

FH-C20-042_V.8/ 26.06.2019

SAFETY DATA SHEET LIQUID FERTILIZERS – UAN TYPE

According to EC Regulation no. 1907/2006 (REACH) / EC Regulation no. 1272/2008/ Regulation no. 830/ 2015.

SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND THE COMPANY

1.1. Product identification

Name: LIQUID FERTILIZERS UREA TYPE – AMMONIUM NITRATE
(mixture of urea and ammonium nitrate substances)
Other names: UAN, URAN
Chemical formula: $\text{NH}_4\text{NO}_3 + \text{NH}_2\text{-CO-NH}_2$
ECHA Registration Number for Ammonium Nitrate: 01-2119490981-27-0064
EINECS Number: 229-347-8
CAS Number: 6484-52-2
ECHA Registration Number for Urea: 01-2119463277-33-0059
CAS Number: 57-13-6
EINECS Number: 200-315-5

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

Usage – for consumers: chemical fertilizer for agriculture under the form of three types based on the total nitrogen content: URAN-320, URAN-300 and URAN-280.

Contraindication: none

1.3. Details concerning the supplier of the Safety Data Sheet

Producer:

Azomureș S.A.Tg.-Mureș, 300 Gheorghe Doja St., tel.0040-265 253 700, Romania
Fax: 0040-265 252 986, e-mail: office@azomures.com, www.azomures.com
e-mail (competent person responsible for the SDS): fds.azo@azomures.com

1.4. Emergency telephone number

The institution responsible with providing information in case of a health emergency is The National Institute for Public Health, Department for the International Sanitary Regulation and Toxicological Information.

Telephone: 0040-21.318.36.06, working hours: Monday – Friday from 8 a.m. to 3 p.m.

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SECTION 2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Chemical fertilizer UAN type is an inorganic mixture of four components, namely: ammonium nitrate solution, urea solution, demineralized water and corrosion inhibitor.

The mixture is not classified as hazardous.

Classification according to EC Regulation no. 1272/2008 (CLP)

No classification according to CLP (Classification, Labeling and Packaging).

Human health hazard

Will be taken into account the following aspects:

skin contact: may cause irritation and slight burns of the skin

eye contact: may cause irritation and eye disorders

ingestion: no toxic effects in small quantities but used in large quantities may cause nausea, vomit, diarrhea, abdominal pains or even methemoglobinemia.

inhaling: toxicity is very low for exposures to small quantities; the exposures to high concentrations may cause respiratory tract irritation, headaches, dizziness, tingling etc.

thermal decomposition products: inhaling gases resulted from thermal decomposition may cause serious disorders of the respiratory system.

Environmental hazards:

Liquid fertilizers UAN type are nitrogenous fertilizers, therefore accidental discharge may have a negative impact on environment by soil, flowing or phreatic water contamination.

2.2. Labelling

Labelling according to CLP Regulation

The mixture is not classified as hazardous according to the Regulation no.1272/2008/EC on classification, labeling and packaging.

Name of the preparation: LIQUID FERTILIZERS UAN TYPE
(UREA – AMMONIUM NITRATE)

ECHA Number of registration for ammonium nitrate: 01-2119490981-27-0064

EINECS Number: 229-347-8

ECHA Number of registration for urea: 01-2119463277-33-0059

EINECS Number: 200-315-5

Producer:

Azomureș S.A. Tg.-Mureș, Gheorghe Doja Street no.300, tel.0040-265-253700, Romania

Fax: 0040-265252986, e-mail: office@azomures.com, www.azomures.com

Emergency: 0040-21.318.36.06, working hours: Monday – Friday from 8 a.m. to 3 p.m.

Content

Fertilizer net mass

2.3. Other hazards

According to Regulation (EC) no.1907/2006 Annex XIII, the evaluation PBT and vPvB was not carried out as the mixture is formed of inorganic substances.

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Other dangers: unknown.

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

3.1. Chemical identity of the substance

The product must be considered: Mixture

UAN types of chemical fertilizers are mixtures of: ammonium nitrate solution and urea solution. Contains as impurities biuret and additives.

LIQUID FERTILIZERS UAN TYPE - mixture of ammonium nitrate solution, concentration 85-95%, urea solution concentration with 65-75%, demineralized water and corrosion inhibitor „CORROGARD”.

Molecular Formula: $H_3N.HNO_3 + CH_4N_2O$

Ammonium Nitrate - EINECS Number: 229-347-8

CAS Number: 6484-52-2

IUPAC Name: ammonium nitrate

Molecular Formula: $H_3N.HNO_3$

Concentration limit: $\geq 44 - \leq 47\%$ (w/w)

Urea - CAS Number: 57-13-6

EINECS Number: 200-315-5

IUPAC Name: UREA

Molecular Formula: CH_4N_2O

Concentration limit: $\geq 34 - \leq 37\%$ (w/w)

Water - CAS Number: 7732-18-5

EINECS Number: 231-791-2

IUPAC Name: water

Concentration limit: $\geq 16 - \leq 21.3\%$ (w/w)

Chemical identity of impurities

Biuret - CAS Number: 108-19-0

EINECS Number: 203-559-0

IUPAC: dicarbonimidic diamide

Concentration limit: $\geq 0 - \leq 0.5\%$

Corrosion inhibitor “Corrogard” (aditive)

Concentration limit: $\geq 90 - \leq 150$ ppm

SECTION 4. FIRST AID MEASURES

4.1. Description of the first aid measures

4.1.1 First aid instructions are provided according to the relevant areas of exposure.

skin contact: wash the contaminated area with plenty of water, replace the contaminated clothing and shoes with clean ones, if necessary (contaminated clothes must be washed before reuse); if the irritation persists seek medical assistance;

eye contact: rinse/irrigate eyes (including under the eyelids) with plenty of water for minimum 15 minutes; if the irritation persists immediately call the medical service;

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ingestion: get emergency medical assistance; if the victim is unconscious and vomits, lay down the person on the left side and make sure the person does not ingest anything.

4.1.2 Recommendations:

No special measures are necessary.

4.2. The most important symptoms and effects, acute as well as delayed

No available information.

4.3. Indications concerning any emergency medical assistance and necessary special treatments

Not available information.

SECTION 5. FIREFIGHTING MEASURES

5.1. Fire extinguishing means

Adequate extinguishing means

Use water in abundance, chemical foam or mechanical foam extinguishers, CO₂ extinguishers

Use water hose to minimize or spread the vapors.

Use water to cool down the equipment exposed to the fire, if possible with minimum risk.

Use protection mask with filtering cartridge and adequate equipment for fire extinguishing.

In case of accidents, damages, when the spilled quantities are large, intervention will be made using an insulating oxygen mask.

Inadequate extinguishing means

It is prohibited the use of steam to extinguish the fire due to the ammonium nitrate contained by UAN liquid fertilizer.

5.2. Special hazards caused by the substance or mixture

The product is not flammable. No special measures required.

5.3. Advice for firefighters

No special measures required. Wear protection equipment. Wear individual breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1 For personnel not involved in emergency situations

(a) Protective equipment

Hand protection:

Protection gloves (thermoresistant).

Eye protection:

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Protection mask for the face - tight safety goggles (plastic frame, polycarbonate lenses) for chemical substances

- face mask (polycarbonate) – in case of danger of nitrate splashes

Skin protection

Protective clothing:

Dust-proof protection equipment (duck overalls - bodice trousers, coat)

Winter, summer skirt (duck natural fibers)

Protective shoes:

Boots resisting at chemical and mechanical aggression, with anti-static properties that allow usage in this environment (e.g. leather with rubber sole)

(b) Keep away from sources of heat and fire

Use individual breathing apparatus and appropriate equipment for fire extinguishing.

Open the doors and the windows to produce the maximum ventilation of the room.

(c) Emergency procedures

In case of great danger, the surrounding area must be evacuated.

Avoid inhalation of toxic gases by going perpendicular to the wind direction.

6.1.2. For the personnel involved in the emergency situations

The personnel involved in emergency situations must wear dust-proof protection equipment made of duck, boots resisting at chemical and mechanical aggression and protection mask.

6.2. Precautions for the environment

Avoid contact of the spilled substance with the soil and prevent the product discharge in the surface water flow.

6.3. Methods and material for containing fires and for cleaning

Containment and cleaning method for the dispersed substance

Discharge and leakage of small quantities

Vacuum and collect the product in containers marked for disposal. Clean the affected area with large amounts of water. If the spilled substance reaches watercourses, inform the local authorities.

Discharge and leakage of large quantities

Vacuum and collect the product in containers marked for disposal. Recycle if possible. Clean the affected area with large amounts of water. If the spilled substance reaches watercourses, inform the local authorities.

Inadequate techniques for containment and cleaning

Do not collect the discharged product in containers with scobs or other combustible materials.

Do not use plugs made of organic materials such as wood to stop leakage.

6.4. Reference to other sections

Note: see chapter Exposure control / individual protection, for information concerning personal protection equipment and the section Disposal considerations.

SECTION 7. HANDLING AND STORAGE

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7.1. Precautions for safe handling

7.1.1 Recommendations for safe handling

Use appropriate ventilation. Local ventilation system is compulsory. Avoid possible sources of ignition (sparks or flame). Avoid contamination with any other sources including metals, powder and organic substances. When handling the product do not use brass, bronze or cooper devices.

7.1.2 Advice on general hygiene at the work place

- (a) Do not smoke, do not eat, do not drink in the operation area. Place warning device "DO NOT SMOKE" in the operation area.
- (b) Wash hands with plenty of water after handling operations.
- (c) Remove the contaminated clothing and the protective equipment before entering the areas where the meal is served.

7.2. Safe storage conditions, including possible incompatibilities

The product is stored in carbon steel or stainless steel recipients; or in containers made from non-corrosive material.

Store it far from heat and fire sources.

Store it in cool, dry and ventilated places.

Provide the storage area with protection measures.

Do not store it together with flammable materials or other incompatible materials.

UAN liquid fertilizers are not corrosive to carbon steel.

Protect containers against damages.

Avoid extreme temperatures: heating above 60°C may cause hydrolysis and cooling below 0°C leads to the crystallization of the product.

Storage and transportation will be made in railway tanks or in tank cars, in PPE and/or PE containers.

7.3 Specific end use (s)

Not the case.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Control parameters

No official limits are specified.

8.2. Exposure control

8.2.1 Appropriate Engineering Controls

General measures at company level

The CSSM (The Committee for Work Health and Security) was established at the Company level, where the risk factors of professional injury and illness in the work place are assessed.

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The evaluation of the risks of professional injury and illness at the work place was carried out by committees established by the management; preventive measures were taken to eliminate or to diminish the risks that cannot be avoided, having as purpose the work security and health, reduction of work injuries and of professional illnesses.

The employees are provided with appropriate instructions regarding the usage of hazardous chemical agents.

- The personnel are provided with individual protection equipment.
- Collective protection measures are provided.

Collective protection measures for the source of risk – Liquid fertilizers UAN type

Technical Measures

Monitoring system of the main functioning parameters for the safety of the equipment (pressure, temperature, concentration, flow capacity, level etc), with acoustic and optical warning signals in case of malfunction.

Toxic gas, fire and explosion detectors

Protection devices – flange fenders on all the dangerous liquids layouts

Ammonia and nitric acid layouts painted in conventional colors

Signaling for work safety health and according to Government Ordinance no. 971/2006 (safety, warning, interdiction, obligation marks, delimitation of danger zones)

Ventilation systems.

Rescue showers for the danger of splashing with corrosive substances.

Water sources with upward jet (for washing the eyes in case of splashing)

Periodical ISCIR inspections of under-pressure equipment.

Toxic gases level control

Organization and provision of individual insulating protection equipment

Endowment and organization of medical help trained in case of gassing.

Administrative measures

Manufacturing regulation, work instructions regarding work safety and health and fire prevention

Safety data sheets for hazardous substances

Organization of an information system for surveillance and intervention:

Action plan in case of fire

Internal Emergency Plan (PUI).

Evacuation action plan in emergency situations

Action plan in case of earthquake

Action plan for safe road transport (PSTR).

Authorization for the job position, employees in the production sector, maintenance, repair (mechanic, electric, automation) in technological installations.

Work safety and health training for Azomures employees, in all stages (upon hiring, at work, periodically, supplementary) and work safety and health instruction for the employees from the companies that perform services based on contract and for the persons that are on the platform with the employer's permission, related to:

- risk of professional injury and illness at the place of work
- minimal requests of health and safety of work, stipulated by legal regulations applicable to the specific activity at the work place
- tasks and responsibilities of the employees
- usage of work equipment and individual protection equipment

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- prevention and protection measures, action plan in case of danger
- giving first aid to the injured at the work place

Risk management measures for health

No necessary measures identified for the risk management.

8.2.2. Personal protection measures, such as personal protection equipment

(a) Hand protection: Wear adequate protection gloves.

Waterproof gloves (nitrile rubber, crosnitrile, with cotton interior) permeability resistance 6.

(b) Eye protection: Tight protection glasses (plastic frame, polycarbonate lenses) or

Protection visor (polycarbonate) in case of ammonium nitrate or urea plashing

(d) Skin protection:

Protective clothing:

Dust-proof protection equipment (duck overalls - bodice trousers, coat)

Winter, summer skirt (duck natural fibers)

Protective shoes:

Protection boots resisting at contact with corrosive chemical substances (rubber, PVC)

Boots resisting at chemical and mechanical aggression, with anti-static properties that allow usage in this environment (e.g. leather with rubber sole).

8.2.3 Environment exposure control

No information available.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information concerning the main physical and chemical properties

a) Substance/mixture aspect

Physical status: liquid

Color: colorless to yellow

b) Odor: inodorous

c) pH- at 20 °C: 7-7.8

d) Density: 1.28-1.32 g/cm³ la 20 °C

e) Detonability – not detonable

f) Auto flammability – not auto-flammable

g) Crystallization temperature: (-16 °C) - 0 °C

h) Alkalinity: max. 0.1%

9.2. Additional information

No data available.

SECTION 10. STABILITY AND REACTIVITY

10.1. Reactivity

No data available.

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10.2. Chemical stability

In normal storage, handling and usage conditions, the product is stable.

10.3. Hazardous reactions potential

Dangerous reactions: unknown.

10.4. Conditions to avoid

High temperatures (above 60°C) – the compounds decompose and release nitrogen and ammonia oxides toxic gases.

High pressures (by heating the closed tanks, the pressure inside increases).

Evaporation or drying of the product.

10.5. Incompatible materials

Fuel materials and lubricants (Diesel oil, gasoline, oils, Vaseline), organic substances, oxidizing materials.

Strong acids and chlorates or other strong oxidants.

In contact with alkaline substances may release ammonia.

It is corrosive to copper, brass or bronze.

10.6. Hazardous decomposition products

No decomposition of the product provided the usage instructions are followed.

The product is not combustible, but if present in fire it may emit toxic vapors of nitrogen oxides and carbon.

Exposure to high temperatures may cause release of ammonia vapors.

Total evaporation of water from UAN may generate solid residues of ammonium nitrate and urea.

SECTION 11. TOXICOLOGICAL INFORMATION

Toxicokinetics (absorption, metabolism, distribution and excretion)

No data available.

11.1. Information on toxicological effects

The relevant hazard classes for which information is provided are:

- (a) Acute toxicity
- (b) Skin corrosion / irritation
- (c) Eye irritation / damage
- (d) Sensitization of the skin or the respiratory system
- (e) Mutagenicity germ cell

- (f) Carcinogenicity
- (g) Toxicity for reproduction
- (h) STOT (specific target organs of toxicity) – unique exposure
- (i) STOT (specific target organs of toxicity) – repeated exposure
- (j) Aspiration hazard

11.1.1 Information for each hazard class

(a) Acute toxicity - oral LD50 > 2000 mg/kg bw may cause methaemoglobinaemia (see section 2.1)

(b) Irritation

No data available.

(c) Serious eye damage / irritation

No data available.

(d) Sensitization

No data available.

(e) Mutagenicity germ cell

No data available.

(f) Carcinogenicity

Not identified as a carcinogen.

(g) Toxicity for reproduction

No data available.

(h) STOT (specific target organs of toxicity) – unique exposure - conclusive but not sufficient for classification

(i) STOT (specific target organs of toxicity) – repeated exposure - conclusive but not sufficient for classification

(j) Aspiration hazard - there is no data available

11.1.2 The data in this subsection apply to the UAN in the form under which it is placed on the market – no data available.

11.1.3 The results of experimental studies by route of exposure:

The acute toxicity after oral administration

LD50 oral > 2000 mg/kg bw

The acute toxicity after administration by inhalation

LC50: > 88.8 mg/L

The acute toxicity after dermal administration

No data available.

11.1.4 For the following hazard classes: STOT – single exposure, STOT – repeated exposure, aspiration hazard –. no data available.

11.1.5 Information on the likely routes of exposure

The likely routes of exposure are ingestion (swallowing), inhalation or skin / eyes exposure - no data available.

11.1.6 Symptoms related to the physical, chemical and toxicological characteristics

No data available.

11.1.7 The known delayed and immediate effects and the chronic effects of long term exposure and short term exposure

No data available.

11.1.8 Interactive effects

No data available.

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11.1.9 Absence of specific data
No data available.

SECTION 12. ECOLOGICAL INFORMATION

12.1. Toxicity

Aquatic compartment (including sediments)

Low toxicity for aquatic life.

Terrestrial – No data available

Atmospheric environment – No data available

12.2. Persistence and degradability

Ammoniacal nitrogen as well as nitric nitrogen is essential in plant nutrition, ammonia ion can oxidize, in time, until it becomes nitrate ion, causing soil to become acid.

12.3. Potential for bioaccumulation

The fertilizer does not produce bio-accumulation phenomena.

12.4. Mobility in soil

Adsorption/desorption – no data available

Volatility - not applied to inorganic substances

Distribution modeling – no data available

12.5. PBT and vPvB assessment results

According to the Regulation (EC) no. 1907/2006 - Annex XIII, the evaluation was not carried out because the ammonium nitrate is an inorganic substance.

12.6. Other adverse effects

No information available regarding other adverse environmental effects.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Disposal methods

Wastes must be disposed of in compliance with national and local regulations. Controlled biodegradation in wastewater treatment is possible.

Relevant provisions of the harmonized EU legislation and domestic legislation regarding waste.

National legislation in force:

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Law no. 211/2011 concerning wastes treatment.

Law no. 265/2006 – The Law on environment protection.

Law no. 249/2015 related to the packaging and waste packaging management.

GD no. 856/2002 - The evidence of wastes management, with subsequent modifications.

Law on labor security and health no. 319/2006, GD no. 1425/2006 on approving the Methodological Norms for the enforcement of the provisions set by the Law on labor security and health no. 319/2006, GD no.355/2007 on the surveillance of workers' health with subsequent modifications.

Decision no. 1061/2008 on transport of hazardous or non-hazardous wastes on Romanian territory, with subsequent modifications.

UE Legislation in force:

Regulation (EC) no. 1907/2006 of the European Parliament and of the Council regarding the Registration, evaluation authorization and restriction of chemicals (REACH).

Regulation (EC) no. 1272/2008 of the European Parliament and of the Council on the classification, labeling and packaging of substances and mixtures.

European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR).

European Agreement concerning the International Carriage of Dangerous Goods by Rail (RID).

SECTION 14. TRANSPORT INFORMATION

Information concerning classification for

The liquid fertilizers – UAN type is not classified, according to the UN Orange Book, RID, ADR and IMDG; the product is not considered dangerous for transport.

Chapters 14.1; 14.2; 14.3; 14.4 are not applicable.

14.5. Environmental hazards

No available information.

14.6. Special precautions for users

Each delivery is accompanied by the Conformity Statement.

The labeling is according to the stipulations in force.

All transports will be accompanied by transport documents specific for the transported products, according to the legislation in force.

The product does not have ADR, RID, IMDG classification for transport.

14.7. Bulk transport, according to Annex II to MARPOL convention and IBC Code

Not applicable.

SECTION 15. REGULATORY INFORMATION

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

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Relevant information regarding the domestic legislation

Law on labor security and health no. 319/2006, GD no.1425/2006 on approving the Methodological Norms for the enforcement of the provisions set by the Law on labor security and health no. 319/2006, GD no. 355/2007 on the surveillance of workers' health with subsequent modifications.

Law no. 265/2006 for the amendment of GEO no.195/2005 on environment protection

Decision no. 1391/2006 for the approval of the Regulation concerning the application of Government Emergency Ordinance no. 195/2002 regarding traffic on public roads, with subsequent amendments and supplements.

ISCIR technical prescriptions in use.

Order no. 2737/17.12.2012 regarding the approval of the Procedure concerning the designation of the bodies in charge with the issuance of the aggregation certificates and of the prototype conformity certificates according to the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR), as well as with the inspection for the certification for maintaining the exploitation conformities for the specialized superstructures installed on the road vehicles for the carriage of dangerous goods and of packaging of dangerous goods transported on the road.

Law no. 59/2016 referring to the control of hazards in case of serious accidents involving dangerous substances.

Decision no. 1175/2007 for the approval of the Norms referring to the performance of road transportation activities for dangerous goods in Romania.

Law no. 360/2003 on dangerous substances and preparations republished in 12.03.2014.

Law no. 278/2013 on industrial emissions.

Relevant information regarding the EU legislation

Regulation (EC) no. 1907/2006 of the European Parliament and of the Council regarding the Registration, evaluation authorization and restriction of chemicals (REACH).

Regulation (EC) no. 1272/2008 of the European Parliament and of the Council on the classification, labeling and packaging of substances and mixtures.

Regulation (EU) no. 286/2011 by the Commission from 10.03.2011 amending Regulation (EC) no. 1272/2008.

Regulation (EC) no. 830/2015 of the Commission from date of 28.05.2015 amending Regulation (EC) no. 1907/2006.

Regulation (EU) no 98/2013 of the European Parliament and of the Council of 15 January 2013 on the marketing and use of explosives precursors.

EC no. 2003/2003 regulation of the European Parliament regarding fertilizers with its subsequent amendments relating to EN standards drawn up by the European Committee for Standardization.

European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR), 2017 edition.

Regulation referring to the International Carriage of Dangerous Goods by Rail (RID), 2017 edition
International Maritime Dangerous Goods (IMDG), 2017 edition.

Other regulations

“This product is not subject to Regulation (EU) 98/2013, but all suspicious transactions, disappearances and thefts shall be reported to the relevant authority.”

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15.2 Chemical safety assessment

Not the case.

SECTION 16. ADDITIONAL INFORMATION

a) A clear evidence of added, deleted or modified information

Version (revision, edition) number	Date	Page number	Evolution of the information
revision 1, edition 4	20.11.2013	7, 11	At page 7, chapter 8.2.1. Organizational measures, Monitoring and intervention plans were modified At page 11, section 15.1 – information regarding national legislation was modified
version 5	28.01.2015	11	At page 11, section 15.1 – information regarding national legislation was modified
version 6	01.06.2015	1, 2, 10, 11	At page 1, section 1.4 emergency telephone number was modified. At page 2 section 2.1 it was removed classification in accordance with directive 67/548/ EEC. At page 10, chapter 13.1 - Waste treatment methods national legislation was modified. At page 11, section 15.1 was added to EU legislation.
version 7	23.05.2016	9, 11	At page 9, section 11 they have introduced additional toxicological data. At page 11, section 15.1 it was introduced Law 360/2003 republished and Regulation no.830/2015. At page 11, section 15 the legislation was amended SEVESO.
version 8	26.06.2019	14	At page 14, section 15.1 "Other regulations" have been introduced.

b) List of abbreviations and acronyms used throughout the Safety Data Sheet

SDS	- Safety Data Sheet
ECHA	- European Chemicals Agency
EC	- European Commission
ESIS	- European chemical Substances Information System

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FE (EFMA)	- Fertilizers Europe (European Fertilizer Manufacturers Association)
REACH	- Regulation (EC) No.1907/2006 of the European Parliament and of the Council regarding the registration, evaluation authorization and restriction of chemicals
LD50	- Median Lethal Dose, (50%) (dose required to kill half the members of a tested population)
LC50	- Lethal concentration for 50% of the tested population
STOT	- Specific target organs of toxicity
PBT	- Persistent, Bioaccumulative, Toxic
vPvB	- very Persistent, very Bioaccumulative
SEVESO III	- European Council Directive no. 2012/18/UE of July 4, 2012 on the control of major-accident hazards involving dangerous substances
GD	- Government Decision
GEO	- Government Emergency Ordinance
LHS	- Labor Health and Security
FPE	- Fire Prevention and Extinction
ADR	- European Agreement concerning the International Carriage of Dangerous Goods by Road, 2015 edition
RID	- European Agreement concerning the International Carriage of Dangerous Goods by Rail, 2015 edition
IMDG	- International Maritime Dangerous Goods, 2012 edition
MARPOL	- International Convention for the Prevention of Pollution from Ships
IBC	- International Code for the construction and equipment of ships carrying dangerous chemical products in bulk
w/w	- mass unit
b/w	- body weight

c) Bibliography

Official Journal of the European Union – EU Regulation no. 830/2015 of the European Council of 28.05.2015

EFMA – Guidance for the Compilation of Safety Data Sheets

ESIS – European Chemical Substances Information System

Official Journal of the European Union - Regulation (EC) No.1907/2006 of the European Parliament and of the Council regarding the registration, evaluation authorization and restriction of chemicals (REACH).

GESTIS Data Bank - Material Safety Data Sheets

Note:

The information included in this safety data sheet is based on the data available at the time of publication.

The client and the user assume all risks regarding usage, handling and storage of this product.

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There are no guarantees for the product in case of improper handling, transport and storage of the product, not complying with the specifications of the Technical Specification and the Safety Data Sheet.