

SAFETY DATA SHEET

Registered															
SDS Reg. No.	8	5	1	7	3	9	8	9	1	7	2	2	8	0	7
											Valid	May 11, 2010 till 11 May 2015			
Federal Agency on Technical Regulation and Metrology (Rostekhnregulirovaniye)															
Research and Information Center "Substances and Materials Safety"											Director _____/A.D. Kozlov/				
VNITSSMV															

NAME:

Product name (as per normative documents)	Aluminium hydroxide
Chemical name (as per IUPAC)	Aluminium (III) hydroxide
Trade name	Aluminium hydroxide of grades GD 00, GD 8, GD 1; fine aluminium hydroxide
Synonyms	Aluminium hydrate, aluminum oxide trihydrate, aluminum trihydroxide, hydrated alumina

OKP Code:

1	7	1	1	6	0	0	0	0
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HS code*:

2	8	1	8	3	0	0	0	0
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Data on product registration

Series A I No. 000482 dated 26 May 1995 (Russian Register of Potentially Hazardous Chemical and Biological Substances)

Reference designation and title of the main normative, technical or information document (GOST, TU, OST, STO, (M)SDS etc.)

TU 1711-045-00196368-95 Aluminium Hydroxide. Specifications

HAZARD CHARACTERISTICS:

Signal word:	Caution
Brief characteristic:	Low hazardous for a human body, causing irritation of respiratory, skin and eyes Fibrogenic. Environmental pollutant
Detailed characteristic:	see 16 paragraphs of SDS (attached).

MAIN HAZARD COMPONENTS	MAC w.z (mg/m ³)	Hazard class	CAS No.	EC No.
Aluminium Hydroxide	-/6	4	21645-51-2	244-492-7

APPLICANT: JSC "BazelCement Pikalevo"

Pikalevo

(company name)

(city)

Kind of applicant: manufacturer, supplier, seller, exporter, importer

(delete as applicable)

OKPO Code:

8	5	1	7	3	9	8	9
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Emergency telephone number: (81366) 94-521, 450-12

Head of the applicant organization

(signature)

Stamp

/S.E. Sofyin/

decipher

IUPAC	International Union of Pure and Applied Chemistry
GHS	recommendations of UN ST/SG/AC.10/30 "Globally Harmonized System of Classification and Labelling of Chemicals"
OKP -	All-Russian Classification of products
OKPO	All-Russian Classification of enterprises and organizations
HS -	Harmonized Commodity Description and Coding System * Code not to be indicated for RF domestic supplies
CAS No.	Number of substance in the Register of Chemical Abstracts Service
EC No.	Number of substance in the Register of European Chemical Agency
MAC w.z.	Maximum allowable concentration of chemical substance in the air of working zone, mg/m ³ (max. single/average per shift)
Safety Data Sheet	Safety data sheet for chemical products (substance, compound, material, industrial waste products)
SDS corresponds to:	
	– UN Recommendations ST/SG/AC.10/30 (GHS)
	– EU Regulation No. 1907/2006 concerning Registration, Evaluation, Authorisation and Restriction of Chemicals (Regulation REACH) Appendix II
Signal word	- indicates one of two words " HAZARD " or " CAUTION " (or " Not used ") according to GOST 31340-2007 "Warning Marking of Chemical Products. General Requirements"
Data on product registration (for pesticides and agrochemicals, disinfectants, food additives, individual chemicals, etc.) - includes the state registration number and date; certificate number, state registration number (if any) or number given by the Russian Register of Potentially Hazardous Chemical and Biological Substances	

1. Identification of chemical products and information on the Manufacturer / Supplier**Identification of chemical product**

1.1.1. Product name:	Aluminium hydroxide
1.1.2. Application: (including application restrictions):	Cryolite, aluminum fluoride and sulphate production, as filler for paints, plastics, paper and for other purposes
1.1.3. Additional information:	Products with composition and hazardous features similar to those of products, described in this SDS, are produced as per TU 1711-046-00196368-95 "Fine Aluminium Hydroxide. Specifications"[2]

1.2. Manufacturer and/or Supplier Identification

1.2.1. Full legal name:	Closed Joint-Stock Company "BazelCement Pikalevo"
1.2.2. Postal address:	1 Spryamlennoye shosse, Pikalevo, Leningrad region 187600 Russia
1.2.3. Emergency telephone number and working hours:	(81366) 94-521, 450-12 (twenty four hours) (81366) 94-600 from 8 00 till 17.30 (except weekends)
1.2.4. Fax:	(81366) 41-511, 45-002
1.2.5. E-mail:	BCPikalevo@mail ru

2. Hazards identification

2.1. Hazard level of chemical products in general: (data on hazard classification according to RF legislation (GOST 12.1.007) and GHS (upon approval)) (MAC w.z. a/s - 6 mg/m ³ for aluminium hydroxide)	Norm is rated as an average per-shift maximum allowable concentration (MAC w.z. a/s – 6 mg/m ³ for aluminium hydroxide) Hazard class: 4. Low hazardous to a human body. Aerosol is generally fibrogenic (F) Fire and explosion proof [3]
2.2. Hygienic norms for the product in general in the working zone: (MAC w.z. or SRLI w.z.)	MAC w.z. MAC w.z, 6 mg/m ³

2.3. Label elements (as per GOST 31340-07)

2.3.1. Hazard description:	<p>Skin contact:</p> <ul style="list-style-type: none"> – Signal word: Caution – Hazard pictogram: not available – Hazard statements: Skin contact causes weak irritation <p>Eye contact</p> <ul style="list-style-type: none"> – Signal word: Caution – Hazard pictogram: not available* – Hazard statements: Contact with eyes causes irritation <p>Prolonged skin contact:</p> <ul style="list-style-type: none"> – Signal word: Caution – Hazard pictogram: "Exclamation mark" – Hazard statements: Prolonged skin contact may cause allergy <p>Genetic effects:</p> <ul style="list-style-type: none"> – Signal word: Caution – Hazard pictogram: "Hazard to human health" – Hazard statements: May cause genetic defects <p>Reproductive effects:</p> <ul style="list-style-type: none"> – Signal word: Caution – Hazard pictogram: "Hazard to human health"
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	– Hazard statements: May affect the reproductive potential or an unborn child
2.3.2. Precautionary statements:	<p>Skin contact:</p> <p>First aid measures:</p> <ul style="list-style-type: none"> – If skin irritation symptoms are observed, obtain medical attention <p>Eye contact</p> <p>First aid measures:</p> <ul style="list-style-type: none"> – Rinse cautiously with water for several minutes. Remove contact lenses, if any and if possible. Continue rinsing. – If irritation is not gone, seek medical attention. Wash hands after using the substance. <p>Prolonged skin contact:</p> <p>Safe handling precautions:</p> <ul style="list-style-type: none"> – Avoid breathing dust – Wear protective gloves/protective clothing – Do not carry away contaminated clothing from the workplace <p>First aid measures:</p> <ul style="list-style-type: none"> – In case of contact with skin, wash thoroughly with plenty of water and soap – If skin irritation or redness symptoms are observed, obtain medical attention – Wash contaminated clothing before reuse
	<p>Genetic and reproductive effects:</p> <p>Safe handling precautions:</p> <ul style="list-style-type: none"> – Get a briefing on product handling before use – Use personal protective equipment <p>First aid measures:</p> <p>If there is a suspicion of possible impact, obtain medical attention</p> <p>Safe storage conditions:</p> <ul style="list-style-type: none"> – Store in a locked container

3. Composition (information on ingredients)

3.1. General data on product

3.1.1. Chemical name: (as per IUPAC)	Aluminium (III) hydroxide [3]
3.1.2. Chemical formula:	Al(OH) ₃
3.1.3. General characteristics of composition: (in regard to grade range, with indication of impurities and functional additives, influencing hazard qualities of the product; production process)	White fine-crystal powder. Shades of gray, pink and other colours are permissible. Product grades differ in weight content of water and impurities, as well as in fractional composition [1,2]

3.2. Ingredients

(name, CAS and EC numbers (if any), concentration, MAC w.z. or SRLI w.z., hazard classes, source references)

Ingredients (name, CAS/EC No.)	Concentration (%)	MACw.z (mg/m ³)	Hazard class	Source references
1. Aluminum trihydroxide Al(OH) ₃ CAS 21645-51-2; EC 244-492-7	98 to 99	-/6	4 o	[4]
2. Diiron trioxide Fe ₂ O ₃ CAS 1309-37-1; EC 215-168-2	up to 0.03	-16	4	[4]
3. Silicon dioxide (SiO ₂)	up to 0.12	3/1	3	[4]
4. Fraction of sodium oxides (Na ₂ O) and potassium oxides (K ₂ O) total	up to 0.60	not rated	none	-

mass calculated on sodium oxide (Na ₂ O)				
5. Moisture	1 to 18	not rated	none	-
4. First aid measures				
4.1. Observed symptoms				
4.1.1. Inhalation:	Dry mouth, nose, upper respiratory tract. Breathing trouble, dyspnea, excitation [3].			
4.1.2. Skin contact:	Dermahemia, pain, cutaneous swelling [6]			
4.1.3. Eye contact:	Pain in eyes, tearing [3]			
4.1.4. Ingestion:	Intestinal upset, stomach ache. The product is gastro-intestinally low-absorbable and has good intestinal excretion ability [7]			
4.2. First aid measures for injured people				
4.2.1. Inhalation:	Move to fresh air. Keep in rest and warm [3]. In case of nasal mucosa lesion, clean it thoroughly. Wash with water and soap. Apply melted butter, Vaseline or fish oil in nasal passages after work and before sleep. In case of cough due to dust inhalation, inhale sea buckthorn oil and drink warm milk with soda or with Borjomi water [7]. Obtain medical attention, if necessary.			
4.2.2. Skin contact:	Wash with warm water and soap. If there are scratches and cuts, treat with spirit and apply aseptic dressing. Obtain medical attention, if necessary [6].			
4.2.3. Eye contact:	Wash immediately with running water for min. 15 minutes with the eyelid held wide open [3,6]. Consult an ophthalmologist.			
4.2.4. Ingestion:	Flush out the mouth with water. Drink plenty of water. Take activated carbon, saline purgative [3].			
4.2.5. Contra indications:	Chronic bronchitis, bronchial asthma, skin hypersensitivity.			
4.2.6. First aid means:	Sterile bandage, surgical spirit (spirit-containing liquids), activated carbon [7].			
5. Firefighting measures				
5.1. General fire-and-explosion hazard characteristics:	Aluminium hydroxide is not combustible. It is fire an explosion-proof [1, 2, 3, 11].			
5.2. Indexes of fire and explosion hazard: (indexes set - as per GOST 12.1.044 and GOST R 51330 0)	No data.			
5.3. Danger caused by products of combustion and/or thermal decomposition:	The product is not subjected to thermal decomposition [3].			
5.4. Suitable extinguishing media:	Use extinguishing media directly at the main source of ignition.			
5.5. Unsuitable extinguishing media:	No data.			
5.6. Personal protective equipment (PPE) for fire-fighting: (Firefighters' PPE)	Use PPE at the main source of ignition.			
5.7. Particular measures at fire-fighting:	No data.			
6. Accidental release measures.				
6.1. Personal and environmental precautions, precautions for buildings, facilities, etc. in case of accidents and emergency situations				
6.1.1. General actions to be done:	Premises and laboratories, where aluminium hydroxide is handled, are to be provided with plenum-exhaust ventilation [1, 2, 13], and areas of eventual dust formation - with local aspiration hoods. Use sealed equipment in areas of dust release [1, 2, 9, 13]. Monitor the content of aluminium hydroxide dust in the working zone air according to requirements of standards and enterprise practices. In case of emergency isolate a hazardous zone within the radius of 50 m. Clear the zone of the external people. Do not let the product get to water basins, basement rooms and sewage lines.			

6.1.2. Personal protective equipment: (of emergency brigades and personnel)	Dust masks, gloves, rubber gloves, any type of goggles, cotton protective clothing, leather footwear [14, 15, 16, 27]. See para 8.3.
6.2. Emergency procedures	
6.2.1 Measures in case of leakage, spillage, scattering: (including environmental precautions)	See Section 13. If the product has been spilled during loading, transportation or storage, collect it into tightly closing containers and send for disposal. Personnel involved in spillage removal should use personal protective equipment, described in Section 8.
	If the product has been spilled outdoors (transport accident), enclose a hazardous zone and clear it of the external people. Embank the spilled product. Do not let the product get to water basins, basement rooms and sewage lines.
6.2.2. Fire-fighting actions:	See Section 5. Aluminium hydroxide is fire and explosion-proof [3]. In case of fire use fire-fighting equipment and personal protective equipment at the main source of ignition.
7. Handling and storage	
7.1. Precautions for safe handling	
7.1.1. Precaution measures and collective protection equipment: (including system of fire and explosion safety measures)	During production and recycling of product use hermetic equipment and tare for the purpose of collective protection. Premises must have plenum-exhaust ventilation to provide air condition in working zone compliant with requirements of standards [9,13]. Monitor the working zone air as per Hygiene Standard GN 2.2.5.1313 and GOST 12.1.005. Analyze air samples for aluminium hydroxide content according to approved practices. Personnel must be trained in safe handling of the product and equipped with personal protective equipment. Aluminium hydroxide is fire and explosion-proof [3].
7.1.2. Environmental protection:	Aluminium hydroxide may cause mechanical pollution of environment. Do not allow entrance in soil, sewage water, drain systems and water conduits
7.1.3. Advices for safe relocation and transportation:	Aluminium hydroxide is non-hazardous cargo. Depending on the grade it can be transported in bulk or packed by all means of ground transport according to cargo transportation regulations applicable to a given transport mean [1,2]. Take care of container/tare integrity to avoid the product spillage.
7.2. Chemicals storage regulations	
7.2.1. Safe storage conditions and terms: (including guarantee shelf life)	Store aluminium hydroxide, packed in tare, in covered warehouses. Store separately the products of different grades. The Manufacturer guarantees the compliance of aluminium hydroxide to specification requirements provided that transportation and storage conditions are met. The shelf life of aluminium hydroxide is not limited provided that storage conditions are met [1, 2].
7.2.2. Substances and materials incompatible for storage:	Do not store aluminium hydroxide together with organic substances, acids and alkali [3].
7.2.3. Materials recommended for tare and packing:	Depending on grade aluminium hydroxide can be transported in bulk or packed in tare. Load aluminium hydroxide of grades GD 00 and GD 8 in bulk in open wagons and open trucks.
	Pack aluminium hydroxide of grade GD 1 and fine aluminium hydroxide in bags dedicated for bulk cargo according to standards. Transport aluminium hydroxide, packed in bags, in open and covered means of transport. Any other type of packing is possible upon agreement between the Manufacturer and the User [1, 2].
7.3. Safety measures and rules of storage at household use:	Not for household use
8. Exposure controls/personal protection	
8.1. Working zone parameters subject to mandatory monitoring	MAC w.z. : 6 mg/m ³ [1, 2, 3, 4, 9].

(MAC w.z. or SRLI w.z.):	
8.2. Measures to limit hazardous substances content within admissible concentrations:	Use centralized plenum-exhaust ventilation, in areas of higher dust formation - exhaust ventilation [1, 2, 9, 13].
8.3. Personal protective equipment	
8.3.1. General re:	Avoid direct contact with dusty substance. Wear protective clothing and personal protective equipment while working [3, 15, 16]
8.3.2. Respiratory organs protection (types of respiratory protective equipment)	Use "Lepestok" type dust masks for dusty operations [14], 9312 FFP 2
8.3.3. Protective clothing (material, type):	Cotton suit [27]. Leather shoes or boots [16]. Cotton or rubber gloves.
8.3.4. Personal protective equipment for household use:	Not for household use
9. Physical and chemical properties	
9.1. Physical state: (aggregate state, color, odor)	Aluminium hydroxide is white fine-crystal powder. Shades of white, pink or other colors are permitted [1, 2]. Odorless [3].
9.2. Physical-property variables (mainly hazardous properties): (temperature factors, pH, solubility, partition coefficient n-octanol/water, etc.)	Melting point: 200-300°C Density: 2.35 - 3.44 g/cm ³ Acid- and alkali-soluble [3,5]. Effective specific activity (A _{eff.}) of natural radioactive nuclides: 22 Bq/kg maximum
10. Stability and reactivity	
10.1. Chemical stability: (indicate decomposition products for unstable substances)	Very stable [3]
10.2. Reactivity:	Reacts with acids, alkali [3]
10.3. Conditions to avoid: (including hazards arising from contact with incompatible substances and materials)	Incompatible with organic substances, acids, alkali. Hazardous decomposition products: none [3]
11. Toxicological information	
11.1. General characteristics of exposure: (level of hazardous (toxic) effect on a human body)	Low hazardous to a human body. Irritates upper respiratory tracts, skin and eyes [3, 6, 7] Acute toxicity: Al(OH) ₃ DL _{min} = 150 mg/kg (i.p., rat)
	DL ₅₀ > 5000 mg/kg (oral, rat) DL ₅₀ > 2500 mg/kg (dermal, rabbit) CL ₅₀ – not achieved [3]
11.2. Routes of exposure: (Inhalation, ingestion, skin/eyes contact)	Skin/eyes contact, accidental ingestion, inhalation of dust
11.3. Human organs, tissues and systems to be affected:	Affects central nervous and respiratory systems, gastrointestinal tract, liver, heart, kidneys, mineral metabolism, skin, eyes, hemopoiesis system [3].
11.4. Information on hazardous effects arising from direct contact with the substance, and consequences of these effects: (irritation of upper respiratory system, eyes, skin, including skin-resorptive effect; sensitization)	<i>Effect on upper respiratory system.</i> Long-term exposure can cause catarrhal respiratory diseases, chronic upper respiratory inflammation. Long-term inhalation of dust (for 8 or 9 years) can cause development of lung fibrosis, aluminosis [3, 6, 7]. <i>Effect on skin:</i> Skin irritation [3, 6]. <i>Effect on eyes:</i> Lasting contact with dust can cause tearing, pain in eyes, damage of ocular tissue, reddening [6, 7]. <i>Skin resorptive effect:</i> not found. <i>Sensitizing effect:</i> found [3].
11.5. Delayed effects from exposure: (reproductive effects, carcinogenicity, cumulativeness, etc.)	Research made by the International Agency for Research on Cancer (IARC) shows that some aluminium production processes have certainly carcinogenic effects on a human body. Carcinogenic effects on animals: weak [3]. Cumulativeness: moderate [3]. Embryotropic effects: discrepant data [3]. Mutagenic effects: found (not confirmed by IARC) [3].

	Teratogenic effects: discrepant data [3]. Gonadotrophic effects: found [3].
11.6. Acute toxicity: (DL ₅₀ , canal (oral, dermal), animal; CL ₅₀ , exposure time (h), animal)	DL _{min} = 150 mg/kg, i.p., rat DL ₅₀ > 5000 mg/kg (oral, rat) DL ₅₀ > 2500 mg/kg (dermal, rabbit) CL ₅₀ – not achieved [3]
11.7. Doses (concentration) with minimum toxic effect:	Limchr. - 0.25 mg/kg, oral, 6 months, rat (general toxic and gonadotoxic effect) - for AL (3+)/ DNEL chr.- 0,025 mg/kg, oral, 6 months, rat - for AL (3+)/ Unit of activity - 3.7-7.3 mg/kg, oral, human (pneopneic reflex) [3].
12. Ecological information	
12.1. General characteristics of environmental impact: (air, water, soil)	Can cause mechanical pollution of environment
12.2. Environmental impact pathways:	Can cause environmental impact in case of violation of storage, transportation and application rules and as a result of accidents, emergencies, non-organized waste emplacement and disposal.

12.3. Observed signs of impact:	Can cause water pollution and sludge formation, in case of ingress in quantities exceeding MACwater.
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12.4. Most important characteristics of environmental impact

12.4.1. Hygienic norms:
(allowable concentration in air, water, including fishery
waters, soil)

Components	MAC air or SRLI air, mg/m ³ (LNV ¹ , hazard class)	MACwater ² or APLwater, mg/ltr (LNV, hazard class)	MAC fish. ³ or SRLI fish., mg/ltr (LNV, hazard class)	MAC or APCsoil, mg/kg (LNV)	References
Aluminium	not rated	0.2, org. sludge, Hazard class: 3	0.04, tox., Hazard class: 4	not rated	[3]

12.4.2. Ecotoxicity:
(CL, EC for fish, Daphnia magna, algae, etc.)

EC = 0.0005 mg/ltr, Chlorella pyrenoidosa (growth inhibition) - for
Al(OH)₃ at pH 5.8-6.2 [3, 5].
EC = 1 mg/ltr - inhibition of microflora propagation [3].

12.4.3. Environmental mobility and fate due to
biodegradation and other processes
(oxidation, hydrolysis, etc.):

Does not transform in environment [3].

13. Disposal considerations

13.1. Precautions for handling of waste resulting from application, storage, transportation, etc.	Avoid direct contact with waste. Use dust masks, protective goggles, gloves and protective clothing for dusty operations [14, 15, 16, 27].
13.2. Sites and methods of waste deactivation, recycling or disposal, including tare (containers):	Collect thoroughly waste in a container and send for recycling. Collect non-recyclable waste in a tightly closing drums or containers, and send for burial. Send contaminated tare (bags for bulk cargo) for burial [3].
13.3. Advices for removal of household waste:	Not for household use

14. Transport information

14.1. UN number: (as per UN Recommendations on the Transport of Dangerous Goods (Model Regulations), latest edition)	Cargo is not classified as hazardous according to UN Recommendations on the Transport of Dangerous Goods, therefore it has no UN number [26]
14.2. Proper shipping name:	Aluminium hydroxide GD 00 (GD 8 or GD 1). TU 1711-045-00196368-95 [1], fine aluminium hydroxide

¹ LNV — limiting nuisance value (tox. - toxicological; s/t - sanitary toxicological; org. - organoleptic; refl. - reflectory; res. - resorptive; refl. -res. - reflectory resorptive, fish. - fishery (degradation of aquatic organisms quality); gen.- general sanitary)

² Cultural and household use waters

³ Fishery waters (including sea waters)

	TU 1711-046-00196368-95 [2].
14.3. Means of transport:	Transportable by any means of ground transport. Can be transported in bulk in open wagons and open or covered trucks.
	Can be transported packed in bags for bulk cargo in open and covered means of transport according to cargo transport regulations set for a given mean of transport [1, 2].
14.4. Cargo hazard class: (as per GOST 19433, UN Recommendations on the Transport of Dangerous Goods)	Cargo is not classified as hazardous according to GOST 19433 and UN Recommendations on the Transport of Dangerous Goods [26]
14.5. Shipping label: (handling signs; main, auxiliary and informative inscriptions)	As per GOST 14192
14.6. Packing group: (as per UN Recommendations on the Transport of Dangerous Goods)	Cargo is not classified as per UN Recommendations on the Transport of Dangerous Goods, therefore it is not assigned to any packing group [26]
14.7. Road transportation hazards:	Emergency measures code: none [22]
14.8. Emergency cards: (for transportation by rail, sea, etc.)	Not applicable
14.9. International traffichazards: (as per AIGT, ADR, RID, IMDG Code, ICAO/IATA, etc., including environmental hazards, sea pollutants).	Hazard code: none
15. National and international legislation	
15.1. National legislation	
15.1.1. RF laws:	"On sanitary-epidemiological welfare of the population"- No.52-FZ, dated 30 March 1999. "On natural environment protection", No. 7-FZ, dated 10 January 2002. "On radiation security of population" No. 3-FZ, dated 09 January 1996
15.1.2. Human and environmental protection documents: (certificates, hygiene certificate, evidences, etc.)	Hygiene Certificate No.77 99 34.570.D.008501.07 09 dated 21 July 2009 issued by the Federal Service for Supervision on Consumer Rights Protection and Human Welfare
15.2. International legislation	
15.2.1. International conventions and agreements: (whether controlled or not by the Montreal Protocol, Stockholm Convention, etc.)	Not controlled
15.2.2. EU safety marking: (hazard symbols, risk phrases, safety phrases, etc.)	Risk phrases: R - 20/21 (harmful by inhalation, in contact with skin); Safety phrases: S - 7/13/14 (keep container tightly closed, away from food and acids); S - 22/24/26 (do not breathe dust, avoid contact with skin, in case of contact with eyes rinse immediately with plenty of water and seek medical attention); S - 36/37/38/39 (wear suitable protective clothing, gloves, in case of insufficient ventilation wear suitable respiratory equipment, eye protection).

16. Additional information:	
16.1. MSDS revisions (reissue): (indicate as applicable: "This SDS is developed for the first time" or other cases with the main reason of SDS revision)	SDS is revised due to the enterprise restructuring and expiration of SDS validity
16.2. List of information sources	

1. TU 1711-045-00196368-95 "Aluminium Hydroxide. Specifications"
2. TU 1711-046-00196368-95 "Fine Aluminium Hydroxide. Specifications"
3. Information Card of Potentially Hazardous Chemical and Biological Substance. Aluminium (III) Hydroxide. State Registration Certificate AT No. 000482 dated 26 May 1995 RPHCBS.
4. Hygiene Standard GN 2.2.5.2536-09 Supplement No.5 to GN 2.2.5.13-03 "Maximum Allowable Concentration (MAC) of Harmful Substances in Working Zone Air. Hygienic norms"
5. Chemist's Reference Book Volume 2 L., "Chemistry" 1971
6. Hazardous substances in industry. Inorganic and hetero-organic substances. Reference book for chemists, engineers and doctors. Volume 3, edited by N. V. Lazarev and Y. D. Gadaskina L., "Chemistry" 1977
7. Harmful Chemicals. Inorganic compounds of I-IV group elements. Reference book edited by V.A. Filov et al. L., "Chemistry" 1988
8. GOST 12 0 004-90 "Occupational Safety Standards System. Organization of Training for Labour Safety. General Rules"
9. GOST 12.1.005-88 "Occupational Safety Standards System. General Sanitary Requirements for Working Zone Air".
10. GOST 12.1.007-76 "Occupational Safety Standards System. Noxious Substances. Classification and General Safety Requirements"
11. GOST 12.1.044-89 "Occupational Safety Standards System. Fire and Explosion Hazard of Substances and Materials. Nomenclature of Indices and Methods of their Determination"
12. GOST 12.3.009-76 "Occupational Safety Standards System. Loading and Unloading Works. General Safety Requirements"
13. GOST 12.4.021-75 "Occupational Safety Standards System. Ventilation systems. General Requirements"
14. GOST 12.4.028-76 "Occupational Safety Standards System. Respirators ShB-1 "Lepestok". Specifications"
15. GOST R 12.4.230.1-2007 "Occupational Safety Standards System. Personal Eyes Protection. General Requirements"
16. GOST 12.4.103-83 "Occupational Safety Standards System. Special Protective Clothes, Personal Means of Hand and Legs Protections. Classification"
17. GOST 17.2-3.02-78 "Nature Protection. Atmosphere. Regulations for Establishing Permissible Emissions of Noxious Pollutants from Industrial Enterprises"
18. GOST 14192-96 "Cargo Marking"
19. GOST 19433-88 "Dangerous Cargo. Classification and Marking"
20. RD 15-73-94 "Safety Rules for Rail Shipment of Hazardous Goods"
21. SNiP 2.01.28-85 "Landfills for Deactivation and Burial of Toxic Industrial Waste". Main Design Rules"
22. Regulations for Transport of Dangerous Goods by Road, approved by the Decree of the RF Ministry of Transportation No.73 dated 08 August 1995
23. "Dangerous Goods Regulations" Appendix No.1 and No.2 to "Agreement on International Goods Transport by Rail (AIGT)", Traffic Ministry of RF, 1998
24. Occupational Pathology Reference Book, edited by L.N. Gratsianskaya, V. E. Kovshilo - M: "Medicine" 1981
25. GOST 31340-2007 "Labelling of Chemicals. General Requirements"
26. UN Recommendations on the Transport of Dangerous Goods, "Orange Paper"
27. GOST 29057-91 "Occupational Safety Standards System. Men's Overalls for Protection from Non-Toxic Dust. Specifications".
GOST 29058-91 "Occupational Safety Standards System. Women's Overalls for Protection from Non-Toxic Dust. Specifications"