

MATERIAL SAFETY DATA SHEET

Registered	05 July 2011
Safety Data Sheet Registration No. 00186507 - 08 - 25757	Valid until 05 July 2016
Rosstandard	
Information Analytical Center "Substance and Material Safety" Federal State Unitary Enterprise "VNITSMV"	Chief _____ / A. D. Kozlov / L.S.

NAME:

Technical (ND):
Chemical (IUPAC):
Trade:
Synonyms:

Silicocalcium
None
Calcium silicon of various grades
Alloy of Calcium and Silicon

Code of All-Russian Classification of Product:

0 8 2 2 0 0

Code of Harmonized Commodity Description and

Coding System:

7 2 0 2 9 9 8 0 0 0

Product Registration Information

Not to be registered

Reference Identification and Name of Basic Normative, Technical or Informational Document for Products (GOST, Specifications, Industrial Standards, Proprietary Standard, (M)SDS, etc.)

GOST 4762-71 (ST SEV 496-87). Amendments 1-4. Silicocalcium. Specifications.

HAZARD IDENTIFICATION:

Signal Word: **WARNING**

Brief (in words): It is moderately hazardous substance for the health impact. Dust has the fibrogenic effects and causes the irritation of upper airways, and there may be silicosis after long-term influence. Interaction with water may cause the release of dangerously explosive gases, such as hydrogen and acetylene.

Detailed: in the 16 attached sections of MSDS.

BASIC HAZARDOUS COMPONENT	MPC _{wz} , mg/m ³	Class of Hazard	CAS No.	EC No.
Silico-calcium	Not determined	No	12022-95-6	234-670-2

APPLICANT: OJSC "Chelyabinsk Electrometallurgical Integrated Plant", Chelyabinsk
(Organization Name) (City)

Type of Applicant: manufacturer, supplier, seller, exporter, importer
(Strike out unnecessary item)

Code of All-Russian Classifier of Enterprises and Organization:

00186507

Hotline: (351) 772-66-09

Head of Applicant Organization: _____ L.S.
Signature

/ A. V. Sheykin /
(Clarification of signature)

IUPAC	International Union of Pure and Applied Chemistry
GHS	Globally Harmonized System of Classification and Labeling of Chemicals
ARCP	All-Russian Classification of Products
ARCEO	All-Russian Classifier of Enterprises and Organization
HCDCS	Harmonized Commodity Description and Coding System * This code is not indicated for the Russian Federation internal market.
CAS No.	Number of the Chemical Abstract Services
EC No.	Number of the European Chemical Agency
MPC_{wz}	Maximum Permissible Concentration of Chemical Substance in Working Zone Air, mg/m ³ (maximum one-time/average monthly)
MSDS	Material Safety Data Sheet is used for the Russian Title: "Passport of Chemical Products' Safety" (substance, mixture, material, waste of industrial production)

Material Safety Data Sheet meets:

- Recommendations of the UN ST/SG/AC.10/30 "GHS";
- The EC regulations "Regulation No. 1907/2006 concerning Registration, Evaluation, Authorization and Restriction of Chemicals", Attachment II.

Signal Word:

Indicates one of two words "**Danger**" or "**Warning**" (or "**Absent**") according to GOST 31340-2007 "Labeling of Chemicals. General Requirements."

Product Registration Information (*for pesticide, agrochemical, disinfectant, food additive, individual chemical, etc.*) includes: Number and Date of the State Registration; Certificate Number; and the Number of the State Registration (if available)/PHCBSR Number for the Potentially Hazardous Chemical and Biological Substances Register of Russian Federation (PHCBSR).

1. Chemical Product Identification and Information on Manufacturer and/or Supplier

1.1 Chemical Product Identification

1.1.1 Product Name: Silicon-calcium [1].
 1.1.2 Brief Recommendations for Use: For deoxidizing of steels and alloys, cast iron modification, and other purposes [1].
 (including the restrictions for use)

1.2 Information on Manufacturer and/or Supplier

1.2.1 Full Legal Name of Organization: "Chelyabinsk Electrometallurgical Integrated Plant joint-stock company" (OAO "ChEMK")
 1.2.2 Address (Postal and Legal): 454081, Chelyabinsk, Geroev Tankograd Street, 80-P, Bld. 80.
 1.2.3 Telephone, including phone for special consultation and convenient time: (351) 772-66-09
 1.2.4 Fax: (351) 772-96-19
 1.2.5 E-mail: info@chemk.ru

2. Hazard (hazards) Identification

2.1 Level of chemical product hazard as whole: Moderately dangerous substance concerning the influence on the organism, the class of hazard – 3
 (Information about classification of hazard according to the RF legislation (GOST 12.1.007) and GHS (after approval))
 The water influences the alloy with the release of the fire- and explosion-hazardous gases: hydrogen and acetylene. Quantity of released gases increases under moistening the alloy, the calcium content increase, and the decrease of alloy particle sizes [1, 9, 22].

2.2 Hygiene regulations for product, as whole, in the working zone air: Hygiene regulations for the working zone air are not specified [2].
 (MPCwz or SRLIwz)

2.3 Labeling Information: (GOST 31340-07)

Symbols:



Flame



Exclamation mark

Signal Word: WARNING.

Summary of hazard properties: Inflammable substance. Contact with skin may cause the irritation. Contact with eyes causes the apparent irritation.

Danger preventive measures:

Keep from sources of inflammation, heat, sparks, and open fire. While using this product, do not smoke, do not drink, and do not eat. Use the explosive-proof equipment and explosion-proof lighting. Keep from static electricity. Avoid inhaling dust, use gloves and eye/face protection means. Do not take away the dirty overalls from the work places. After working, wash up carefully hands.

When it contacts the skin: remove the dirty working clothes; wash up skin with the large amount of water and soap. If there is the irritation and redness, appeal for medical aid.

Launder the dirty working clothes before the reuse.

Contact with eye: wash up carefully eyes with water for several minutes. Remove contact lenses, if you use them, and if it is easily made. Continue to wash up the eyes. If irritation does not disappear, appeal for medical aid.

Extinguish with powders.

Avoid the product release in the environment [17].

3. Content (Information about Component)

3.1 General Information about Product

3.1.1 Chemical name:
(IUPAC)

None, the alloy with specified composition [1].

3.1.2 Chemical formula:

None, the alloy with the specified composition [1].

3.1.3 General characteristics of composition:
(considering the grade assortment, the impurity indications, and functional additives which influence on the product hazard; production process)

Alloy of calcium and silicon. It is supplied as lumps of following size category:
- 1st class (lump sizes up to 1 mm)
- 2nd class (lump sizes from 1 to 20 mm)
- 3rd class (lump sizes from 20 to 200 mm) [1].

3.2 Ingredients

(name, CAS No., EC No. (if available), weight percent, MPCwz, classes of hazard, references for data sources)

Ingredients [1]	Weight percent, % [1]	MPCwz, mg/m ³ [2]	Class of hazard	CAS No. [2]	EC No. [19]
Silico-calcium, including:	Up to 100	Not specified	No	12022-95-6	234-670-2
- Silicon	Not less than 45 (depending from grade)	6/2 (silicon dioxide with the content 10-70%)	3	7440-21-3	231-130-8
- Calcium	Not less than 10 (depending from grade)	Not specified	No	7440-70-2	231-179-5

Note: Depending from the grade, silico-calcium contains not more than: 2.0% aluminum, 1.0% carbon, 0.04% phosphorus [1].

4. First Aid Measures

4.1 Observed symptoms:

4.1.1 Inhalation poisoning (inhalation):

Cough, pains in different chest parts, dyspnea, weakness [12].
Silicosis signs: more frequent and early complain about dyspnea, related to physical strain, which early did not cause the dyspnea; chest pains, cough [12].

4.1.2 Skin exposure:

Dust and gases released after contact with water have the irritation effects [12].

4.1.3 Eye exposure:

Dust and gases released after contact with water have the irritation effects [12].

4.1.4 Ingestion exposure (per oral way):

The cases of acute poisoning are unlikely [12].

4.2 First aid measure for exposed one

4.2.1 For inhalation poisoning:

Fresh air, rest, rewarming, strong tea or coffee [12].

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4.2.2 For skin exposure:

Wash with running water and vaseline the skin [12].

4.2.3 For eye exposure:

Wash immediately with the large amount of running water for 15 minutes while palpebral fissure is open. If there are enduring redness and pain, appeal to oculist [12].

4.2.4 For ingestion poisoning:

Rinse the oral cavity with water, use abundant water portion, activated carbon, and saline purge. If necessary, urgently appeal for medical aid [12].

4.2.5 Contraindications

There is no data [1, 12].

4.2.6 First aid kit:

The first aid kit shall include the medicines and medications approved by the Public Health Bodies for using in the first aid help at this industry [12].

5. Fire and explosion fighting measures and equipment

5.1 General characteristics of fire and explosion fighting:

It is non-flammable, the interaction with water causes the inflammable gas releases (hydrogen and acetylene) and the large quantity of heat [1, 16]. The released gas quantities increase while the alloy is being moistened, the calcium content is increasing, and the particle size is decreasing (1 nm³/t of alloys grades SK30(ch), SK(3), SK30R with the particle sizes up to 2mm per day) [1, 9]. The silico-calcium dust with the particle sizes less than 50 μm is combustible [9].

5.2 Characteristics of fire and explosion risk:
(List of characteristics according to GOST 12.1.004 and GOST R 51330.0)

Values of the low concentration flammability limit (LCFL):

- for hydrogen – 3.9%;
- for dust with particle sizes less than 50 μm:
 - for grades SK10, SK10R, SK15, SK15R, SK20, SK20R – 6.7 g/m³;
 - for grades SK25, SK25(ch), SK25R, SK30, SK30(ch), SK30R – 42 g/m³ [1];

Low concentration limit of flame propagation (LCLFP) in aerosol:

- for particles of the grade SK15 – 169 g/m³;
- for particles of the grade SK30 – 130 g/m³ [9];

Ignition temperature of alloy aerosol:

- for the grades SK10, SK10R, SK15, SK15R, SK20, SK20R – 795 °C;
- for the grades SK25, SK25(ch), SK25R, SK30, SK30(ch), SK30R – 650 °C;

Ignition temperature in layer:

- for particles of the grade SK15 – 485 °C;
- for particles of the grades SK30 – 445 °C [9].

5.3 Hazard of combustion products and/or thermodestruction:

Noncombustible. If dust inflames, there may be the formation of the silicon and calcium oxides.

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- 5.4 Recommended extinguishing means: Powder mixes [16].
- 5.5 Prohibited extinguishing means: Do not use water and foam! [16]
- 5.6 Personal protective gear for extinguishing the fire:
(Personal protective gear of fire-fighters) Fire-protection suit with escape hood SPI-20 [16].
- 5.7 Specific character of fire-extinguishing: The water interaction causes the releases of the inflammable gas (hydrogen and acetylene) and the great quantity of heat.

6. Activities to prevent and eliminate accidents, emergencies, and their consequences.

6.1 Activities to prevent the hazardous effects on human beings, environment, buildings, constructions, etc, during accidents and emergencies.

6.1.1 General required activities: Isolate the dangerous zone. Evacuate unauthorized persons. Enter the dangerous zone with the protection clothes. No smoking. Remove the sources of flame and sparks. Render the first medical aid and/or evacuate the injured persons for the medical examination. [16].

6.1.2 Personal protective gears:
(emergency crew and staff) For the chemical survey team and the work head – maximum permissible level 3 for 20 minutes. For emergency crews – isolating protection suit KIH-5 and isolating gas mask IP-4M. If there are no such protective gears, use the battledress overgarment L-1 or L-2 and the industrial gas mask with cartridge V. The industrial gas mask PFM-1 with small size, gloves made of butyl rubber, special footwear for protection against the oil and oil product effects. In case of small concentrations in the air (exceeding of MPL as much as 100 times), use the overalls to protect against dust, the individual autonomic protection gear with the forced feed of purified air to the inhalation zone and the cartridge PZU, PZ-2, filtering respirator "FORT-P2", universal respirator "Snezhok-KU-M" [16].

6.2 Procedures for activities to eliminate accidents and emergencies

6.2.1 Activities for leak, overflow, and spill:
(including precautions providing the protection of environment) Report to the local service of Rospotrebnadzor. Do not touch the spilled substance. The spilling is enclosed with dirt wall. It can not be allowed its ingress into bodies of water, basements, and sewerage system. Not damaged product shall be collected considering the precautions, and after coordination with the manufacturer it can be shipped to the destination or for reprocessing. Remainders shall be filled with dry inert material and collected with the upper layer of ground into dry tanks, then marked and shipped for treatment at the sites authorized by the local services of Rospotrebnadzor.

Places of cuts shall be filled with fresh layer of ground, the soil shall be ploughed. All the surfaces of rolling stock and the territory shall thoroughly be cleaned, washed with the large amount of water, and treated with diluted solution of acid [16].

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6.2.2 Fire-fighting measures:

Do not use water! Avoid the water penetration into tanks and on cargoes. Extinguish only with powder mixes. [16].

7. Storage and handling rules for chemical products during handling operations

7.1 Safety measures while handling the chemical products

7.1.1 Safety measures and collective protection gears:
(including the measure system for fire-explosion fighting)

Combined extract-and-input system or natural ventilation in the work premises; Application of technological processes with minimum dust generation and dust-collecting devices. Observance of preventive fire-fighting regulations; Versions of equipment, utilities, and fittings of artificial lighting shall be explosion-proof; Workplaces shall be equipped with the first fire fighting appliances; Use of individual protection gears [1, 12].

Use the individual protection means during the work (see Section 8).

7.1.2 Environment protection measures:

Intermittent monitoring of hazardous substance contents in the work zone air. Gas- and dust cleaning units while processing the products. Analysis of the industrial sewerage systems for the hazardous substance contents and permissible concentrations. Cleaning of the working premises air up to the specified standards before releasing it into atmosphere. Preventing of the silico-calcium penetration in the domestic sewerage and rainwater disposal, and in the open water bodies and in soil.

7.1.3 Recommendations for transportation safety:

Silico-calcium is transported as the packed one in steel drums as well as in specialized containers. When the silico-calcium is packed, the moisture penetration shall be excluded.

Silico-calcium of the grade SK10 is transported without the package in the clean transportation means or specialized containers [1].

The moistening of cargo shall be excluded. Before loading start, the consignor shall provide the certificate that after manufacturing the cargo was under covering and at the same time in the open air not less than 3 days before its loading, and the particle sizes remained unchangeable. The loading shall only be in the dry weather [22, 23].

7.2 Chemical product storage regulations

7.2.1 Conditions and safe storage life:
(including guaranteed storage life, expiration time)

The packed alloy shall be kept in the closed premises in stacks according to grades, size grades, and year of manufacture.

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The alloys, which are transported in bulk and also in specialized containers, are stored on the places under shelter or in the closed premises in stacks, bins, or in bowls according to grades and years of manufacture.

The premises may be any construction with the concrete or asphalt floors and the natural ventilation. The areas shall have the hard coverage and be even with small slope to the edges (1:100) [6].

Silico-calcium with the particle sizes up to 2 mm is used during 5 days after its production; the 2nd size grade with particle sizes from 2 to 20 mm – 3 months; the 3rd size grade – 5 years after its production [1].

7.2.2 Substances and material incompatible for storage: Moisture [1].

7.2.3 Materials recommended for tares and package: For lump sizes less than 5 mm – in steel drums or specialized containers.
For lump sizes more than 5 mm – in steel drums, wooden boxes, or specialized containers [6].
Ferroalloys with lump sizes more than 5 mm are permitted not to be packed [6].

7.3 Safety measures and storage regulations in private life: It is not used in the private life conditions.

8. Monitoring means for hazardous effects and individual protection gears

8.1 Working zone criteria, that shall necessarily be monitored (MPCwz or Safe Reference Levels of Impact in Working Zone (SRLIwz)): MPCwz for silico-calcium is not specified. Control is recommended for silicon dioxide - MPCwz = 6/2 mg/m³ (for aerosol of the amorphous silicon dioxide condensation, contents from 10% to 60%) [1, 2].

8.2 Safety measures to keep the hazardous substance contents in the permissible concentrations: Dust- and gas-cleaning facilities. Combined extract-and-input ventilation. Control of MPCwz [1, 12].

8.3 Individual protection gears for personnel

8.3.1 General recommendations: Avoid the direct contact with the products; and use the protection overalls.
The routine cleaning of premises and industrial area by the dry method from dust and spilling.
Observe the personal hygiene regulations; do not smoke and do not eat at the workplace. After work, take a shower.
All staff involved in operation with corrosion inhibitor shall take medical examinations, the first for taking on job and the periodical ones according to the orders of the Russian Federation Ministry of Public Health and Russian Federation Ministry of Social Development, which have been approved through established procedures [12].

8.3.2 Protection of respiratory apparatus: Dust respirators [12, 18].

(types of Individual Protection Gears of Respiratory Apparatus)

8.3.3 Protection clothes (material and type): **Protection clothes:** Overalls made out of dust-protection fabric.

Eye protection: safety goggles that are closely put on the face (e. g., safety gastight goggles, type G) or shield for face protection.

Leg protection: protective footwear.

Hand protection: tarpaulin gauntlets, gloves [12, 18].

8.3.4 Individual protection gear in private life

It is not use in the private life conditions [1].

9. Physicochemical properties:

9.1 Physical state:
(aggregate state, color, odor)

Solid substance, grey color [9].
Odorless [9].

9.2 Criteria defining the basic properties of chemical products, first of all the hazardous ones:

Density, g/cm ³ [9]:	3.3 ... 3.7 (SK15) 2.2 ... 2.5 (SK30)
Melting temperature, °C [9]:	1100 ... 1250 (SK15) 990 ... 1160 (SK30)
Solubility:	Water-insoluble

10. Stability and chemical reactivity

10.1 Chemical stability:

Material is stable under the normal operational conditions, there is no hazardous polymerization.

10.2 Chemical reactivity:

Transformation in environment involves insignificant quantity of slag (<1%), which inevitably is in material, therefore, the general reactivity of material is minimum. Under the melting temperature the silico-calcium is a reducing agent for metals from melts [21].

10.3 Conditions that shall be avoided:
(including dangerous behavior under the contact with the incompatible substances and materials)

Moisture interaction [1, 22].

11. Toxicity information

11.1 General effect characteristics:
(evaluation of hazard (toxicity) extent for the organism effects)

Moderately dangerous products concerning the extent of effects to organism [1].

11.2 Routes of entry:

Inhalation, contact of dust with skin and conjunctiva, per oral way.

11.3 Affected human organs, tissues, and systems:

Upper airways, lungs, skin, eyes [12].

11.4 Information on the hazardous effects of direct contact with substance on health, as well as consequences of such exposures:
(irritating action for upper air passages, eyes, skin, including percutaneous action; sensibilization)

Apparent irritation for conjunctiva, skin, and upper air passages. There may be percutaneous action [12].

Chronic exposure of high concentration of dust containing silico-calcium may cause silicosis as well as chronic dust bronchitis. Dust containing silicon, depositing in respiratory apparatus, usually causes the slowly developing pathologic changes, such as chronic catarrhus of the upper respiratory tract, chronic bronchitis, and pneumoconiosis [12].

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11.5 Information on long-term harmful effects for human organism:

(Effects on reproduction function, carcinogenicity, cumulativeness, etc.)

Cumulativeness is moderate.

Effects on reproduction function, mutagenic and carcinogenic effects of ferrosilicon have not been studied [12].

11.6 Criteria of acute toxicity:

(DL₅₀, entry routes (internal, external), animal species; CL₅₀, exposure time (h), animal species)

There is no data.

11.7 Doses (concentrations) having the minimum toxic effect:

There is no data.

12. Information about effects on environment

12.1 General characteristic of effects on environment objects:

(atmospheric air, water bodies, soil)

When concentrations are large, it can contaminate various objects of environment, i.e., give an extraneous odor to the atmospheric air; change the organoleptic properties of water; have fatal effects on living organism of a water body; cause the inhibition of biochemical consumption of oxygen; and delay the plant growth [24].

12.2 Environment impact ways:

Violation of storage and transportation regulations, unorganized waste treatment, throwing out on relief or in water bodies.

12.3 Observed features of impact:

Extraneous odor to the atmospheric air; increased water turbidity and extraneous taste; formation of bottom and waterside sediments [24].

12.4 Most important characteristics of effects on environment

12.4.1 Hygiene regulations:

(permissible concentrations in atmospheric air, water, including fishery waters, and in soil)

Not determined for whole product [1, 17].

When specific water consumer releases the wastewater, and also the works are made in foreshore of water body, the content of suspended substance in the control point shall not increase in comparison with the natural conditions more than:

- 0.25 mg/dm³ (for the highest and first categories of water bodies);
- 0.75 mg/dm³ (for the second category of water bodies).

For water bodies having 30 mg/dm³ of natural suspended substances for the low water period, the increase up to 5% limit in water is acceptable.

Waste water containing the suspended substances with the settling rate more than 0.4 mm/sec is forbidden for releasing into watercourse, and one with 0.2 mm/sec – into water bodies [6].

Ingredient	MPC _{atm.air} , mg/m ³ (LHI ¹ , class of hazard)	MPC _{water} ² , mg/l, (LHI, class of hazard)	MPC _{fishery} ³ , mg/l (LHI, class of hazard)	MPC _{soil} , mg/kg (LHI)	Source of data
Dust containing silicon	0.5/0.15 mg/m ³ (for inorganic dust containing silicon dioxide up to 20%) (resorptive,3)	Not determined.			[4, 5, 7, 12]

12.4.2 Criteria of ecotoxicity:
(CL, EC for fishes, daphnia Magna, algae, etc.)

N/A

12.4.3 Migration and conversion in environment due to biodegradation or other processes (oxidation, hydrolysis, etc.):

There is no conversion in environment [3].

13. Recommendations for waste treatment

13.1 Safety measures for handling waste obtained during use, storage, and transportation, etc.

Safety measures for handling waste are analogical for those used for handling of silico-calcium (see Sections 7, 8).

13.2. Information about places and ways to decontaminate, utilize, or eliminate the substance (material) waste, including tares (packages):

Wastes, substandard products, not subject to reprocessing, and non-returnable tares shall be destroyed at the landfill for industrial toxic wastes or at the places coordinated with the sanitary inspection and environmental organizations [11].

13.3 Recommendations for treatment of wastes obtained during use in the private life conditions:

There is no use in the private life conditions [1].

14. Transportation information

14.1 UN No.:
(according to the UN recommendations for transportation of danger goods (typical rules), last edition)

No. UN 1405 [1, 14, 22]

14.2 Appropriate shipping name:

Appropriate shipping name of the UN: CALCIUM SILICON [1, 14].
Transportation name: silico-calcium [1].

14.3 Types of used transport:

All types of transport according to the regulations of transportation acting for appropriate kind of transport [6].

14.4 Danger classification of cargo:
(GOST 19433 and the UN recommendations for transportation of danger cargoes)

According to GOST 19433: class 4, subclass 4.3, classification code 4323 [1, 6, 8].
The UN Class of hazard: 4.3 [1, 14]
For the carriages of goods by rail: class of hazard 4, classification code 4313 [16].

14.5 Shipping marking:
(handling marks; basic, additional, and information notices)

Transportation marking (handling marks and information notification) can be used according to GOST 14192-96 [1]

¹LHI – Limiting Harmful Index (toxicological, sanitary-toxicological, organoleptic, reflex, resorptive, reflex-resorptive, fishery (change of commercial quality for aquatic organisms), general sanitary)

²Water of water bodies for household and community water consumption.

³Water of water bodies having the fishery significance (including the marine ones).

14.6 Packing group:
(according to the UN recommendations for transportation of danger goods)

Hazard sign – according to the drawing 4.3 in GOST 19433-88 [1, 6, 8]
III [14].

14.7 Information about hazard for motor-vehicle transportation (Kemler code):

Kemler code is not applied [3].

14.8 Emergency cards:

No. 408 for transportation by railway [1, 16].

(For transportation by railway, sea, etc.)

14.9 Danger information for international freight transportation:

AIGTR: classification code M3; danger code 423 [14].

(AIGTR, ADR, RID, IMDG Code, ICAO/IATA, etc., including the danger information for environment and “sea pollutants”)

15. Information about National and International Legislation

15.1 National Legislation

15.1.1 Russian Federation Laws:

Federal Law, 18 June 1998, No. 89-FZ “About waste of production and consumption”.
Federal Law, 30 March 1999, No. 52-FZ “Sanitary-epidemiological welfare of population”.
Federal Law, 10 January 2002, No. 7-FZ “About environment preservation”.

15.1.2 Documents, regulating the requirements for the population and environment preservation:
(Certificates, Sanitation and Epidemiological Conclusions, Licenses, etc.)

None.

15.2 International Legislation

15.2.1 International Conventions and Agreements:
(Is product regulated by Montreal Protocol, Stockholm Convention, etc.)

Silico-calcium is not covered by the actions of any international conventions and regulations.

15.2.2 Warning marking active in the EC countries:
(Danger symbols, risk and safety phrases, etc.)

Hazard signs:



F - fire-hazardous



Xn – Hazardous

Risk phrases:

R15 – Contact with water releases inflammable gases

R38 – Irritation of cutaneous covering

R53 – Can have the long-term negative effects for aqueous medium;

Precautions:

S24/25 – Avoid the contact with skin and eyes;

S36/37/38 – It is necessary to apply the appropriate individual protection means, gloves, and eyes/face protection;

S45 – In case the product exposure or bad feeling, immediately apply for medical aid and bring the product label [13, 19].

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16. Additional information

16.1 Information about revision (republication) of MSDS: (Indicate: "MSDS is developed for the first time" or other cases, determining the basic reason why the MSDS is reviewed.)

MSDS has been re-registered because the period of validity expired.

This MSDS can be used for evaluating the hazard of silico-calcium, supplied according to Specifications TU 14-5-283-97 "Silicocalcium supplied for export", and which does not have different physical-chemical and toxicological properties, for human being and environment.

16.2 List of date sources used for compilation of MSDS

- GOST 4762-11 (ST SEV 496-87), Amendments 1-4, Silicocalcium. Specifications.
- MPC/SRLI of hazardous substances in air of working zone: Hygiene Regulations. GN 2.2.5.1313-03/ GN 2.2.5.2308-07. – M.: Russian Potential Hazardous Chemical and Biological Substances Register of the RF Ministry of Health, 2003/2007.
- Regulations for transportation of dangerous cargoes by road (Under editorship of orders of RF Mintrans No. 37, 11 June, 1999, and No. 77, 14 October 1999), St.P.: Publishing House DEAN, 2002.
- MPC/SRLI of polluting substances in atmospheric air of populated area: Hygiene Regulation. GN 2.1.6.1228-03/ GN 2.1.6.2309-07. M.: Russian Potential Hazardous Chemical and Biological Substances Register of the RF Ministry of Health, 2003/2007.
- MPC/APL of chemical substances in water of water bodies of household and community water of water consumption: Hygiene Regulations. GN 2.1.5.1315-03/ GN 2.1.5.2307-07. – M.: Russian Potential Hazardous Chemical and Biological Substances Register of the RF Ministry of Health, 2003/2007.
- GOST 26590-85, Amendment 1, Ferroalloys. Packing, transportation, and storage. – M.: Standard Publisher.
- List of fishery regulations: Maximum permissible concentrations (MPC) and Safe Reference Levels of Impact (SRLI) of dangerous substances for water bodies of fishery significance. – M.: Publishing House VNIRO, 1999.
- GOST 19433-88, Amendment 1, Dangerous goods. Classification and Marking. – M.: Standard Publisher.
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