxidising agents |

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SECTION 10: Stability and reactivity

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

Decomposition products may include the following materials:Carbon oxides, Burning produces obnoxious and toxic fumes.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

| Product/ingredient name | Endpoint | Species | Result | Exposure |
|-----------------------------------------------------------------------------------------------------|-----------------------|--------------------|-------------|----------|
| reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700) | LC0 Inhalation Vapour | Rat - Male | 0.00001 ppm | 5 hours |
| | LD50 Dermal | Rat - Male, Female | >2000 mg/kg | - |
| bisphenol F-epoxy resin | LD50 Oral | Rat - Female | >2000 mg/kg | - |
| | LD50 Dermal | Rat - Male, Female | >2000 mg/kg | - |
| butanedioldiglycidyl ether | LD50 Oral | Rat - Male, Female | >5000 mg/kg | - |
| | LD50 Dermal | Rat - Male, Female | >2150 mg/kg | - |
| | LD50 Oral | Rat - Male, Female | 1163 mg/kg | - |

Irritation/Corrosion

| Product/ingredient name | Test | Species | Route of exposure | Result |
|-----------------------------------------------------------------------------------------------------|--------------------------------------------|---------|-------------------|-----------------|
| reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700) | OECD 404 Acute Dermal Irritation/Corrosion | Rabbit | Skin | Mild irritant |
| | OECD 405 Acute Eye Irritation/Corrosion | Rabbit | Eyes | Mild irritant |
| bisphenol F-epoxy resin | OECD 405 Acute Eye Irritation/Corrosion | Rabbit | Eyes | Non-irritant. |
| | OECD 404 Acute Dermal Irritation/Corrosion | Rabbit | Skin | Mild irritant |
| butanedioldiglycidyl ether | OECD 404 Acute Dermal Irritation/Corrosion | Rabbit | Skin | Non-irritant. |
| | OECD 405 Acute Eye Irritation/Corrosion | Rabbit | Eyes | Severe irritant |

Conclusion/Summary

Skin : No additional information.
Eyes : No additional information.
Respiratory : No additional information.

Sensitiser

| Product/ingredient name | Test | Route of exposure | Species | Result |
|-------------------------|------|-------------------|---------|--------|
| | | | | |

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SECTION 11: Toxicological information

| | | | | |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------|------|------------|-------------|
| reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700) | OECD 429 Skin Sensitisation: Local Lymph Node Assay | skin | Mouse | Sensitising |
| bisphenol F-epoxy resin | OECD 429 Skin Sensitisation: Local Lymph Node Assay | skin | Mouse | Sensitising |
| butanedioldiglycidyl ether | OECD 406 Skin Sensitization | skin | Guinea pig | Sensitising |

Conclusion/Summary : No additional information.

Mutagenicity

| Product/ingredient name | Test | Result |
|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------|
| reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700) | OECD 471 Bacterial Reverse Mutation Test | Positive |
| bisphenol F-epoxy resin | OECD 476 In vitro Mammalian Cell Gene Mutation Test | Positive |
| | OECD 478 Genetic Toxicology: Rodent Dominant Lethal Test | Negative |
| | EPA OPPTS | Negative |
| | OECD 471 Bacterial Reverse Mutation Test | Positive |
| | OECD 476 In vitro Mammalian Cell Gene Mutation Test | Positive |
| butanedioldiglycidyl ether | OECD 473 In vitro Mammalian Chromosomal Aberration Test | Positive |
| | OECD 474 Mammalian Erythrocyte Micronucleus Test | Negative |
| | OECD 486 Unscheduled DNA Synthesis (UDS) Test with Mammalian Liver Cells in vivo | Negative |
| | OECD 471 Bacterial Reverse Mutation Test | Positive |
| | OECD 473 In vitro Mammalian Chromosomal Aberration Test | Positive |
| | OECD 474 Mammalian Erythrocyte Micronucleus Test | Negative |

Carcinogenicity

| Product/ingredient name | Test | Species | Exposure | Result | Route of exposure | Target organs |
|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------|---------|--------------------------|----------|-------------------|---------------|
| reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700) | OECD 453 Combined Chronic Toxicity/Carcinogenicity Studies | Rat | 2 years; 7 days per week | Negative | Oral | - |
| | OECD 453 Combined Chronic Toxicity/Carcinogenicity Studies | Rat | 2 years; 5 days per week | Negative | Dermal | - |
| | OECD 453 Combined Chronic Toxicity/Carcinogenicity Studies | Mouse | 2 years; 3 days per week | Negative | Dermal | - |

Reproductive toxicity

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SECTION 11: Toxicological information

| Product/ingredient name | Test | Species | Result/Result type | Target organs |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------|---------|------------------------|---------------|
| reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700) | OECD 416 Two-Generation Reproduction Toxicity Study | Rat | Oral: 540 mg/kg NOEL : | - |
| bisphenol F-epoxy resin | OECD 416 Two-Generation Reproduction Toxicity Study | Rat | Oral: 540 mg/kg NOEL : | - |

Teratogenicity

| Product/ingredient name | Test | Species | Result/Result type |
|-----------------------------------------------------------------------------------------------------|------------------------------------------------|-----------------|--------------------|
| reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700) | OECD 414 Prenatal Developmental Toxicity Study | Rat - Female | >540 mg/kg NOEL : |
| bisphenol F-epoxy resin | EPA CFR | Rabbit - Female | >300 mg/kg NOEL : |
| | OECD 414 Prenatal Developmental Toxicity Study | Rabbit - Female | 180 mg/kg NOAEL |
| | EPA CFR | Rabbit - Female | >300 mg/kg NOEL : |

Information on the likely routes of exposure : Not available.

Potential acute health effects

- Inhalation** : No known significant effects or critical hazards.
- Ingestion** : Irritating to mouth, throat and stomach.
- Skin contact** : Irritating to skin. May cause sensitisation by skin contact.
- Eye contact** : Irritating to eyes.

Symptoms related to the physical, chemical and toxicological characteristics

- Inhalation** : No specific data.
- Ingestion** : No specific data.
- Skin contact** : Adverse symptoms may include the following:
irritation
redness
- Eye contact** : Adverse symptoms may include the following:
irritation
watering
redness

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Long term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Potential chronic health effects

| Product/ingredient name | Test | Result type | Result | Target organs |
|-------------------------|------|-------------|--------|---------------|
| | | | | |

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SECTION 11: Toxicological information

| | | | | |
|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------|---------|-----------|---|
| reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700) | OECD 408 Repeated Dose 90-Day Oral Toxicity Study in Rodents | NOAEL - | 50 mg/kg | - |
| bisphenol F-epoxy resin | OECD 411 Subchronic Dermal Toxicity: 90-day Study | NOEL : | 10 mg/kg | - |
| | OECD 411 Subchronic Dermal Toxicity: 90-day Study | NOAEL | 100 mg/kg | - |
| | OECD 408 Repeated Dose 90-Day Oral Toxicity Study in Rodents | NOAEL - | 250 mg/kg | - |
| butanedioldiglycidyl ether | OECD 407 Repeated Dose 28-day Oral Toxicity Study in Rodents | NOAEL - | 200 mg/kg | - |

- Conclusion/Summary** : Not available.
General : Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
Carcinogenicity : No known significant effects or critical hazards.
Mutagenicity : No known significant effects or critical hazards.
Teratogenicity : No known significant effects or critical hazards.
Developmental effects : No known significant effects or critical hazards.
Fertility effects : No known significant effects or critical hazards.
Other information : Not available.

SECTION 12: Ecological information

12.1 Toxicity

| Product/ingredient name | Test | Endpoint | Exposure | Species | Result |
|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|--------------|----------------------|----------|-----------|
| reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700) | - | Acute EC50 | 72 hours Static | Algae | 9.4 mg/L |
| | OECD 202 <i>Daphnia</i> sp. Acute Immobilisation Test | Acute EC50 | 48 hours Static | Daphnia | 1.7 mg/L |
| | - | Acute IC50 | 3 hours Static | Bacteria | >100 mg/L |
| | OECD 203 Fish, Acute Toxicity Test | Acute LC50 | 96 hours Static | Fish | 1.5 mg/L |
| | OECD 211 <i>Daphnia</i> Magna Reproduction Test | Chronic NOEC | 21 days Semi-static | Daphnia | 0.3 mg/L |
| bisphenol F-epoxy resin | OECD 201 Alga, Growth Inhibition Test | Acute EC50 | 72 hours Static | Algae | 1.8 mg/L |
| | OECD OECD 202: Part I (<i>Daphnia</i> sp., Acute Immobilisation test) | Acute EC50 | 48 hours Static | Daphnia | 1.6 mg/L |
| | - | Acute IC50 | 3 hours Static | Bacteria | >100 mg/L |
| | OECD 203 Fish, Acute Toxicity Test | Acute LC50 | 96 hours Semi-static | Fish | 0.55 mg/L |
| butanedioldiglycidyl ether | OECD 211 <i>Daphnia</i> Magna Reproduction Test | Chronic NOEC | 21 days Semi-static | Daphnia | 0.3 mg/L |
| | OECD 202 <i>Daphnia</i> sp. Acute Immobilisation Test | Acute EC50 | 24 hours Static | Daphnia | 75 mg/L |
| | OECD 201 Alga, Growth Inhibition Test | Acute EL50 | 72 hours Static | Algae | >160 mg/L |

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| | | | | | | |
|--|--------------------------------------------------------|------------|-----------------|----------|------|------|
| | OECD 209 Activated Sludge, Respiration Inhibition Test | Acute IC50 | 3 hours Static | Bacteria | >100 | mg/L |
| | OECD 203 Fish, Acute Toxicity Test | Acute LC50 | 96 hours Static | Fish | 24 | mg/L |

12.2 Persistence and degradability

| Product/ingredient name | Test | Period | Result |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|---------|--------|
| reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700) bisphenol F-epoxy resin butanedioldiglycidyl ether | OECD Derived from OECD 301F (Biodegradation Test) | 28 days | 5 % |
| | EU OECD 301F Ready Biodegradability - Manometric Respirometry Test | 28 days | 0 % |
| | | 28 days | 43 % |

Conclusion/Summary : reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700): Not readily biodegradable.

| Product/ingredient name | Aquatic half-life | Photolysis | Biodegradability |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|------------|------------------|
| reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700) bisphenol F-epoxy resin butanedioldiglycidyl ether | Fresh water 4.83 days Fresh water 3.58 days Fresh water 7.1 days | - | Not readily |
| | - | - | Not readily |
| | - | - | Not readily |

12.3 Bioaccumulative potential

| Product/ingredient name | LogP _{ow} | BCF | Potential |
|-----------------------------------------------------------------------------------------------------|--------------------|-----|-----------|
| reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700) | 3.242 | 31 | low |
| bisphenol F-epoxy resin | 2.7 to 3.6 | - | high |
| butanedioldiglycidyl ether | -0.269 | - | low |

12.4 Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Mobility : Not available.

12.5 Results of PBT and vPvB assessment

Not applicable.

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

12.7 Other ecological information

| | | | |
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SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

13.1 Waste treatment methods

Product

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

Hazardous waste : Yes.

European waste catalogue (EWC)

| Waste code | Waste designation |
|------------|-------------------------------------------|
| 07 02 08* | other still bottoms and reaction residues |

Packaging

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Special precautions : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

| | 14.1 UN number | 14.2 UN proper shipping name |
|----------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ADR/RID | UN3082 | Environmentally hazardous substance, liquid, n.o.s. BISPHENOL A/F EPOXY RESIN (reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)) |
| IMDG | UN3082 | Environmentally hazardous substance, liquid, n.o.s. (BISPHENOL A/F EPOXY RESIN) (reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)). Marine pollutant (reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700), bisphenol F-epoxy resin) |
| IATA | UN3082 | Environmentally hazardous substance, liquid, n.o.s. (BISPHENOL A/F EPOXY RESIN) (reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)) |

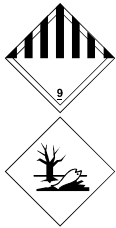
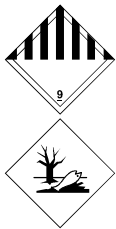
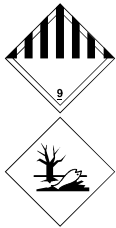
| | 14.3 Transport hazard class(es) | 14.4 Packing group | 14.5 Environmental hazards | 14.6 Special precautions for user | Additional information |
|--|---------------------------------|--------------------|----------------------------|-----------------------------------|------------------------|
| | | | | | |

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| | | | | | | |
|----------------|---|------------------------------------------------------------------------------------|-----|------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ADR/RID | 9 |  | III | Yes. | Not available. | Hazard identification number 90 Special provisions 274 335 601 Tunnel code E |
| IMDG | 9 |  | III | Yes. | Not available. | Emergency schedules (EmS) F-A, S-F |
| IATA | 9 |  | III | Yes. | Not available. | Passenger and Cargo Aircraft Quantity limitation: 450 L Packaging instructions: 964 Cargo Aircraft Only Quantity limitation: 450 L Packaging instructions: 964 |

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 Safety, health and environmental regulations/legislation specific for the substance or mixture

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Substances of very high concern

None of the components are listed.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles : Not applicable.

Other EU regulations

Europe inventory : All components are listed or exempted.
Black List Chemicals : Not listed
Priority List Chemicals : Not listed

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SECTION 15: Regulatory information

Integrated pollution prevention and control list (IPPC) - Air : Not listed

Integrated pollution prevention and control list (IPPC) - Water : Not listed

National regulations

References : The provision of Safety Data Sheets comes under Regulation 6 of CHIP (CHIP is the recognised abbreviation for the Chemicals Hazard Information and Packaging Regulations). This is an addition to the Health and Safety at Work Act 1974.

International regulations

Chemical Weapons Convention List Schedule I Chemicals : Not listed

Chemical Weapons Convention List Schedule II Chemicals : Not listed

Chemical Weapons Convention List Schedule III Chemicals : Not listed

15.2 Chemical Safety Assessment : This product contains substances for which Chemical Safety Assessments are still required.

SECTION 16: Other information

✔ Indicates information that has changed from previously issued version.

Abbreviations and acronyms : ATE = Acute Toxicity Estimate
 CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
 DNEL = Derived No Effect Level
 EUH statement = CLP-specific Hazard statement
 PNEC = Predicted No Effect Concentration
 RRN = REACH Registration Number

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Skin Irrit. 2, H315
 Eye Irrit. 2, H319
 Skin Sens. 1, H317
 Aquatic Chronic 2, H411

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

| Classification | Justification |
|-------------------------|--------------------|
| Skin Irrit. 2, H315 | Calculation method |
| Eye Irrit. 2, H319 | Calculation method |
| Skin Sens. 1, H317 | Calculation method |
| Aquatic Chronic 2, H411 | Calculation method |

Full text of abbreviated H statements : H312 Harmful in contact with skin.
 H315 Causes skin irritation.
 H317 May cause an allergic skin reaction.
 H319 Causes serious eye irritation.
 H332 Harmful if inhaled.
 H411 Toxic to aquatic life with long lasting effects.

| | | | |
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SECTION 16: Other information

Full text of classifications [CLP/GHS] : Acute Tox. 4, H312 ACUTE TOXICITY: SKIN - Category 4
 Acute Tox. 4, H332 ACUTE TOXICITY: INHALATION - Category 4
 Aquatic Chronic 2, H411 AQUATIC TOXICITY (CHRONIC) - Category 2
 Eye Irrit. 2, H319 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
 Skin Irrit. 2, H315 SKIN CORROSION/IRRITATION - Category 2
 Skin Sens. 1, H317 SKIN SENSITIZATION - Category 1

Full text of abbreviated R phrases : R20/21- Harmful by inhalation and in contact with skin.
 R36- Irritating to eyes.
 R38- Irritating to skin.
 R36/38- Irritating to eyes and skin.
 R43- May cause sensitisation by skin contact.
 R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
 R52/53- Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Full text of classifications [DSD/DPD] : Xn - Harmful
 Xi - Irritant
 N - Dangerous for the environment

MSDS no. : 00047858
Date of printing : 6/19/2012.
Date of issue/ Date of revision : 6/19/2012.
Date of previous issue : No previous validation.
Version : 1

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