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MATERIAL SAFETY DATA SHEET

PUFFIN EPOXY DUOS BASE B

Published : Januari 2021 Product –identity no :IW-PESLH100CR40-B
Edited : - Distribution date : March 2021

TRADE NAME : PUFFIN EPOXY DUOS BASE B

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1. IDENTIFICATION OF SUBSTANCE AND COMPANY

Identification of Substance or Preparation
Chemical description : Polyamine
Recommendation : Hardener

Company / Undertaking Identificaation Supplier
PT.Indowijaya Sakti Teguh
Jl.Pangeran Jayakarta No. 121/3-4, Jakarta Pusat, 10730. Indonesia
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2. HAZARD IDENTIFICATION

Classification of the substance or mixture

- **SKIN CORROSION/IRRITATION - Category 2**
- **SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2A**
- **SKIN SENSITISATION - Category 1**
- **LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2**

GHSLabel elements
Hazard pictograms :

Signal word : Warning

Hazard statements:
Causes serious eye irritation.
Causes skin irritation.
May cause an allergic skin reaction.
Toxic to aquatic life with long lasting effects

Precautionary statements

Prevention: Wear protective gloves. Wear eye or face protection. Avoid release to the environment. Wash hands thoroughly after handling.
Response: Collect spillage. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation or rash occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Storage : Not applicable

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

Other hazards which do not result in classification: None known

3. COMPOSITION/INFORMATION ON INGREDIENTS:

Substance/mixture : mixture
Other means of identification: Not available
CAS number/other identifiers
CAS number : Not applicable.
EC number : Mixture.
Product code : 496

Ingredients name	%	Cas number
epoxy resin (MW ≤ 700)	≥50 - ≤75	1675-54-3
oxirane, mono[(c12-14-alkyloxy)methyl]derivs	≥10 - ≤25	68609-97-2
Fatty acids, C18-unsatd., dimers, oligomeric reaction products with1-chloro-2,3-epoxypropane	≤ 3	68475-94-5
Oxirane, 2-(chloromethyl)-, polymer with α-hydro-ωhydroxypoly[oxy(methyl-1,2-ethanediyl)]	≤ 3	9072-62-2

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.

Occupational exposure limits, if available, are listed in Section 8.
Chemical formula: Not applicable

4. FIRST AID MEASURES

Description of first aid measures

1. **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.
2. **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. 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.
3. **Skin contact :**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. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
4. **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**.**

Most important symptoms and effects, both acute and delayed
Potential acute health effects
Eye contact : Causes serious eye irritation
Inhalation : No known significant effects or critical hazards.
Skin contact : Causes skin irritation. May cause an allergic skin reaction
Ingestion : No known significant effects or critical hazards.
Over-exposure signs/symptoms
Eye contact : Adverse symptoms may include the following: pain or irritation watering redness
Inhalation : No specific data.
Skin contact : Adverse symptoms may include the following: irritation redness
Ingestion : No specific data.

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

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 : No specific treatment.
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.

5. FIRE FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media: None known

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst. This material is toxic 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:

carbondioxide,carbon monoxide ,nitrogen oxides, sulfur oxides, halogenated compounds,carbonyl halides ,metal oxide/oxides

Hazardous combustion products : Decomposition products may include the following materials: carbon monoxide, carbon dioxide, smoke, oxides of nitrogen.

Special protective actions 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.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

For non-emergency personel: 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 the information in "For non-emergency personnel".

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.Maybe harmful to the environment if released in large quantities. Collect spillage.

Methods and material 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 contract

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 (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

7. HANDLING AND STORAGE

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. 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.

Conditions for safe storage, including any incompatibilities : 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. See Section 10 for incompatible materials before handling or use.

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.

8. EXPOSURE CONTROLSPERSONALPROTECTION

Control parameters

Occupational exposure limits

None

Appropriate engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants

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.

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 to EN 166 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.

Hand protection : There is no one glove material or combination of materials that will give unlimited resistance to any individual or combination of chemicals. The breakthrough time must be greater than the end use time of the product. The instructions and information provided by the glove manufacturer on use, storage, maintenance and replacement must be followed. Gloves should be replaced regularly and if there is any sign of damage to the glove material. Always ensure that gloves are free from defects and that they are stored and used correctly. The performance or effectiveness of the glove may be reduced by physical/ chemical damage and poor maintenance. Barrier creams may help to protect the exposed areas of the skin but should not be applied once exposure has occurred. Wear suitable gloves tested to EN374. Recommended, gloves(breakthrough time) > 8 hours: PVC, fluor rubber, Viton®, PE, butyl rubber, nitrile rubber, neoprene

For right choice of glove materials, with focus on chemical resistance and time of penetration, seek advice by the supplier of chemical resistant gloves. The user must check that the final choice of type of glove selected for handling this product is the most appropriate and takes into account the particular conditions of use, as included in the user's risk assessment.

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 : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearaance

Physical state	**:** Liquid.
Colour	**:** Various colours
Odour	**:** Characteristic
Odour threshold	**:** Not Available
PH	**:** Not Applicable
Melting/freezing point	**:** Not Applicable
Boiling point	**:** Lowest known value: >260°C (>500°F)(epoxy resin (MW ≤ 700)).
Flash point	**:** Closed cup: 100°C (212°F)
Burning time	: Not applicable.
Burning rate	: Not applicable.
Evaporation rate	**:** Not available.
Flammability (solid, gas)	**:** Not applicable

Lower and upper explosive (flammable) limits : Not applicable

Vapour pressure	**:** Highest known value: 0 kPa (0 mm Hg) (at 20°C) (epoxy resin (MW ≤ 700)). Weighted average: 0 kPa (0 mm Hg) (at 20°C)
Vapour density	**:** Highest known value: 11.7 (Air = 1) (epoxy resin (MW ≤ 700)).
Relative density	**:**1.17 to 1.392 g/cm^3
Solubility	**:** Insoluble in the following materials: cold water and hot water.
Solubility in water	**:** Not available.

Partition coefficient: noctanol/water : Not available.

Auto-ignition temperature.	**:** Not available.
Decomposition temperature	**:** Not available.
SADT	**:** Not available**.**
Viscosity	**:**Dynamic: Highest known value: 10 to 12 cP (epoxy resin (MW ≤ 700)) Weighted average: 10.13 cP Kinematic (40C): >20.5 cSt

10. STABILITY AND REACTIVITY

Reactivity: No specific test data related to reactivity available for this product or its ingredients.
Chemical Stability : The product is stable.

Possibility of Hazardous reaction : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Keep away from the following materials to prevent strong exothermic reactions: oxidising agents, strong alkalis, strong acids.

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

SADT : Not available

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute toxicity

Product/Ingredient name	Result	Species	Dose	Exposure
epoxy resin (MW ≤ 700) oxirane, mono[(c12-14-alkylox methyl] derivs	LD50 Dermal LD50 Oral LD50 Oral	Rabbit Mouse Rat	20 g/kg 15600 mg/kg 17100 mg/kg	- - -

Irritation/ corrosion

Product/ ingredient name	Result	species	score	exposure	observation
epoxy resin (MW ≤ 700)	Eyes - Severe irritant	Rabbit	-	24 hours 2 Milligrams	-
	Skin - Mild irritant	Rabbit	-	500 milligrams	-
oxirane, mono[(c12-14-alkyloxy)methyl] derivs	Skin - Moderate irritant	Rabbit	-	24 hours 500 µl	-
	Skin - Mild irritant	Mammal species	-	-	-
Fatty acids, C18-unsatd., dimers, oligomeric reaction productswith 1-chloro2,3-epoxypropane	Skin - Mild irritant	Mammal Species Unspecified	-	-	-
	Eyes - Mild irritant	Mammal Species Unspecified	-	-	-
Oxirane, 2-(chloromethyl)-, polymer with α-hydro-ωhydroxypoly[oxy(methyl-1,2-ethanediyl)]	Eyes - Mild irritan	Rabbit	-	24 hours 100 Microliters	-
	Skin - Mild irritant	Mammal species unspecified	-	-	-
	Eyes - Mild irritant	Mammal Species unspecified	-	-	-

Sensitisation

Product/ingredient name	Route of exposure	Species	Result
epoxy resin (MW ≤ 700)	Skin	Mammal - species unspecified	Sensitising
oxirane, mono[(c12-14-alkyloxy)methyl] derivs	Skin	Mammal - species unspecified	Sensitising
Fatty acids, C18-unsatd., dimers, oligomeric reaction products with 1-chloro2,3-epoxypropane	Skin	Mammal - species unspecified	Sensitising
Oxirane, 2-(chloromethyl)-, polymer with α-hydro-ωhydroxypoly[oxy	Skin	Mammal - species	Sensitising

(methyl-1,2-ethanediyl)]		unspecified	

Mutagenicity
Not available.

Carcinogenicity
Not available.

Reproductive toxicity
Not available.

Teratogenicity
Not available.

Specific target organ toxicity (single exposure)
Not available.

Specific target organ toxicity (repeated exposure)
Not available.

Aspiration hazard
Not available.

Information on likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : No known significant effects or critical hazards.

Skin contact : Causes skin irritation. May cause an allergic skin reaction.

Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following: pain or irritation watering redness

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following: irritation redness.

Ingestion : No specific data.

Delayed and immediate effects as well as 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

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.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

12. ECOLOGICAL INFORMATION

Toxicity

Product/ingredient name	Result	Species	Exposure
epoxy resin (MW ≤ 700)	Acute EC50 1.4 mg/l Acute LC50 3.1 mg/l Chronic NOEC 0.3 mg/l	Daphnia Fish - pimephalespromelas Fish	48 hours 96 hours 21 days

Persistence/degradability

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
epoxy resin (MW ≤ 700)	-	-	readily

Bioaccumulative potential

Product/ingredient name	LogPow	BCF	Potential
epoxy resin (MW ≤ 700) oxirane, mono[(c12-14-alkyloxy)methyl] derivs	2.64 to 3.78 3.77	31 160 to 263	Low Low

Mobility in soil

Soil/water partition: Not available.
coefficient (KOC)

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

13. DISPOSAL CONSIDERATION

Disposal Methods: 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 nonrecyclable 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. 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.Do not allow to enter drains or watercourses. Material and/or container must be disposed of as hazardous waste.

14. TRANSPORT INFORMATION

	UN	IMDG	IATA
UN number	UN3082	UN3082	UN3082
UN proper shipping name	Environmentally hazardous substance, liquid, n.o.s. (epoxy resin (MW ≤ 700))	Environmentally hazardous substance, liquid, n.o.s. (epoxy resin (MW ≤ 700)). Marine pollutant (epoxy resin (MW ≤ 700))	Environmentally hazardous substance, liquid, n.o.s. (epoxy resin (MW ≤ 700))
Transport hazard class(es)	9	9	9
Packing group	III	III	III
Environmental hazards	Yes.	Yes.	Yes.
Additional information	This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.	This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8. Emergency schedules F-A, S-F	This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 5.0.2.4.1, 5.0.2.6.1.1 and 5.0.2.8.

Additional information
Transport in accordance with ADR/RID, IMDG/IMO and ICAO/IATA and national regulation.

ADR / RID : Tunnel restriction code: (-)
Hazard identification number: 90

IMDG :.This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.

Special precautions for user : transport within user's premises: 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.

Transport in bulk according to Annex II of Marpol and the IBC Code : Not applicable

15. REGULATORY INFORMATION

Singapore - hazardous chemicals under government control
None.

16. OTHER INFORMATION

Key to abbreviations :

- **ATE =** Acute Toxicity Estimate
- **BCF =** Bioconcentration Factor
- **GHS =** Globally Harmonized System of Classification and Labelling of Chemicals
- **IATA =** International Air Transport Association
- **IBC =** Intermediate Bulk Container
- **IMDG =** International Maritime Dangerous Goods
- **LogPow**= logarithm of the octanol/water partition coefficient
- **MARPOL** = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
- **UN =** United Nations.

References : Not available.

NOTES

PT.INDOWIJAYA SAKTI TEGUH has a responsibility to take reasonable care for our own health and safety and the health and safety of others who may be affected by our acts or omissions. This M.S.D.S. at the date of issue has Health and Safety Information of the product, and how to safely handle and use this product in the workplace.

All information given is our best knowledge, and because we cannot anticipate or control the conditions of the end use of this products, prior to usage, each user must determine by reviewing this M.S.D.S, Safe Handling and usage of this products in the Workplace.

PT.INDOWIJAYA SAKTI TEGUH believe this information to be reliable, and in good faith, but no guarantees or warranties of any kind are made as to its accuracy, suitability to particulate applications due to variations in methods, conditions and equipment. When PT.INDOWIJAYA SAKTI TEGUH provides information and service involving skill, assistance, judgment, recommendations, and or advise this is done on the best of our knowledge only; information is not be relied upon.

Full scale testing and performance of the product is the responsibility of the end user. For further information or classification of certain points to ensure that the user has made a proper assessment and reasonable precautions have been applied, please contact PT.INDOWIJAYA SAKTI TEGUH.