SAFETY DATA SHEET

according to the Globally Harmonized System and US regulation

ARMOHIB 31

Version 1 Revision Date 02/25/2019 Print Date 03/12/2020 US / Z8

1. IDENTIFICATION

Product name	:	ARMOHIB 31
Product Use Description	:	Specific use(s): Surfactant
Company	:	Nouryon Surface Chemistry LLC 131 S Dearborn St, Suite 1000 Chicago IL 60603-5566 US
Telephone	:	+18009069977
Fax	:	+13125447188
E-mail address	:	
Emergency telephone	:	CANUTEC: +1 613-996-6666 CHEMTREC: +1 800-424-9300

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	liquid
Color	amber
Odor	mild, fatty odor

GHS Classification

Acute toxicity, Category 4, Oral
Serious eye damage, Category 1
Short-term (acute) aquatic hazard, Category 2
Long-term (chronic) aquatic hazard, Category 2

GHS label elements

Hazard pictograms :

Signal Word : Danger

Hazard Statements : H302 Harmful if swallowed.
H318 Causes serious eye damage.
H411 Toxic to aquatic life with long lasting effects.

Precautionary Statements : **Prevention:**
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P273 Avoid release to the environment.

P280 Wear protective gloves/ eye protection/ face protection.
Response:
P301 + P312 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER/doctor.
P330 Rinse mouth.
P391 Collect spillage.
Disposal:
P501 Dispose of contents/container in accordance with local regulation.

Carcinogenicity:

IARC : No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA : No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP : No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture : Mixture

Hazardous ingredients

Chemical name	CAS-No.	Classification	Concentration [% W/W]
Quaternary amine compound		Eye Dam. 1; H318 Aquatic Acute 2; H401 Aquatic Chronic 2; H411	>= 70 - < 90
Thiourea, N,N´-dibutyl-	109-46-6	Acute Tox. 4; H302 Aquatic Acute 3; H402	>= 20 - < 30

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

General advice : Immediate medical attention is required.
Move out of dangerous area.
Show this material safety data sheet to the doctor in attendance.

Inhalation : If breathed in, move person into fresh air.
Consult a physician after significant exposure.

Skin contact : Take off contaminated clothing and shoes immediately.
Rinse immediately with plenty of water.

Eye contact : Rinse with plenty of water.
Get medical attention immediately. Continue to rinse during transport of patient.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.

Ingestion : Clean mouth with water and drink afterwards plenty of water.
Never give anything by mouth to an unconscious person.
Obtain medical attention.

Notes to physician

Symptoms : The symptoms and effects are as expected from the hazards as shown in section 2. No specific product related symptoms are known.

Risks : Harmful if swallowed.
Causes serious eye damage.

Treatment : Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Specific hazards during fire fighting / Specific hazards arising from the chemical	:	Do not allow run-off from fire fighting to enter drains or water courses.
Combustion products	:	Carbon oxides Nitrogen oxides (NOx) Halogenated compounds Hydrogen chloride
Special protective equipment for fire-fighters	:	In the event of fire, wear self-contained breathing apparatus.
Further information	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

See also Section 9. Physical and chemical properties: Safety data

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Use personal protective equipment. Ensure adequate ventilation.
Emergency measures on accidental release	:	Evacuate personnel to safe areas. Only qualified personnel equipped with suitable protective equipment may intervene. Prevent unauthorized persons entering the zone.
Environmental precautions	:	Do not flush into surface water or sanitary sewer system. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods for cleaning up / Methods for containment	:	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.
Reference to other sections	:	For disposal considerations see section 13. For personal protection see section 8.

7. HANDLING AND STORAGE

Handling

Advice on safe handling	:	For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

Storage

Requirements for storage areas and containers : Keep container tightly closed in a dry and well-ventilated place.

Other data : No decomposition if stored and applied as directed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Contains no substances with occupational exposure limit values.

Occupational exposure limits of decomposition products

Decomposition products	CAS-No.	Value	Control parameters	Update	Basis	Form of exposure
Hydrogen chloride	7647-01-0, 7647-01-0	C	2 ppm	2007-01-01	ACGIH	
	Further information	:	URT irr: Upper Respiratory Tract irritation A4: Not classifiable as a human carcinogen			
		C	5 ppm 7 mg/m3	2013-10-08	NIOSH REL	
	Further information	:	Often used in an aqueous solution.			
		C	5 ppm 7 mg/m3	2006-02-28	OSHA Z-1	
	Further information	:	(b): The value in mg/m3 is approximate. (C): Ceiling limit is to be determined from breathing-zone air samples.			
		C	5 ppm 7 mg/m3	1989-01-19	OSHA P0	
		PEL	0.3 ppm 0.45 mg/m3	2014-11-26	CAL PEL	
		C	2 ppm	2014-11-26	CAL PEL	

Appropriate engineering controls

Effective exhaust ventilation system

Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protective equipment

Eye/face protection : Tightly fitting safety goggles

Hand protection : Glove material: Neoprene

: Glove material: Nitrile rubber

Skin and body protection : Protective suit

Respiratory protection : In the case of vapor or aerosol formation use a respirator with an approved filter.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.

When using do not eat or drink.
When using do not smoke.
Wash hands before breaks and at the end of workday.

Environmental exposure controls

General advice : Do not flush into surface water or sanitary sewer system.
If the product contaminates rivers and lakes or drains inform respective authorities.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	:	liquid
Color	:	amber
Odor	:	mild fatty odor
Odor Threshold	:	No data available

Safety data

pH	:	5.5
Melting point/range	:	-4 °C
Boiling point/boiling range	:	> 100 °C
Flash point	:	> 150 °C Method: closed cup
Ignition temperature	:	> 100 °C
Evaporation rate	:	No data available
Flammability (solid, gas)	:	Not applicable
Flammability (liquids)	:	Not classified as a flammability hazard
Lower explosion limit	:	No data available
Upper explosion limit	:	No data available
Vapor pressure	:	< 1 hPa at 20 °C
Relative vapor density	:	No data available
Density	:	1,042 kg/m3 at 25 °C
Relative density	:	1.04 at 25 °C
Water solubility	:	soluble
Solubility in other solvents	:	Dispersible in ethanol.
Partition coefficient: n-	:	No data available

octanol/water

Autoignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	No data available
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.

This material safety datasheet only contains information relating to safety and does not replace any product information or product specification.

10. STABILITY AND REACTIVITY

Conditions to avoid	:	None known.
Materials to avoid	:	None known.
Hazardous decomposition products	:	Halogenated compounds Hydrogen chloride
Thermal decomposition	:	No data available
Reactivity	:	Stable under normal conditions.
Chemical stability	:	Stable under recommended storage conditions.
Hazardous reactions	:	No dangerous reaction known under conditions of normal use.

11. TOXICOLOGICAL INFORMATION

PRODUCT INFORMATION:

Hazard Summary

Acute toxicity	:	Harmful if swallowed.
Skin corrosion/irritation	:	Not classified based on available information.
Serious eye damage/eye irritation	:	Causes serious eye damage.
Respiratory or skin sensitization	:	Respiratory sensitization: Not classified based on available information. Skin sensitization: Not classified based on available information.
Germ cell mutagenicity	:	Not classified based on available information.
Carcinogenicity	:	Not classified based on available information.
Reproductive toxicity	:	Not classified based on available information.
STOT-single exposure	:	Not classified based on available information.

STOT-repeated exposure	:	Not classified based on available information.
Aspiration hazard	:	Not classified based on available information.

Potential Health Effects

Inhalation	:	Inhalation of aerosols may cause irritation to mucous membranes. Thermal decomposition can lead to release of irritating gases and vapors.
Skin	:	Not expected to be irritating.
Eyes	:	Causes serious eye damage.
Ingestion	:	Harmful if swallowed. May cause irritation of the mucous membranes.
Aggravated Medical Condition	:	None known.
Symptoms of Overexposure	:	The symptoms and effects are as expected from the hazards as shown in section 2. No specific product related symptoms are known.

Toxicology Assessment

Further information	:	No further data available.

Test result

Acute oral toxicity	:	Acute toxicity estimate: 1,400 mg/kg Method: Calculation method

Carcinogenicity:

IARC	:	No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA	:	No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.
NTP	:	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

TOXICOLOGY DATA FOR THE INGREDIENTS:

Test result

Component: Quaternary amine compound

Acute oral toxicity	:	LD50: > 2,000 mg/kg Species: Rat Method: OECD Test Guideline 401

Eye irritation : Result: Risk of serious damage to eyes.

Component: Thiourea, N,N´-dibutyl-

Acute oral toxicity : LD50: 350 mg/kg
Species: Rat

12. ECOLOGICAL INFORMATION

PRODUCT INFORMATION:

Ecotoxicology Assessment

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Toxic to aquatic life with long lasting effects.

Further information on ecology

Hazardous to the ozone layer

Regulation : 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances

Remarks : This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

COMPONENTS:

Ecotoxicology Assessment

Component: Thiourea, N,N´-dibutyl-

Long-term (chronic) aquatic hazard : This product has no known ecotoxicological effects.

Test result

Component: Quaternary amine compound

Ecotoxicity effects

Toxicity to fish : LC50: > 10 - 100 mg/l
Exposure time: 96 h
Species: Oncorhynchus mykiss (rainbow trout)
Read-across (Analogy)

Toxicity to daphnia and other aquatic invertebrates : EC50: > 10 - 100 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)
Read-across (Analogy)

Toxicity to algae : EC50: > 1 - 10 mg/l
Exposure time: 72 h
Species: algae
Read-across (Analogy)

Elimination information (persistence and degradability)

Bioaccumulation	:	Bioaccumulation is unlikely.
Mobility	:	No data available
Biodegradability	:	Result: Not readily biodegradable. Method: OECD Test Guideline 301D

Further information on ecology

Biochemical Oxygen Demand (BOD)	:	No data available

Component: Thiourea, N,N´-dibutyl-

Ecotoxicity effects

Toxicity to daphnia and other aquatic invertebrates	:	EC50: > 10 - 100 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea)

Elimination information (persistence and degradability)

Bioaccumulation	:	No data available
Mobility	:	No data available
Biodegradability	:	Result: Inherently biodegradable.

Further information on ecology

Biochemical Oxygen Demand (BOD)	:	No data available

13. DISPOSAL CONSIDERATIONS

Product	:	The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Hazardous waste Dispose of contents/container in accordance with local regulation.
	:	Waste must be disposed of in accordance with federal, state and local environmental control regulations.
Contaminated packaging	:	Empty remaining contents. Dispose of as unused product.

14. TRANSPORT INFORMATION

International Regulations

IATA-DGR

UN/ID No.	:	UN 3082
Proper shipping name	:	Environmentally hazardous substance, liquid, n.o.s. (Quaternary alkylamine ethoxylate)
Class	:	9
Packing group	:	III
Labels	:	9
Packing instruction (cargo aircraft)	:	964
Packing instruction (passenger aircraft)	:	964
Packing instruction (LQ)	:	Y964
Environmentally hazardous	:	yes

IMDG-Code

UN number	:	UN 3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Quaternary alkylamine ethoxylate)
Class	:	9
Packing group	:	III
Labels	:	9
EmS Code	:	F-A, S-F
Marine pollutant	:	yes (Quaternary alkylamine ethoxylate)

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

Further information for transport

49CFR: no dangerous good in non-bulk packaging

Domestic regulation

49 CFR

UN/ID/NA number	:	UN 3082
Proper shipping name	:	Environmentally hazardous substance, liquid, n.o.s.
	:	(Quaternary alkylamine ethoxylate)
Class	:	9
Packing group	:	III
Labels	:	9
ERG Code	:	171
Marine pollutant	:	yes (Quaternary alkylamine ethoxylate)
Reportable Quantity	:	This product does not contain an environmentally hazardous substance per 49 CFR 172.101, Appendix A.

15. REGULATORY INFORMATION

Notification status

DSL	:	YES. All components of this product are on the Canadian DSL
AICS	:	YES. On the inventory, or in compliance with the inventory
NZIoC	:	YES. On the inventory, or in compliance with the inventory
ENCS	:	YES. On the inventory, or in compliance with the inventory

ISHL	:	YES. On the inventory, or in compliance with the inventory
KECI	:	YES. On the inventory, or in compliance with the inventory
PICCS	:	NO. Not in compliance with the inventory
IECSC	:	YES. On the inventory, or in compliance with the inventory
TCSI	:	YES. On the inventory, or in compliance with the inventory
TSCA	:	YES. All chemical substances in this product are either listed on the TSCA Inventory or in compliance with a TSCA Inventory exemption.

For explanation of abbreviations, see section 16.

TSCA list

TSCA 5(a)(2)	:	No substances are subject to a Significant New Use Rule.
TSCA 12(b)	:	No substances are subject to TSCA 12(b) export notification requirements.

EPCRA - Emergency Planning and Community Right-to-Know

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards	:	Acute toxicity (any route of exposure) Serious eye damage or eye irritation
SARA 302	:	This material does not contain any components with a section 302 EHS TPQ.
SARA 313	:	This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Air Act

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489).

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.
This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.
This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

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California Prop. 65

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.
This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

16. OTHER INFORMATION

Full text of H-Statements

H302	:	Harmful if swallowed.
H318	:	Causes serious eye damage.
H401	:	Toxic to aquatic life.
H402	:	Harmful to aquatic life.
H411	:	Toxic to aquatic life with long lasting effects.

Full text of other abbreviations

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
CAL PEL	:	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
NIOSH REL	:	USA. NIOSH Recommended Exposure Limits
OSHA P0	:	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
ACGIH / C	:	Ceiling limit
CAL PEL / PEL	:	Permissible exposure limit
CAL PEL / C	:	Ceiling
NIOSH REL / C	:	Ceiling value not be exceeded at any time.
OSHA P0 / C	:	Ceiling limit
OSHA Z-1 / C	:	Ceiling

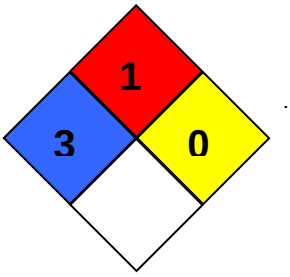
AICS - Australian Inventory of Chemical Substances; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; CPR - Controlled Products Regulations; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act (United States); UN - United Nations;

UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

Further information

HMIS Classification : Health Hazard: 3
Chronic Health Hazard: /
Flammability: 1
Physical hazards: 0

NFPA Classification : Health Hazard: 3
Fire Hazard: 1
Reactivity Hazard: 0



Notification status explanation

REACH	1907/2006 (EU)
DSL	Canadian Domestic Substances List (DSL)
AICS	Australia Inventory of Chemical Substances (AICS)
NZIoC	New Zealand. Inventory of Chemical Substances
ENCS	Japan. ENCS - Existing and New Chemical Substances Inventory
ISHL	Japan. ISHL - Inventory of Chemical Substances
KECI	Korea. Korean Existing Chemicals Inventory (KECI)
PICCS	Philippines Inventory of Chemicals and Chemical Substances (PICCS)
IECSC	China. Inventory of Existing Chemical Substances in China (IECSC)
TCSI	Taiwan Chemical Substance Inventory (TCSI)
TSCA	United States TSCA Inventory

Further information

Revision Date	02/25/2019

The information in this material safety data sheet should be provided to all who will use, handle, store, transport or otherwise be exposed to this product. The user must determine the appropriate measures that need to be implemented for the use and handling of this product in the c ontext of the user's operations and use of this product. The information contained herein supersedes all previously issued bulletins on the subject matter covered. If the date on this document is more than three years old,call to make certain that this sheet is current. No warranty is made as to the product’s merchantability or fitness for any particular purpose, or that any suggested use will not infringe any patent. User must determine for himself, by preliminary tests or otherwise, the suitability of this product for his purposes, including mixing with other products. Nothing contained herein shall be construed as granting or extending any license under any patent.

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.