

SAFETY DATA SHEET: **BD35 & BD36 SOLID WATER HARDENER**

(Hardener to be used with Solid Water Resin BD35 & 36)

REVISION DATE: 27/5/2015

REVISION 2 DATE: 14/8/2024

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

1.1 Product identifier

Product name : SOLID WATER HARDENER

Registration number : Not available.

Product code : BD35 and BD36

UFI : 7K20-D0EE-Q00C-A090

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

Product use : Hardener for coating systems

1.3 Details of the supplier of the safety data sheet

Supplier : Deluxe Materials Ltd.
Unit 12/13, Cufau de Business Park
Cufau de Lane, Bramley
Hampshire RG26 5DL
United Kingdom

e-mail address of person responsible for this SDS : john@deluxematerials.com

1.4 Emergency telephone number

Supplier

Telephone number : +44 (0) 1256 883 944 office hours only 9.00 - 5.00

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : Mixture

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

Acute Tox. 4, H302

Acute Tox. 4, H332

Skin Corr. 1B, H314

Eye Dam. 1, H318

Skin Sens. 1, H317

Aquatic Chronic 3, H412

Ingredients of unknown toxicity :

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SECTION 2: Hazards identification

Ingredients of unknown :
ecotoxicity

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

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

Classification : Xn; R20/22
C; R34
R43
R52/53

Human health hazards : Harmful by inhalation and if swallowed. Causes burns. May cause sensitisation by skin contact.

Environmental hazards : Harmful 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 pictograms :



Signal word : Danger

Hazard statements : H302+332 Harmful if swallowed or if inhaled.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H412 Harmful to aquatic life with long lasting effects.

Precautionary statements

General : Not applicable.

Prevention : P280 Wear protective gloves: > 8 hours (breakthrough time): Ethyl Vinyl Alcohol Laminate (EVAL), butyl rubber. Wear eye or face protection. Wear protective clothing. Avoid release to the environment.
P273

Response : P304+340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: P301+310 Immediately call a POISON CENTER or physician. Do NOT induce vomiting. IF P331 ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Immediately call a POISON CENTER or physician. IF IN EYES: P303+361 P305+310 Immediately call a POISON CENTER or physician.

Storage : P405 Store locked up.

Disposal : P501 Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazardous ingredients : benzyl alcohol
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 5-amino-1,3, 3-trimethylcyclohexanemethanamine and (chloromethyl)oxirane
trimethylhexamethylenediamine
isophorone diamine

Supplemental label elements : Not applicable.

Special packaging requirements

Containers to be fitted with child-resistant fastenings : Not applicable.

Tactile warning of danger : Not applicable.

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SECTION 2: Hazards identification**2.3 Other hazards**

Other hazards which do : None known.
not result in classification

SECTION 3: Composition/information on ingredients**3.2 Mixtures**

: Mixture

Product/ingredient name	Identifiers	%	Classification		Type
			67/548/EEC	Regulation (EC) No. 1272/2008 [CLP]	
Benzyl alcohol	CAS: 100-51-6 EC: 202-859-9	30-60	Xn; R20/22	Acute Tox. 4, H302 Acute Tox. 4, H332 Eye Irrit. 2, H319	[1]
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2, 3-epoxypropane, reaction products with 3-aminomethyl-3,5, 5-trimethylcyclohexylamine	CAS: 38294-64-3 EC: 500-101-4 RRN: 01-2119965165-33	13-30	Not classified.	Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 Aquatic Chronic 3, H412	[1]
Trimethylhexane-1, 6-diamine	CAS: 25620-58-0 EC: 247-134-8	13-30	Xn; R22 C; R34 R43 R52/53	Acute Tox. 4, H302 Skin Corr. 1C, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 Aquatic Chronic 3, H412	[1]
3-aminomethyl-3,5, 5-trimethylcyclohexylamine	CAS: 2855-13-2 EC: 220-666-8	7-13	Xn; R21/22 C; R34 R43 R52/53	Acute Tox. 4, H302 Acute Tox. 4, H312 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 Aquatic Chronic 3, H412	[1]
octahydro-4, 7-methano-1H-indenedimethylamine	CAS: 68889-71-4 EC: 272-573-7	0.1-1	Xn; R21/22 C; R34 R43 See Section 16 for the full text of the R-phrases declared above.	Acute Tox. 4, H302 Acute Tox. 3, H311 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 See Section 16 for the full text of the H statements declared above.	[1]

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

[5] Substance of equivalent concern

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

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SECTION 4: First aid measures

4.1 Description of first aid measures

- Eye contact** : Get medical attention immediately. Call a poison center or physician. 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. Chemical burns must be treated promptly by a physician.
- Inhalation** : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. 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. 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. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Skin contact** : Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and 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. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Get medical attention immediately. Call a poison center or physician. 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. Chemical burns must be treated promptly by a physician. 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. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. 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** : Causes serious eye damage.
- Inhalation** : Harmful if inhaled. May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Skin contact** : Causes severe burns. May cause an allergic skin reaction.
- Ingestion** : Harmful if swallowed. May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

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

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SECTION 4: First aid measures

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| Skin contact | : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur |
| Ingestion | : Adverse symptoms may include the following:
stomach pains |

4.3 Indication of any immediate medical attention and special treatment needed

- | | |
|----------------------------|---|
| Notes to physician | : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. |
| 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. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain. |
| Hazardous thermal decomposition products | : Decomposition products may include the following materials:
carbon dioxide
Carbon monoxide
nitrogen oxides
halogenated compounds |

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. |
| 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. Do not breathe 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 the information in "For non-emergency personnel". |

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SECTION 6: Accidental release 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.

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 breathe vapour or mist. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. 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. Store locked up. 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 8, Corrosive substances
Huntsman Advanced Materials

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SECTION 7: Handling and storage

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 monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

Derived effect levels

Product/ingredient name	Type	Exposure	Value	Population	Effects
Benzyl alcohol	DNEL	Short term Dermal	47 mg/kg bw/day	Workers	Systemic
	DNEL	Short term Inhalation	450 mg/m ³	Workers	Systemic
	DNEL	Long term Dermal	9.5 mg/kg bw/day	Workers	Systemic
	DNEL	Long term Inhalation	90 mg/m ³	Workers	Systemic
	DNEL	Short term Dermal	28.5 mg/kg bw/day	Consumers	Systemic
	DNEL	Short term Inhalation	40.55 mg/m ³	Consumers	Systemic
	DNEL	Short term Oral	25 mg/kg bw/day	Consumers	Systemic
	DNEL	Long term Dermal	5.7 mg/kg bw/day	Consumers	Systemic
	DNEL	Long term Inhalation	8.11 mg/m ³	Consumers	Systemic
	DNEL	Long term Oral	5 mg/kg bw/day	Consumers	Systemic
3-aminomethyl-3,5,5-trimethylcyclohexylamine	DNEL	Short term Inhalation	20.1 mg/m ³	Workers	Systemic
	DNEL	Short term Inhalation	20.1 mg/m ³	Workers	Local
	DNEL	Long term Oral	0.526 mg/kg bw/day	Consumers	Systemic

Predicted effect concentrations

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SECTION 8: Exposure controls/personal protection

Product/ingredient name	Type	Compartment Detail	Value	Method Detail
Benzyl alcohol 3-aminomethyl-3,5, 5-trimethylcyclohexylamine	PNEC	Fresh water	1 mg/l	Assessment Factors
	PNEC	Marine	0.1 mg/l	Assessment Factors
	PNEC	PNECintermittent	2.3 mg/l	Assessment Factors
	PNEC	Sewage Treatment Plant	39 mg/l	Assessment Factors
	PNEC	Fresh water sediment	5.27 mg/kg	Assessment Factors
	PNEC	Marine water sediment	0.527 mg/kg	Assessment Factors
	PNEC	Soil	0.456 mg/kg	Assessment Factors
	PNEC	Secondary Poisoning	-	Assessment Factors
	PNEC	Fresh water	0.06 mg/l	Assessment Factors
	PNEC	Marine	0.006 mg/l	Assessment Factors
	PNEC	PNECintermittent	0.23 mg/l	Assessment Factors
	PNEC	Sewage Treatment Plant	3.18 mg/l	Assessment Factors
	PNEC	Fresh water sediment	5.784 mg/kg	Assessment Factors
	PNEC	Marine water sediment	0.578 mg/kg	Assessment Factors
	PNEC	Soil	1.121 mg/kg	Assessment Factors
	PNEC	Secondary Poisoning	-	Assessment Factors

8.2 Exposure controls

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants 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, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

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): : nitrile rubber

(BTT = Break Through Time)

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SECTION 8: Exposure controls/personal protection

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.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

- Physical state** : Liquid.
- Colour** : Colourless., Clear.
- Odour** : Amine-like.
- Odour threshold** : Not available.
- pH** : 11 to 11.7 [Conc. (% w/w): 50%]
- Melting point/freezing point** : Not available.
- Initial boiling point and boiling range** : Not available.
- Flash point** : Closed cup: >110°C [Data based on tests on similar product]
- 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** : Not available.
- Vapour density** : Not available.
- Relative density** : Not available.
- Solubility(ies)** : partially soluble
- Water solubility** : partially soluble
- Other** : 20 deg C
- Partition coefficient: n-octanol/ water (LogK_{ow})** : Partially miscible in water
- Auto-ignition temperature** : Not available.
- Decomposition temperature** : >200°C

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SECTION 9: Physical and chemical properties

Viscosity : Dynamic (25°C): 240 mPa·s
Kinematic: Not available.
Kinematic (40°C): Not available.

Explosive properties : Not available.

Oxidising properties : Not available.

9.2 Other information

Density : 1.02 g/cm³ [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

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: Nitrogen oxides, Burning produces obnoxious and toxic fumes., Carbon oxides

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Endpoint	Species	Result	Exposure
ARADUR 3253 BD Benzyl alcohol Trimethylhexane-1, 6-diamine 3-aminomethyl-3,5, 5-trimethylcyclohexylamine octahydro-4,7-methano-1H-indenedimethylamine	LD50 Oral	Rat	1500 mg/kg	-
	LC50 Inhalation Dusts and mists	Rat - Male, Female	>4178 mg/m³	4 hours
	LD50 Oral	Rat - Male	1620 mg/kg	-
	LD50 Oral	Rat	910 mg/kg	-
	LD50 Oral	Rat - Male	1030 mg/kg	-
	LD50 Dermal	Rat - Female	400 to 500 mg/kg	-
	LD50 Oral	Rat	502 mg/kg	-

Conclusion/Summary : No additional information.

Acute toxicity estimates

Route	ATE value
Dermal Inhalation (dusts and mists)	6862.5 mg/kg 3.846 mg/l

Irritation/Corrosion

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SECTION 11: Toxicological information

Product/ingredient name	Test	Species	Route of exposure	Result
Benzyl alcohol	OECD 404 Acute Dermal Irritation/Corrosion	Rabbit	Skin	Non-irritant.
	OECD 405 Acute Eye Irritation/Corrosion	Rabbit	Eyes	Irritant
Trimethylhexane-1, 6-diamine	Unknown guidelines	Mouse	Skin	Corrosive
	Unknown guidelines	Rabbit	Skin	Irritant
	OECD 405 Acute Eye Irritation/Corrosion	Rabbit	Eyes	Corrosive
3-aminomethyl-3,5, 5-trimethylcyclohexylamine	-	Rabbit	Skin	Corrosive
	OECD 405 Acute Eye Irritation/Corrosion	Rabbit	Eyes	Corrosive
octahydro-4,7-methano-1H-indenedimethylamine	OECD 404 Acute Dermal Irritation/Corrosion	Rabbit	Skin	Corrosive

Conclusion/Summary

Skin

: Benzyl alcohol Non-irritating to the skin.
Trimethylhexane-1, Corrosive to the skin.
6-diamine
3-aminomethyl-3,5, Corrosive to the skin.
5-trimethylcyclohexylamine
octahydro-4, Corrosive to the skin.
7-methano-1H-indenedimethylamine

Eyes

: Benzyl alcohol Irritating to eyes.
Trimethylhexane-1, Corrosive to eyes.
6-diamine
3-aminomethyl-3,5, Corrosive to eyes.
5-trimethylcyclohexylamine

Respiratory

: No additional information.

Sensitiser

Product/ingredient name	Test	Route of exposure	Species	Result
ARADUR 3253 BD	-	skin	Guinea pig	Sensitising
Benzyl alcohol	-	skin	Guinea pig	Not sensitizing
Trimethylhexane-1, 6-diamine	OECD 406 Skin Sensitization	skin	Guinea pig	Sensitising
3-aminomethyl-3,5, 5-trimethylcyclohexylamine	OECD 406 Skin Sensitization	skin	Guinea pig	Sensitising
octahydro-4,7-methano-1H-indenedimethylamine	OECD 406 Skin Sensitization	skin	Guinea pig	Sensitising

Conclusion/Summary

Skin

: No additional information.

Respiratory

: No additional information.

Mutagenicity

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Product/ingredient name	Test	Result
Benzyl alcohol	OECD 474 Mammalian Erythrocyte Micronucleus Test	Negative
octahydro-4,7-methano-1H-indenedimethylamine	OECD 471 Bacterial Reverse Mutation Test	Negative
	OECD 474 Mammalian Erythrocyte Micronucleus Test	Negative

Conclusion/Summary : Trimethylhexane-1, 6-diamine Not mutagenic in a standard battery of genetic toxicological tests.
3-aminomethyl-3,5, Not mutagenic in a standard battery of genetic toxicological tests.
5-trimethylcyclohexylamine

Carcinogenicity

Product/ingredient name	Test	Species	Exposure	Result	Route of exposure	Target organs
Benzyl alcohol	OECD 453 Combined Chronic Toxicity/ Carcinogenicity Studies	Rat	103 weeks; 5 days per week	Negative	Oral	-

Conclusion/Summary : No additional information.

Reproductive toxicity

Product/ingredient name	Test	Species	Result/Result type	Target organs
Trimethylhexane-1, 6-diamine	OECD 416 Two-Generation Reproduction Toxicity Study	Rat	Oral: 10 mg/kg NOAEL	-

Conclusion/Summary : No additional information.

Teratogenicity

Product/ingredient name	Test	Species	Result/Result type
Benzyl alcohol	-	Mouse - Female	550 mg/kg NOAEL
Trimethylhexane-1, 6-diamine	-	Rabbit - Female	>250000 ppm NOAEL
3-aminomethyl-3,5, 5-trimethylcyclohexylamine	OECD 414 Prenatal Developmental Toxicity Study	Rat - Female	>250 mg/kg NOAEL

Conclusion/Summary : No additional information.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Inhalation : Harmful if inhaled. May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Ingestion : Harmful if swallowed. May cause burns to mouth, throat and stomach.

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Skin contact : Causes severe burns. May cause an allergic skin reaction.

Eye contact : Causes serious eye damage.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation : No specific data.

Ingestion : Adverse symptoms may include the following:
stomach pains

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Eye contact : Adverse symptoms may include the following:
pain
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
Benzyl alcohol	-	NOAEL -	400 mg/kg	central nervous system (CNS)
	OECD 412 Repeated Dose Inhalation Toxicity: 28-day or 14-day Study	NOEC Dusts and mists	1072 mg/m ³	-
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, reaction products with 3-aminomethyl-3,5,5-trimethylcyclohexylamine	OECD 407 Repeated Dose 28-day Oral Toxicity Study in Rodents	NOEL -	30 mg/kg/d	liver
Trimethylhexane-1,6-diamine	EPA CFR	NOAEL -	10 mg/kg	-
3-aminomethyl-3,5,5-trimethylcyclohexylamine	OECD 408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	NOAEL -	60 mg/kg	kidneys
octahydro-4,7-methano-1H-indenedimethylamine	OECD 407 Repeated Dose 28-day Oral Toxicity Study in Rodents	NOAEL -	50 mg/kg/d	-

Conclusion/Summary : No additional information.

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.

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SECTION 11: Toxicological information**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
Benzyl alcohol	OECD 202 <i>Daphnia</i> sp. Acute Immobilisation Test	Acute EC50	48 hours	Daphnia	230 mg/l
	OECD 201 Alga, Growth Inhibition Test	Acute EgC50	72 hours Static	Algae	770 mg/l
	EPA OPPTS	Acute LC50	96 hours Static	Fish	460 mg/l
	OECD 201 Alga, Growth Inhibition Test	Chronic NOEC	72 hours Static	Algae	310 mg/l
	OECD 211 <i>Daphnia</i> Magna Reproduction Test	Chronic NOEC	21 days Semi-static	Daphnia	51 mg/l
Trimethylhexane-1, 6-diamine	DIN	Acute EgC50	72 hours	Algae	29.5 mg/l
3-aminomethyl-3,5, 5-trimethylcyclohexylamine	DIN Measured	Acute IC50	17 hours	Bacteria	89 mg/l
		Acute EC10	18 hours	Bacteria	1120 mg/l
	EU EC C.3 Algal Inhibition Test	Acute EC50	72 hours Static	Algae	37 mg/l
	OECD 202 <i>Daphnia</i> sp. Acute Immobilisation Test	Acute EC50	48 hours Static	Daphnia	23 mg/l
	EU EC C.1 Acute Toxicity for Fish	Acute LC50	96 hours Semi-static	Fish	110 mg/l
octahydro-4,7-methano-1H-indenedimethylamine	OECD 203 Fish, Acute Toxicity Test	Acute LC50	96 hours	Fish	110 mg/l

Conclusion/Summary : Benzyl alcohol Not toxic or harmful to aquatic organisms.**12.2 Persistence and degradability**

Product/ingredient name	Test	Period	Result
Benzyl alcohol	OECD 301A Ready Biodegradability - DOC Die-Away Test	21 days	95 to 97 %
Trimethylhexane-1, 6-diamine	EU	28 days	7 %
3-aminomethyl-3,5, 5-trimethylcyclohexylamine	EU EC C.4-A Biodegradation: Determination of the "Ready" Biodegradability: Dissolved Organic Carbon (DOC) Die-Away Test	28 days	8 %
octahydro-4,7-methano-1H-indenedimethylamine	OECD 302B Inherent Biodegradability: Zahn-Wellens/EMPA Test	28 days	<30 %

Conclusion/Summary : No additional information.

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SECTION 12: Ecological information

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Benzyl alcohol	-	-	Readily
Trimethylhexane-1, 6-diamine	-	-	Not readily
3-aminomethyl-3,5, 5-trimethylcyclohexylamine	-	-	Not readily
octahydro-4,7-methano-1H-indenedimethylamine	-	-	Not readily

12.3 Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
Benzyl alcohol	1.1	1	low
Trimethylhexane-1, 6-diamine	0.77	-	low
3-aminomethyl-3,5, 5-trimethylcyclohexylamine	0.99	-	low
octahydro-4,7-methano-1H-indenedimethylamine	-0.6	-	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

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. 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. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.

Hazardous waste : Yes.

European waste catalogue (EWC)

Waste code	Waste designation
07 02 04*	other organic solvents, washing liquids and mother liquors

Packaging

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SECTION 13: Disposal considerations

- 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	UN2735	Amines, liquid, corrosive, n.o.s. (Trimethylhexamethylenediamines , Isophorone diamine)
IMDG	UN2735	Amines, liquid, corrosive, n.o.s. (Trimethylhexamethylenediamine , Isophorone diamine)
IATA	UN2735	Amines, liquid, corrosive, n.o.s. (Trimethylhexamethylenediamine , Isophorone diamine)

	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards	14.6 Special precautions for user	Additional information
ADR/RID	8 	II	No.	Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.	<u>Hazard identification number</u> 80 <u>Special provisions</u> 274 <u>Tunnel code</u> E
IMDG	8 	II	No.	Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.	<u>Emergency schedules (EmS)</u> F-A S-B

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SECTION 14: Transport information

IATA	8		II	No.	Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.	Passenger and Cargo Aircraft Quantity limitation: 1 L Packaging instructions: 851 Cargo Aircraft Only Quantity limitation: 30 L Packaging instructions: 855
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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)

This product is compliant with the REACH Regulation EC 1907/2006. Huntsman has pre-registered and is registering all of the substances that it manufactures in or imports into the European Economic Area (EEA) that are subject to Title II of the REACH Regulation.

Annex XIV - List of substances subject to authorisation

Annex XIV

None of the components are listed.

Substances of very high concern

None of the components are listed.

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

Other EU regulations

Europe inventory : All components are listed or exempted.

Black List Chemicals : Not listed

Priority List Chemicals : Not listed

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

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

National regulations

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SECTION 15: Regulatory information

- 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.
- Australia inventory (AICS)** : All components are listed or exempted.
- Canada inventory** :
- China inventory (IECSC)** : All components are listed or exempted.
- Japan inventory** : All components are listed or exempted.
- Korea inventory (KECI)** :
- New Zealand Inventory of Chemicals (NZIoC)** : All components are listed or exempted.
- Philippines inventory (PICCS)** :
- United States inventory (TSCA 8b)** : All components are listed or exempted.
- 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

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

Classification	Justification
Acute Tox. 4, H302	On basis of test data
Acute Tox. 4, H332	Calculation method
Skin Corr. 1B, H314	Calculation method
Eye Dam. 1, H318	Calculation method
Skin Sens. 1, H317	On basis of test data
Aquatic Chronic 3, H412	Calculation method

Full text of abbreviated H statements : H302 Harmful if swallowed.
H311 Toxic in contact with skin.
H312 Harmful in contact with skin.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.

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SECTION 16: Other information

Full text of classifications [CLP/GHS]	H412	Harmful to aquatic life with long lasting effects.
	Acute Tox. 3, H311	ACUTE TOXICITY: SKIN - Category 3
	Acute Tox. 4, H302	ACUTE TOXICITY: ORAL - Category 4
	Acute Tox. 4, H312	ACUTE TOXICITY: SKIN - Category 4
	Acute Tox. 4, H332	ACUTE TOXICITY: INHALATION - Category 4
	Aquatic Chronic 3, H412	LONG-TERM AQUATIC HAZARD - Category 3
	Eye Dam. 1, H318	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
	Eye Irrit. 2, H319	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
	Skin Corr. 1B, H314	SKIN CORROSION/IRRITATION - Category 1B
	Skin Corr. 1C, H314	SKIN CORROSION/IRRITATION - Category 1C
Skin Sens. 1, H317	SKIN SENSITIZATION - Category 1	

Full text of abbreviated R phrases : R22- Harmful if swallowed.
R20/22- Harmful by inhalation and if swallowed.
R21/22- Harmful in contact with skin and if swallowed.
R34- Causes burns.
R43- May cause sensitisation by skin contact.
R52/53- Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Full text of classifications [DSD/DPD] : C - Corrosive
Xn - Harmful

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