SECTION 1: IDENTIFICATION OF THE MIXTURE AND OF THE COMAPANY/UNDERTAKING

1.1. Product identifier

Commercial product name	ZAKsan®33
Synonyms	Ammonium nitrate, Ammonium nitrate 33N
Chemical formula	NH_4NO_3+$CaMg(CO_3)_2$

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

Identified uses: ZAKsan®33 is used as a fertilizer.

Uses advised against: None

1.3. Details of the supplier of the safety data sheet

Name	Grupa Azoty Zakłady Azotowe Kędzierzyn Spółka Akcyjna
Address	p.o. box 163, ul. Mostowa 30A, 47-220 Kędzierzyn-Koźle
Telephone	/+48/ 77 481 20 00 (head office)
Person responsible for safety data sheet (e-mail)	karta_nawozy@grupaazoty.com

1.4. Emergency telephone number

Poland	**997**	Police
	998	Fire service
	999	Emergency medical services
	112	Rescue number in Poland
	+48 77 481 34 01	Shift Dispatcher at the Company Grupy Azoty ZAK S.A. (24h/d, only in Polish)
France	**+33 14 542 59 59**	Centres Antipoison et de Toxicovigilance
Iceland	**+35 45 43 22 22**	Landspítali
Lithuania	**+37 05 236 20 52** **+37 06 875 33 78**	Lithuanian Poison Information Bureau
Malta	**112**	
Romania	**+40 21 318 36 06**	
Slovakia	**+42 12 547 741 66**	Národné Toxikologické Informačné Centrum
Slovenia	**112**	
Italy	**+39 64 997 80 00**	Centro antiveleni di Roma - Policlinico Umberto I

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008
Oxidising solid, hazard category 3 (Ox. Sol. 3)
H272: May intensify fire; oxidizer
Serious eye damage/eye irritation. hazard category 2 (Eye Irrit 2)
H319: Causes serious eye irritation

2.2. Label elements

GHS03

GHS07

Signal note: "Caution"

Hazard Statements:
H272: May intensify fire; oxidizer
H319: Causes serious eye irritation

Precautionary statements:

P210:	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P264:	Wash hands thoroughly after handling.
P280:	Wear eye protection.
P305+P351+P338:	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P337+P313:	If eye irritation persists: Get medical advice/attention.

2.3. Other hazards

On the basis of the available data it is stated that ZAKsan®33 does not fulfill the criteria of toxicity, persistence and bioaccumulation (PBT) or the criteria of high persistence and high bioaccumulation (vPvB).
Prevent entry of the substance into surface and ground waters. In high concentrations, the mixture causes secondary eutrophication of water bodies, rapid algae growth and decreased oxygen content in waters.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Not applicable.

3.2. Mixtures

Name of the substance	EC Number	CAS Number	Content [%]
Ammonium nitrate	229-347-8	6484-52-2	92,57÷96,00
Dolomite	-	-	4,00÷7,43

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

Inhalation:	Move to fresh air. In case of symptoms, seek medical care.
Skin contact:	Rinse with plenty of running water. Remove contaminated clothing and shoes. In case of symptoms, seek medical care.
Eye contact:	Rinse with plenty of running water. In case of symptoms, seek medical care.
Swallowing:	If swallowed, rinse mouth with water (only when the victim is conscious). Do not induce vomiting. In case of symptoms, seek medical care.

4.2. Most important symptoms and effects, both acute and delayed

Blue colouring of lips, nails and skin due to methemoglobinemia, if ingested.

4.3. Indication on any immediate medical attention and special treatment needed

In case of clinical symptoms of methemoglobinemia, the medical personnel should immediately: administer 100% oxygen for breathing, 1 g of ascorbic acid intravenously. If a medical practitioner is present at the event, administer methylene blue in quantity of 10-50 ml.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media: Non-flammable product. Extinguish nitrogen fires with plenty of water.
Unsuitable extinguishing media: Do not use extinguishing foams and powders.

5.2. Special hazards arising from the substance or mixture

May display explosive properties in contact with flammable or organic substances in confined spaces during fire.
In case of fire, ammonium nitrate may be a source of hazardous decomposition products, i.e. oxides (NO, NO_2 etc.), ammonia (NH_3), amines.

5.3. Advice for firefighters

No special advices. Wear protective clothing and self-contained breathing apparatus.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Wear suitable protective clothing (Section 8. Exposure control/personal protection equipment).

6.2. Environmental precautions

Prevent entry to surface and ground waters.

6.3. Methods and materials for containment and cleaning up

Minor spills: pump down or pick up the product and place in a dedicated labelled waste container. Clean any contaminated surfaces with plenty of water. Do not remove spilled product with sawdust or any other flammable material.
Major spills: pump down or pick up the product and place in a dedicated labelled waste container. Dispose for recovery. Clean any contaminated surfaces with plenty of water. If spilled substance enters the ground waters, notify the local authorities. Do not remove spilled product with sawdust or any other flammable material.

6.4. Reference to other sections

See SECTION 8 and SECTION 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Due to hygroscopicity, ZAKsan®33 should be stored in packaging in clean and dry warehouse buildings of non-flammable and moisture insulated floor surface. The fertiliser should be protected against water, precipitations, direct sun and heating above 30°C. No open fire is allowed in premises with stored ZAKsan®33. Power cables should be protected against short circuits.
Keep ZAKsan®33 away from potentially reactive chemical compounds and materials, including among others: plant protection products, fertilisers containing chlorides, organic substances, strong alkaline substances /e.g. lye soda/, lime, cement, powdered metals, metal oxides, acids and flammable materials, such as: coal, sawdust, greases and propellants.
Environmental exposure controls: see SECTION 8.

7.2. Conditions for safe storage, including any incompatibilities

Storage

Avoid contact with combustible and reducing agents. Do not expose to high temperatures and sunlight.

Handling and storage of more than 1250 Mg of ZAKsan®33 in an establishment classifies a given entity as the major accident hazard lower-tier establishment and above 5000 mg as major accident hazard higher-tier establishment (Annex 1, Part 2, item 14, Directive of the European Parliament and of the Council 2012/18/EU)

7.3. Specific end use(s)

ZAKsan®33 is used as a fertiliser.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Maximum permissible concentrations (NDS) of health harmful agents in working environment		
Substance	Limit value	Short-term limit value
Ammonium nitrate	10 mg/m^3	-

Long-term exposure - systemic effects (DNELs) - workers		
Ammonium nitrate	Systemic effect	
	Skin	21.3 mg/kg b.m./d
	Inhalation	37.6 mg/m^3

Long-term exposure - systemic effects (DNELs) - general population		
Ammonium nitrate	Systemic effect	
	Skin	12.8 mg/kg b.m./d
	Inhalation	11.1 mg/m^3
	Swallowing	12.8 mg/kg b.m./d

Predicted No-Effect Concentration (PNEC)		
Freshwater	0.45	mg/l
Saltwater	0.045	mg/l
Accidental release	4.5	mg/l
Sewage treatment plant	18	mg/l

8.2. Exposure controls

Technical controls: Not required. Applying good ventilation is a good industrial practice.

Individual protection measures: Do not eat, drink or smoke when using the product. Wash hands after using the product, before meal, smoking, using toilette and at the end of the day. Personal protection measures: See table below

EYE/FACE PROTECTION

Wear face protection or protective glasses. The equipment must meet the requirements of EN 166 standard.

HAND PROTECTION

Wear protective gloves.

SKIN/BODY PROTECTION

Wear protective clothing. Wear safety shoes.

RESPIRATORY PROTECTION

In case of dust, wear respiratory protective equipment in a form of filtering respirator. The equipment must meet the requirements of EN 149 standard.

GENERAL INDUSTRIAL HYGIENE PRINCIPLES

Avoid contact with eyes. Ensure that an eye washer is located near the work station.

HYGIENE PRODUCTS

Do not eat, drink or smoke when using the product. Take off contaminated clothing immediately. Wash hands before the break and immediately after finishing work with the product.

Environmental exposure control: Notify the applicable authorities in case of any release of the substance to surface and ground waters

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance:	in 20°C and pressure of 1013 hPa	Transparent/white deliquescent crystals or granules, Hygroscopic
Odour:		-
Odour threshold:		-
pH:		-
Melting/freezing point:		under pressure of 1013 hPa 169.6 °C
Boiling range:		the mixture decomposes before reaching the boiling point
Flash point:		the mixture is inorganic
Evaporation rate:		-
Flammability (solid, gas):		non-flammable mixture
Flammability limits or explosion limits:	lower	-
	upper	-
Vapour pressure:		testing not required
Vapour density:		-
Relative density:	*in temperature of 20°C*	1.72
Solubility:		readily soluble in water (> 100 g/L)
n-octanol/water partition coefficient, (log):		the mixture is inorganic
Auto-ignition temperature:		testing scientifically unjustified
Decomposition temperature:		≥ 210°C
Viscosity:		testing scientifically unjustified
Explosive properties:		non-explosive
Oxidizing properties:		yes

9.2. Other information

Grain size:	the product in the form of granules contains no particles of fraction absorbable in the alveoli (0%<0.5 mm)

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

ZAKsan®33 is unstable when heated to higher temperatures. Ammonium nitrate has oxidising properties and reacts with flammable and reducing agents. Water solutions of saltpetre are weak acids.

10.2. Chemical stability

Stable in recommended storage and handling conditions (see Section 7).

10.3. Possibility of hazardous reactions

Reacts dangerously with flammable and reducing agents.

10.4. Conditions to avoid
Decomposes after heating. Avoid tight sealing.

10.5. Incompatible materials
Reducing agents, strong acids and alkali, powdered metals, flammable materials, chromates, zinc, copper and copper alloys and chlorides.

10.6. Hazardous decomposition products
Nitrogen oxides (NO, NO_2), ammonia (NH_3) and amines.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Data refer to ammonium nitrate

Metabolism

Ammonium nitrate dissociates into NH_4^+ ion and nitrate ions. Ammonium cation is a waste product of animal metabolism that is re-used in protein synthesis via glutamate rather than main ion. Depending on species, ammonium shall be directly released to the environment or transformed to less toxic urea. Nitrate toxicity in humans is demonstrated by enterohepatic metabolism of nitrates to ammonia with nitrite as an intermediate product.

Toxicokinetics

On the basis of low molecular weight, high solubility in water, probably $logP_{ow}$ value (partition coefficient: octanol/water), high absorption is expected. At the same time, the substance ions are formed immediately after contact with liquid, which reduces absorption. Thus, in order to assess the exposure via digestive system, skin and respiratory system, the absorption value of 50% was adopted.

Bioaccumulative potential	No data
Skin penetration	No data
Acute toxicity	**Ingredient name** / **Route** / **Effect** Ammonium Nitrate (100%) / Inhalation (30 minutes) / Not applicable Swallowing / 2950 mg/kg Skin contact / 5000 mg/kg
Działanie żrące/ drażniące na skórę	Ammonium nitrate has no skin irritation effect. Longer skin contact may cause redness.
Serious eye damage/ eye irritation	Irritating to eyes, effects fully reversible
Sensitising to respiratory tracts or skin	Skin: no effect, Respiratory system: no data
Germ cells mutagenicity	Genotoxicity: negative result
Carcinogenicity	No carcinogenic effect of ammonium nitrate according to available information
Reproductive toxicity	No data
STOT - single exposure	No target organ toxicity at single exposure observed.
STOT - repeated exposure	No target organ toxicity at repeated exposure observed.
Aspiration hazards	No evidence of harmful effect related to aspiration according to available data.
Neurotoxicity	No data

Repeated exposure toxicity	Oral exposure: No available data for repeated dose toxicity with ammonium nitrate NOAEL KNO_3: 256 mg/kg of body mass Inhalation: NOAEC: 185 mg/m^3 Skin: No skin testing

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Water	Acute toxicity (hazardous agent - ammonium nitrate): *Fish* LC50/48h: Cyprinus carpio: 447 mg/l *Crustaceans* EC50/24h/48h: Daphnia magna: 490 mg/l *Algae* EC50/10d KNO_3 algae test:1700 mg/l
Terrestrial environment	Nitrate absorbed by the plants is reduced to nitrite by nitrate reductase enzyme. This enzyme is present in plants, certain bacteria species and digestive tissues of mammals. Nitrate will be reduced in case of photosynthesis and synthesis of carbohydrates. In draught, frost or shadow conditions, or absence of other nutrients, the process of photosynthesis and protein synthesis is reduced. In such case, the nitrate will continue to be absorbed and deposited in plant tissues.
Sewage treatment plant	EC50/180min $NaNO_3$ active sediment, household: 1000 mg/l EC10/180min $NaNO_3$ active sediment, household: 180 mg/l

12.2. Persistence and degradability

Persistence / Abiotic degradation

Ammonium nitrate is completely soluble in water. Other information is not required/available.

Biodegradation

No testing is needed since the substance is inorganic (Annex VII, REACH). In addition, in process of anaerobic ammonium transformation, one group of bacteria oxidises ammonium to nitrite, while the other one oxidises nitrite to nitrate. An average biodegradation rate in sewage treatment plants in temperature of 20°C is 52 g N/kg of dissolved substance/day. Nitrate degradation is faster under anaerobic conditions. During anaerobic transformation of nitrate to N_2, N_2O and NH_3, the biodegradation rate in sewage treatment plants in temperature of 20°C is 70 g N/kg of dissolved substance/day.

12.3. Bioaccumulative potential

In aquatic environment:

Simple inorganic salts highly soluble in water are present in dissociated form in water solution. Such substances have low bioaccumulability.

In soil:

As in the case of bioaccumulation in aquatic environment, bioaccumulability in terrestrial organisms is also assessed as low.

12.4. Mobility in soil

Simple inorganic soils highly soluble in water will be present in dissociated form in water solution, thus they will be of low absorption potential. In addition, the screening study (OECD 121) could not be performed due to technical reasons and QSARs are not applicable for this type of substances.

The nitrate is not bound in soil and will be transferred with water, and therefore if soil is watered with greater amount of water that it is able to absorb, it can be washed out. This is possible primarily in late autumn, winter and early spring. There are numerous studies on the environmental impact of NO_3 and NH_{4+}/NH_3.

12.5. Results of PBT and vPvB assessment

Pursuant to Annex XIII of the Regulation (EC) No.1907/2006, the assessment of PBT and vPvB criteria was not perforned, since ammonium nitrate is inorganic compound.

12.6. Other adverse effects

High level of nitrates in waters results in rapid algae growth and reduced content of oxygen in water (eutrophication).

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Product information

Waste collection and processing shall comply with the local and national provisions on waste management. The selection of relvant waste treatment/recovery depends on local conditions and capacity of treatment/recovery. Waste is classified as non-hazardous – in accordance with the Regulation of the Minister of Environment on waste catalogue of December 9, 2014 (Dz.U. of 2014, item 1923).

The collected product, if possible, should be primarily returned for re-use as fertiliser. The remain product being waste should be disposed to the authorise waste collection entities, primarily for recovery. Do not dispose product into aquatic environment. Diluted solutions can be transferred to sewage treatment plants capable of nitrogen compound disposal.

Untreated empty packaging

Used packaging, after thorough emptying and cleaning, should be handed over to an authorized recipient of waste for recovery/disposal. Information on waste recipients can be obtained from local administrative authorities competent for environmental protection (e.g. Municipal Office, Poviat Starost's Office). It is recommened to transfer waste to the closest recipients.

Regulations:

1. Directive (EU) 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC of 19 November 2008 on waste (OJ EU of 2018 No. L150/109).
2. The Act of 14 December 2012 on waste (Dz.U. of 2018, item 992, as amended) together with executive acts.
3. Act of 12 October 2017 on the management of packaging and packaging waste (consolidated text in Dz.U. of 2018, item 150, as amended) together with executive acts.

SECTION 14: TRANSPORT INFORMATION

14.1. UN Number

RID/ADR	UN 2067
IMDG	code 5122
ADN	-
ICAO/IATA	-

14.2. UN proper shipping name

RID/ADR	Ammonium nitrate fertiliser
IMDG	-
ADN	-
ICAO/IATA	-

14.3. Transport hazard class(es)

RID/ADR	5.1
IMDG	5.1
ADN	-
ICAO/IATA	-

14.4. Packing group

RID/ADR	group III
IMDG	-
ADN	-
ICAO/IATA	-

14.5. Environmental hazards
Not applicable.

14.6. Special precautions for users
Follow the general safety rules and Road Traffic Code provisions during transport.

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

SECTION 15: REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
15.1.1. European Union

1. Regulation (EC) No. 1907/2006 of the European Parliament and of the Council of 18 December 2006 on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No. 793/93 and Commission Regulation (EC) No 1488/94, as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/WE (OJ EU of 2006, vol. 49, L396 as amended)

Nitrate contained in the product is listed in Annex XIV to the REACH and therefore **is not subject to authorisation**.
Ammonium nitrate contained in the product **is subject to restrictions** pursuant to Annex XVII to the REACH (item 58).
Ammonium nitrate:

- shall not be placed on the market for the first time after 27 June 2010 as a substance, or in mixtures that contain more than 28 % by weight of nitrogen in relation to ammonium nitrate, for use as a solid fertiliser, straight or compound, unless the fertiliser complies with the technical provisions for ammonium nitrate fertilisers of high nitrogen content set out in Annex III to Regulation (EC) No 2003/2003 of the European Parliament and of the Council.
- shall not be placed on the market after 27 June 2010 as a substance, or in mixtures that contain 16 % or more by weight of nitrogen in relation to ammonium nitrate except for supply to:

a) downstream users and distributors, including natural or legal persons licensed or authorised in accordance with Council Directive 93/15/EEC.
b) farmers for use in agricultural activities, either full time or part time and not necessarily related to the size of the land area.

For the purposes of this subparagraph:

(i) "farmer" shall mean a natural or legal person, or a group of natural or legal persons, whatever legal status is granted to the group and its members by national law, whose holding is situated within Community territory, as referred to in Article 299 of the Treaty, and who exercises an agricultural activity;
(ii) "agricultural activity" shall mean the production, rearing or growing of agricultural products including harvesting, milking, breeding animals and keeping animals for farming purposes, or maintaining the land in good agricultural and environmental condition as established under Article 5 of Council Regulation (EC) No 1782/2003;

c) natural or legal persons engaged in professional activities such as horticulture, plant growing in greenhouses, maintenance of parks, gardens or sport pitches, forestry or other similar activities.

2. Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on the classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC and amending the Regulation (EC) No. 1907/2006 (OJ EU of 2008, Volume 51, L 353, as amended)
3. Regulation (EC) No 98/2013 of the European Parliament and of the Council of 15 January 2008 on the marketing and use of explosives precursors (OJ L 39 of 9.2.2013 as amended)

Ammonium nitrate is listed in Annex II, therefore any suspicious transactions and their attempts, losses and thefts should be reported to the National Contact Point.

15.1.2. National

1. Act of 25 February 2011 on chemical substances and their mixtures (Dz.U. of 2011, No. 63, item 322, as amended) together with executive acts.
2. Ordinance of the Minister of Development of 29 January 2016 on the types and quantities of hazardous substances in the plant, which decide on classification of the plant to a plant with an increased or high risk of a serious industrial accident (SEVESO III Implementation)

Ammonium nitrate contained in the solution is listed in Table 2, so threshold quantities may qualify the plant to the group of plants with an increased or high risk of a serious industrial accident.

15.2. Chemical safety assessment

No chemical safety assessment was performed for the mixture. Safety report for ammonium nitrate was prepared.

SECTION 16: OTHER INFORMATION

16.1. Implemented amendments

Compliant with REACH and CLP.

16.2. Legend to abbreviations and acronyms

DNEL	Derived no-effect level
PBT	Persistent, bioaccumulative and toxic
vPvB	very persistent and very bioaccumulative
EC	The EC list consists of three combined European inventories resulting from earlier EU legislation on chemicals: EINECS, ELINCS and the list of “No-longer polymers” (NLP)
CAS	Number assigned to a substance by Chemical Abstracts Service
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
CLP	Classification, labelling and packaging of chemical substances and mixtures
Limit value	Maximum permissible concentrations
Short-term limit value	Maximum short-term permissible concentration
ADR	International convention concerning the International Carriage of Dangerous Goods by Road
RID	Regulations on carriage of dangerous goods to the Convention concerning International Carriage by Rail
UN	United Nations Organization
NOAEL	no observed adverse effect level - maximum dose of a substance demonstrating no adverse effects during tests
NOAEC	no observed adverse effect level - maximum concentration of a substance demonstrating no adverse effects during tests

16.3. Key literature and data sources

Registration dossier of ammonium nitrate.

16.4. Trainings

1. The employer is obliged to inform all employees who are in contact withZAKsan®33, about the hazards and personal protection measures specified herein.
2. The distributor is obliged to provide the ZAKsan®33 recipient with information contained herein.

16.5. Replaces

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This Safety Data Sheet IS NOT a quality specification of the product and CANNOT BE treated as guarantee of its quality or compliance with customer requirements for individual uses. Its task is to provide guidance in the safe handling of the substance (work safety and environmental protection), its transport and storage. Data provided in this safety data sheet are based on our best knowledge and legal regulations currently in force. Recipients should ensure that this information complies with the laws and/or regulations that apply in their countries and/or enterprises.