

Conforms: GHS (rev 4) (2011)  
- Colombia

Date of issue/ Date of revision : 05.07.2017  
Date of previous issue : 14.12.2015  
Version : 1.2



# SAFETY DATA SHEET

RAFOS

## Section 1. Identification

Product identifier : RAFOS  
Product type : Solid (Granular solid.)  
Product code : PLDCZG

### Uses

Area of application : Professional applications  
Material uses : Fertilizers.

### Supplier

Supplier's details : Yara Colombia S.A.

### Address

Street : Cra 11 Piso 3  
Number : #94A-34  
City : Bogotá  
Country : Colombia

Telephone number : +57(5) 6931215  
e-mail address of person : info.colombia@yara.com  
responsible for this SDS  
Emergency telephone number : 01 8000 916012 (7/24)  
(with hours of operation) : 01 8000 511414 (Option 1)(7/24)  
01 800 5184127 (7/24)

National advisory body/Poison : Not available.  
Center

## Section 2. Hazards identification

Classification and labelling have been performed following the guidelines and recommendation of GHS and the intended use.

Classification of the : SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1  
substance or mixture

### GHS label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : H318 Causes serious eye damage.

**Precautionary statements**

<b>Prevention Response</b>	:	P280-b	Wear protective gloves and eye protection.
	:	P305	IF IN EYES:
		P351	Rinse cautiously with water for several minutes.
		P338	Remove contact lenses, if present and easy to do. Continue rinsing.
		P310	Immediately call a POISON CENTER or doctor/physician.

**Other hazards which do not result in classification** : Product forms slippery surface when combined with water.

**Section 3. Composition/information on ingredients**

**Substance/mixture** : Mixture

<b>Ingredient name</b>	<b>CAS number</b>	<b>%</b>
ammonium nitrate	6484-52-2	>= 20 - < 25
potassium chloride	7447-40-7	>= 20 - < 25
calcium bis(dihydrogenorthophosphate)	7758-23-8	>= 7 - < 10
calcium hydrogenphosphate	7757-93-9	>= 2 - < 3
disodium tetraborate pentahydrate	12179-04-3	>= 0,1 - < 0,2

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

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.

**Section 4. First aid measures****Description of necessary first aid measures**

<b>Eye contact</b>	:	Immediately flush eyes with plenty of water for at least 15 minutes, keeping eyelids open. Check for and remove any contact lenses. Get medical attention immediately.
<b>Inhalation</b>	:	If inhaled, remove to fresh air. In case of inhalation of decomposition products in a fire, symptoms may be delayed. Get medical attention immediately. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus.
<b>Skin contact</b>	:	Wash with soap and water. Get medical attention if irritation develops.
<b>Ingestion</b>	:	Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel.

### **Most important symptoms/effects, acute and delayed**

#### **Potential acute health effects**

- |                     |   |   |
|---------------------|---|---|
| <b>Eye contact</b>  | : | Causes serious eye damage.  |
| <b>Inhalation</b>   | : | May give off gas, vapour 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. |
| <b>Skin contact</b> | : | No known significant effects or critical hazards.   |
| <b>Ingestion</b>    | : | May cause burns to mouth, throat and stomach.   |

#### **Over-exposure signs/symptoms**

- |                     |   |  |
|---------------------|---|--|
| <b>Eye contact</b>  | : | Adverse symptoms may include the following:<br>pain<br>watering<br>redness |
| <b>Inhalation</b>   | : | No specific data.  |
| <b>Skin contact</b> | : | No specific data.  |
| <b>Ingestion</b>    | : | No specific data.  |

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

- |                                   |   |   |
|-----------------------------------|---|---|
| <b>Notes to physician</b>         | : | Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. 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.   |
| <b>Specific treatments</b>        | : | No specific treatment.  |
| <b>Protection of first-aiders</b> | : | 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. |

See toxicological information (section 11)

## **Section 5. Firefighting measures**

### **Extinguishing media**

- |   |   |   |
|---|---|---|
| <b>Suitable extinguishing media</b>               | : | Use flooding quantities of water for extinction.  |
| <b>Unsuitable extinguishing media</b>             | : | Do NOT use chemical extinguisher or foam or attempt to smother the fire with steam or sand.   |
| <b>Specific hazards arising from the chemical</b> | : | No specific fire or explosion hazard.   |
| <b>Hazardous thermal decomposition products</b>   | : | Decomposition products may include the following materials:<br>nitrogen oxides<br>sulfur oxides<br>phosphorus oxides<br>halogenated compounds |



metal oxide/oxides

Avoid breathing dusts, vapors or fumes from burning materials.

In case of inhalation of decomposition products in a fire, symptoms may be delayed.

- 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.
- Remark** : None.

## Section 6. Accidental release measures

### 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 spilled material. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialized 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".
- Personal precautions, protective equipment and emergency procedures** : 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 spilled material. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- Environmental precautions** : Avoid dispersal of spilled 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).

### Methods and material for containment and cleaning up

- Small spill** : Move containers from spill area. Avoid dust generation. Using a vacuum with HEPA filter will reduce dust dispersal. Place spilled material in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see section 1 for emergency contact information and section 13 for waste disposal.

## Section 7. Handling and storage

### Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8).  
Do not get in eyes or on skin or clothing. Do not ingest. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. 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. 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 unlabeled containers.  
Use appropriate containment to avoid environmental contamination. Keep away from: organic materials, oil and grease.

## Section 8. Exposure controls/personal protection

### Control parameters

- Occupational exposure limits** : None.
- Appropriate engineering controls** : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- 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** : A washing facility or water for eye and skin cleaning purposes should be present.
- 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.



Recommended: Tightly-fitting goggles

#### Skin protection

- |                               |   |  |
|-------------------------------|---|--|
| <b>Hand protection</b>        | : | 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.<br>> 8 hours (breakthrough time): Protective gloves should be worn under normal conditions of use. |
| <b>Body protection</b>        | : | Personal protective equipment for the body should be selected based on the task being performed and the risks involved.  |
| <b>Other skin protection</b>  | : | 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.  |
| <b>Respiratory protection</b> | : | In case of inadequate ventilation wear respiratory protection.<br>Recommended: Approved/certified disposable particulate dust mask.  |

## Section 9. Physical and chemical properties

#### Appearance

- |   |   |  |
|---|---|--|
| <b>Physical state</b>                               | : | Solid [Granular solid.]  |
| <b>Color</b>  | : | Brown.   |
| <b>Odor</b>   | : | Faint odor.  |
| <b>Odor threshold</b>                               | : | Not determined.  |
| <b>pH</b>   | : | Not determined.  |
| <b>Melting/freezing point</b>                       | : | Not determined.  |
| <b>Boiling/condensation point</b>                   | : | Not determined.  |
| <b>Sublimation temperature</b>                      | : | Not determined.  |
| <b>Flash point</b>                                  | : | Not determined.  |
| <b>Evaporation rate</b>                             | : | Not determined.  |
| <b>Flammability (solid, gas)</b>                    | : | Non-flammable.   |
| <b>Lower and upper explosive (flammable) limits</b> | : | <b>Lower:</b> Not determined.<br><b>Upper:</b> Not determined.       |
| <b>Vapor pressure</b>                               | : | Not determined.  |
| <b>Bulk density</b>                                 | : | 1.120 kg/m <sup>3</sup>  |
| <b>Relative density</b>                             | : | Not determined.  |
| <b>Solubility</b>                                   | : | Not determined.  |
| <b>Partition coefficient: n-octanol/water</b>       | : | Not determined.  |
| <b>Auto-ignition temperature</b>                    | : | Not determined.  |
| <b>Decomposition temperature</b>                    | : | Not determined.  |
| <b>Viscosity</b>                                    | : | <b>Dynamic:</b> Not determined.<br><b>Kinematic:</b> Not determined. |
| <b>Explosive properties</b>                         | : | None.  |
| <b>Oxidizing properties</b>                         | : | None.  |

## Section 10. Stability and reactivity

- |                   |   |  |
|-------------------|---|--|
| <b>Reactivity</b> | : | No specific test data related to reactivity available for this |
|-------------------|---|--|

product or its ingredients.

<b>Chemical stability</b>	:	The product is stable.
<b>Possibility of hazardous reactions</b>	:	Under normal conditions of storage and use, hazardous reactions will not occur.
<b>Conditions to avoid</b>	:	Avoid contamination by any source including metals, dust and organic materials.
<b>Incompatible materials</b>	:	alkalis combustible materials reducing materials organic materials acids
<b>Hazardous decomposition products</b>	:	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## Section 11. Toxicological information

### Information on toxicological effects

#### Acute toxicity

Product / ingredient name	Result	Species	Dose	Exposure	References
ammonium nitrate					
	LD50 Oral	Rat	2.950 mg/kg OECD 401	Not applicable.	IUCLID 5
	LD50 Dermal	Rat	> 5.000 mg/kg OECD 402	Not applicable.	IUCLID 5
potassium chloride					
	LD50 Oral	Rat	3.020 mg/kg	Not applicable.	IUCLID 5
calcium bis(dihydrogenorthophosphate)					
	LD50 Oral	Rat	3.986 mg/kg	Not applicable.	IUCLID
	LD50 Dermal	Rabbit	> 2.000 mg/kg	Not applicable.	IUCLID
calcium hydrogenphosphate					
	LD50 Oral	Rat	3.986 mg/kg OECD 401	Not applicable.	IUCLID
	LD50 Dermal	Rabbit	> 2.000 mg/kg OECD 402	Not applicable.	IUCLID

**Conclusion/Summary** : No known significant effects or critical hazards.

#### Irritation/Corrosion

Product / ingredient name	Result	Species	Score	Exposure	Observation	References
ammonium nitrate	Eyes - Irritant OECD 405	Rabbit	Not applic		Not applicable.	IUCLID 5

			able.			
calcium bis(dihydrogenorthophosphate)	Eyes - Severe irritant OECD 405	Rabbit	Not applicable.		Not applicable.	IUCLID

**Conclusion/Summary**

**Skin** : No known significant effects or critical hazards.

**Eyes** : Causes serious eye damage.

**Respiratory** : No known significant effects or critical hazards.

**Sensitization****Conclusion/Summary**

**Skin** : No known significant effects or critical hazards.

**Respiratory** : No known significant effects or critical hazards.

**Mutagenicity**

**Conclusion/Summary** : No known significant effects or critical hazards.

**Carcinogenicity**

**Conclusion/Summary** : No known significant effects or critical hazards.

**Reproductive toxicity**

Product / ingredient name	Maternal toxicity	Fertility	Development toxin	Species	Dose	Exposure	References
ammonium nitrate	Not applicable.	Negative	Negative	Rat	Oral: > 1500 mg/kg bw/day OECD 422	28 days	IUCLID 5
calcium hydrogenphosphate	Negative	Not applicable.	Negative	Rat	Oral: > 410 mg/kg bw/day Repeated dose	10 days	IUCLID
calcium hydrogenphosphate	Not applicable.	Negative	Not applicable.	Rat	Oral: > 500 mg/kg bw/day	42 days	IUCLID

**Conclusion/Summary** : No known significant effects or critical hazards.

**Teratogenicity**

**Conclusion/Summary** : No known significant effects or critical hazards.



#### Specific target organ toxicity (single exposure)

No known significant effects or critical hazards.

#### Specific target organ toxicity (repeated exposure)

No known significant effects or critical hazards.

#### Aspiration hazard

No known significant effects or critical hazards.

Information on likely routes of exposure : Not available.

#### Potential acute health effects

- Eye contact : Causes serious eye damage.
- Inhalation : May give off gas, vapour 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 : No known significant effects or critical hazards.
- Ingestion : May cause burns to mouth, throat and stomach.

#### Symptoms related to the physical, chemical and toxicological characteristics

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

Product / ingredient name	Result	Species	Dose	Exposure	References
ammonium nitrate	NOAEL Oral	Rat	256 mg/kg OECD 422	28days	IUCLID 5
ammonium nitrate	No-observable-effect-concentration Dusts and	Rat	> 185 mg/kg OECD 412	2weeks 5 hours per day	IUCLID 5

	mists Inhalation				
calcium hydrogenphosphate	NOAEL Oral	Rat	250 mg/kg OECD 422	42days	IUCLID

**Conclusion/Summary** : No known significant effects or critical hazards.

**General** : No known significant effects or critical hazards.

**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.

#### Over-exposure signs/symptoms

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

**Inhalation** : No specific data.

**Skin contact** : No specific data.

**Ingestion** : No specific data.

#### Numerical measures of toxicity

##### Acute toxicity estimates

Route	ATE value
Oral	6.054,9 mg/kg
Route	ATE value
Dermal	24.703,6 mg/kg

## Section 12. Ecological information

#### Toxicity

Product / ingredient name	Result	Species	Exposure	References
ammonium nitrate				
	Acute LC50 447 mg/l Fresh water	Fish	48 h	IUCLID 5
	Acute EC50 490 mg/l Fresh water	Daphnia	48 h	IUCLID 5
	Acute EC50 1.700 mg/l Salt water	Algae	10 d	IUCLID 5
potassium chloride				
	Acute LC50 2.300 mg/l	Fish	48 h	IUCLID 5
	Acute EC50 825 mg/l	Daphnia magna	48 h	IUCLID 5
	Acute EC50 2.500	Algae	72 h	IUCLID 5

	mg/l			
calcium hydrogenphosphate				
	Acute LC50 100 mg/l Fresh water OECD 203	Fish	96 h	IUCLID
	Acute EC50 100 mg/l Fresh water OECD 202	Daphnia	48 h	IUCLID
	Acute EC50 100 mg/l Fresh water OECD 201	Algae	72 h	IUCLID

**Conclusion/Summary** : No known significant effects or critical hazards.

**Persistence and degradability**

**Conclusion/Summary** : No known significant effects or critical hazards.

**Bioaccumulative potential**

**Conclusion/Summary** : No known significant effects or critical hazards.

**Mobility in soil**

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

**Mobility** : Not available.

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

## Section 13. Disposal considerations

**Product**

**Methods of disposal** : The generation of waste should be avoided or minimized 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. 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 spilled material and runoff and contact with soil, waterways, drains and sewers.

## Section 14. Transport information



<b>Regulation: UN Class</b>	
14.1 UN number	Not regulated.
14.2 UN proper shipping name	Not applicable.
14.3 Transport hazard class(es)	Not applicable.
14.4 Packing group	Not applicable.
14.5 Environmental hazards	No.
Additional information <b><u>Environmental hazards</u></b> : No.	

<b>Regulation: IMDG</b>	
14.1 UN number	Not regulated.
14.2 UN proper shipping name	Not applicable.
14.3 Transport hazard class(es)	Not applicable.
14.4 Packing group	Not applicable.
14.5 Environmental hazards	No.
Additional information <b><u>Marine pollutant</u></b> : Not available.	

<b>Regulation: IATA</b>	
14.1 UN number	Not regulated.
14.2 UN proper shipping name	Not applicable.
14.3 Transport hazard class(es)	Not applicable.
14.4 Packing group	Not applicable.
14.5 Environmental hazards	No.
Additional information <b><u>Marine pollutant</u></b> : No.	

- 14.6 Special precautions for user** : Transport within user's premises: Ensure that persons transporting the product know what to do in the event of an accident or spillage.
- Remark** : A NPK fertilizer not liable to self-sustaining exothermic decomposition according to the S.1 trough test as defined in the recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, part III, section 38.

**IMSBC**

- Bulk cargo shipping name** : AMMONIUM NITRATE BASED FERTILIZER (non-hazardous)
- Class** : Not applicable.
- Group** : C

Marpol V : Non-HME

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

## Section 15. Regulatory information

### Inventory list

**New Zealand Inventory of Chemicals (NZIoC):** All components are listed or exempted.

**Australia inventory (AICS):** All components are listed or exempted.

**Canada inventory (DSL and NDSL):** All components are listed or exempted.

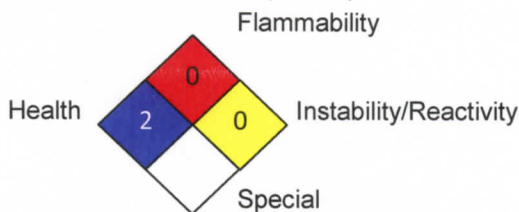
**United States inventory (TSCA 8b):** All components are listed or exempted.

**EC INVENTORY (EINECS/ELINCS):** All components are listed or exempted.

**Canada:** All components are listed or exempted.

## Section 16. Other information

### National Fire Protection Association (U.S.A.)



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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

**Key to abbreviations** :

- ADN/ADNR = European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway
- ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road
- ATE = Acute Toxicity Estimate
- BCF = Bioconcentration Factor
- bw = Body weight
- 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)

NOHSC - National Occupational Health and Safety Commission  
 RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail  
 SUSDP - Standard for the Uniform Scheduling of Drugs and Poisons  
 UN = United Nations

**Procedure used to derive the classification**

Classification	Justification
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1	Calculation method

**References**

: EU REACH IUCLID5 CSR.  
 National Institute for Occupational Safety and Health, U.S.  
 Dept. of Health, Education, and Welfare, Reports and Memoranda Registry of Toxic Effects of Chemical Substances.  
 Sphera Solutions Inc., 4777 Levy Street, St Laurent, Quebec HAR 2P9, Canada.

**History**

Date of printing : 06.07.2017  
 Date of issue/Date of revision : 05.07.2017  
 Date of previous issue : 14.12.2015  
 Revision comments : See Section 1 for emergency contact information.

Version : 1.2  
 Prepared by : Yara Chemical Compliance (YCC).

|| Indicates information that has changed from previously issued version.

**Notice to reader**

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.