SAFETY DATA SHEET OF CHEMICAL PRODUCT

Entered in Safety Data Sheet Register

Registration No 1 3 6 5 7 8 4 2 . 1 9 . 8 9 6 8 9 dated «20» June 2024

Valid until «20» June 2029

Association Non-commercial Partnership
Coordination and Information Centre of CIS member-states
for alignment of regulatory practices

NAME

technical (as per regulatory document)	Nut coke from the east region coals JSC Ural Steel
chemical (as per IUPAC)	Hard coal coke
commercial	Nut coke from the east region coals JSC Ural Steel
synonyms	Hard coal coke

OKPD 2 Code 1 9 . 1 0 . 1 0 . 1 1 0

EAEU HS Code 2 7 0 4 0 0 1 9 0 0

Reference designation and name of the regulatory, technical or information document for the product (GOST, TU, OST, STO, (M)SDS)

TU 0762-218-00190437-2006 Nut coke from the east region coals JSC Ural Steel

HAZARD STATEMENT

Signal word: **Warning**

Brief (word) **description**: It is a low hazardous substance by impact on the body according to GOST 12.1.007. May cause damage to organs (lungs) through prolonged or repeated exposure. Combustible substance. May pollute the environment.

Detailed description: in 16 sections of the enclosed Safety Data Sheet

MAIN HAZARDOUS INGREDIENTS	MAC w.z., mg/m^3	Hazard category	CAS No.	EC No.
Hard coal coke (by carbon dust**)**	-/6	4	65996-77-2	266-010-4

APPLICANT: JSC Ural Steel, (name of organization) Novotroitsk (city)

Applicant type: manufacturer, ~~supplier, seller, exporter, importer~~
(strike out whichever is not applicable)

OKPO Code: 1 3 6 5 7 8 4 2 **Emergency telephone:** **(3537) 66-65-88, 66-46-22**

Chief engineer of JSC Ural Steel _____ / **A.I. Bedrinov** /
(signature) (full name)

stamp here

Safety Data Sheet (SDS) complies with UN recommendations ST/SG/AC.10/30 GHS

IUPAC	–	International Union of Pure and Applied Chemistry
GHS	–	UN recommendations ST/SG/AC.10/30 Globally Harmonized System of Classification and Labelling of Chemicals
OKPD 2	–	Russian Classification of Products by Economic Activities
OKPO	–	Russian Classifier of Enterprises and Organizations
HS Code	–	Foreign Economic Activity Commodity Nomenclature
CAS No.	–	substance number in the Register of Chemical Abstracts Service
EC No.	–	substance number in the Register of European Chemicals Agency
MAC w.z.	–	Maximum allowable concentration of chemical substance in the air of working zone, mg/m^3
Signal word	–	a word used for drawing attention to the hazardous level of the chemical product and chosen in accordance with GOST 31340

1 Identification of chemical product and information about manufacturer and/or supplier

1.1 Identification of chemical product

1.1.1 Technical name	Nut coke from the east region coals JSC Ural Steel (hereinafter referred to as nut, product). [1]
1.1.2 Brief recommended use (including restrictions on use)	It is used as a fuel and carbonaceous reducing agent in ferroalloy and electrode production, in non-ferrous metallurgy and other industries. There are no restrictions on use. [1]

1.2 Information about the manufacturer and/or supplier

1.2.1 Full legal company name	Joint Stock Company Ural Steel (JSC Ural Steel)
1.2.2 Address (postal and legal)	1, Zavodskaya str., Novotroitsk, Orenburg region, 462353
1.2.3 Tel., incl. for emergency consultations and hours of work	(3537) 66-65-88, 66-46-22 (from 06.15 to 15.15 Moscow time)
1.2.4 E-mail	m.mishchenko@uralsteel.com

2 Hazard(s) identification

2.1 Hazard level of chemical product in general (information on hazard classification in accordance with the RF laws (GOST 12.1.007-76) and GHS (GOST 32419-2022, GOST 32423-2013, GOST 32424-2013, GOST 32425-2013)	It is a low hazardous substance by impact on the body according to GOST 12.1.007, hazard category: 4. [2] GHS hazard classification: – chemical products with specific target organ and/or system toxicity through prolonged or repeated exposure: category 2. [2-6]

2.2 Information on the warning marking as per GOST 31340-2022

2.2.1 Signal word	Warning. [7]
2.2.2 Hazard symbols (pictograms)	 "Health hazard"
2.2.3 Hazard statement(s) (H-phrases)	H373: May cause damage to organs (lungs) through prolonged or repeated exposure. [7]

3 Composition (information on ingredients)

3.1 Information on the product in general

3.1.1 Chemical name (as per IUPAC)	Hard coal coke. [8]
3.1.2 Chemical formula	C. [8]
3.1.3 General description of composition (taking into account the grade range; production method)	Coke nut – metallurgical coke of 10-25 mm size, produced in coke ovens during coal high-temperature processing in the absence of air (heating up to 800 – 1100) °C. [1]

3.2 Ingredients

(name, CAS and EC numbers, weight percentage (must be 100% in total), MAC w.z. or ASLI w.z. (Approximately Safe Level of Impact in the working zone), hazard categories, references to data sources)

Table 1 [1,9,10]

Ingredients (name)	Weight percentage, %	Hygienic standards in the air of working zone		CAS No.	EC No.
		MAC w.z., mg/m^3	Hazard category		
Hard coal coke (by carbon dust), including:	100	-/6 (a)	4 (F)	65996-77-2	266-010-4
Ash content, maximum	18	-	-	-	-
It also contains mineral impurities and inorganic components.					
Notes: (a) –aerosol; (F) – aerosols of mainly fibrogenic action.					

4 First aid measures

4.1 Symptoms

4.1.1 In case of inhalation — Cough, throat irritation. [1]

4.1.2 In case of skin contact — Skin redness, skin dryness. Thermal burns may occur if hot product comes in contact with skin. [1]

4.1.3 In case of eye contact — Lacrimation, conjunctivitis. [1]

4.1.4 In case of ingestion — No cases of acute intoxication have been observed from dust ingestion. [1,8,11-13]

4.2 First aid measures for the injured persons

4.2.1 In case of inhalation — Remove person to fresh air, keep at rest. Get medical attention if necessary. [8]

4.2.2 In case of skin contact — Wash skin with warm water and soap.
In case of a thermal burn, immerse the affected area in cold water and wrap it in a clean cotton cloth. Get medical attention. [8]

4.2.3 In case of eye contact — Rinse with plenty of running water while opening the eyelids widely. Get medical attention if necessary. [1,8]

4.2.4 In case of ingestion — Wash out mouth with water. Get medical attention if necessary.
Cases of acute intoxication under production conditions have not been described. [1,8]

4.2.5 Contraindications — In case of thermal burns, the material should not be removed from the skin, as this can lead to damage to living tissue. Do not use solvents when cleaning skin.

5 Measures and means of fire and explosion safety

5.1 General characteristic of fire and explosion hazards (as per GOST12.1.044-89) — Combustible substance. [1,14]

5.2 Indices of fire and explosion hazards (list of indices as per GOST 12.1.044-89) — Auto-ignition temperature 500°C – 650 °C.

Auto-ignition temperature of airborne coke dust:
– with particle size of 13 microns is 800 °C;
– with particle size of less than 50 microns is 610 °C;
– the lower concentration limit of flame propagation of airborne coke dust with particle size of less than 50 microns is 580 g/m^3. [1]

5.3 Hazards caused by combustion products and/or thermal decomposition products	Carbon oxides, sulfur dioxide, and nitrogen oxides are released. Sulfur dioxide irritates ocular mucous membranes and respiratory tract and can cause bronchospasm. Acute fatal poisonings are rare. Nitrogen oxides cause irritation of the respiratory tract, oxygen deficiency, severe cough, headache, and vomiting. At high concentrations, pulmonary edema and fatality are possible. Medical assistance is required. Carbon oxide causes oxygen deficiency, headache, dizziness, blurred vision, nausea, and loss of consciousness. Carbon dioxide under fire conditions causes increased breathing, headache, dizziness, drowsiness, loss of consciousness, and fatality at high concentrations. [1,42]
5.4 Suitable extinguishing media	In case of product fire - sprayed water jets, sand, hand-held fire extinguishers, mechanical (air) foam, powders, carbon dioxide. In case of product dust fire - aerosol spraying water, mechanical (air) foam. [1,17]
5.5 Unsuitable extinguishing media	In case of dust fire – Water jet streams. [18]
5.6 Personal protective equipment for fire-fighting (PPE of fire-fighters)	Fire-entry suit (jacket and trousers with detachable heat-insulating lining) complete with fire-fighter's rescue belt, mittens or gloves, fire helmet, special safety footwear, compressed air breathing apparatus. [19-23]
5.7 Special fire fighting procedures	Extinguish from maximum distance. [39]

6 Accidental release measures

6.1 Precautions against harmful effects on people, environment, buildings, structures etc. in case of emergencies

6.1.1 General emergency response measures	Isolate the hazardous zone. Keep unauthorized people away. Enter the hazardous zone using protective equipment. No smoking. Follow the fire safety measures. Give first aid to the injured. Water nearby buildings and structures with jet streams. [39]
6.1.2 Personal protective equipment in emergency situations (PPE of emergency response teams)	For chemical reconnaissance and incident commander – Protective breathing device PDU-3 (for 20 min). For emergency response teams – insulating protective clothing complete with self-contained gas mask or breathing apparatus. Military protective clothing complete with industrial gas mask (for emergency response teams). In case of low concentrations in the air (exceeding the MAC up to 100 times) – protective clothing, industrial gas mask of small size with a universal protective cartridge, a self-contained protective individual equipment with forced supply of purified air to the breathing zone. Safety glasses, protective gloves, protective clothing, special footwear. In case of fire - fire retardant clothing complete with self-rescuer SPI-20. [18,39]

6.2 Emergency Response Procedure

6.2.1 Spill, leakage, overflow response procedure (including response measures and precautions for environment protection)	Collect the product into a container using dry means and return to the process cycle. Wash the area with water; sending the wash-off to effluent treatment plant. When hot coke is spilled, start cooling it with water, then collect it and return it to the process cycle. [39]
6.2.2 Fire response procedure	Call the fire brigade and remove people from the fire area. Start extinguishing the fire. Enter the emergency area in protective clothing and breathing apparatus (see section 5 of the SDS). Extinguishing Extinguish by sprayed water, mechanical (air) foams. [39]

7 Safety Precautions for Handling Chemical Products

7.1 Safety Precautions for Handling Chemical Products

7.1.1 Systems of engineering safety measures	Availability of general and supply and exhaust ventilation. Sealing and automation of equipment and apparatus. Use of dust suppression and dust catching means. Installation of backup fans with automatic switching-on in case of emergency (accidental) ventilation shutdown and the impossibility of stopping the production process. [1,35]
7.1.2 Environmental precautions	Monitoring of the content of harmful substances, sealing of equipment. Atmospheric industrial emissions and wastewater treatment. Dust-free coke pushing. Landscaping and infrastructure development of the company premises. Prevent product spills. [1,15,35]
7.1.3 Recommendations on safe handling and transportation	The nut is transported in bulk in open-top railway wagons. Unloading from transport and storage shall be carried out using mechanisms that shall not overgrind the product. Multiple reloading of nut coke from one site to another leads to its overgrinding (increased abrasion) and changes in the sieve analysis. [1]

7.2 Storage Precautions

7.2.1 Safe storage life and conditions: (including guaranteed shelf life, expiry date; substances and materials incompatible for storing)	Storage at the manufacturer is not provided for. Storage at the consumer – it shall be stored in open specially equipped areas or under shelter. Upon production, it is immediately transferred to the consumer. Short-term storage shall be in bins. The safe storage period is not limited. There is no guaranteed shelf life. Substances and materials incompatible for storage: flammable gases, extremely flammable liquids, spontaneously combustible substances, substances that emit flammable gases, acids, alkalis. [1]
7.2.2 Containers and packing (including materials they are manufactured from)	The product is not packaged. [1]
7.3 Household precautions	It is not used in the household. [1]

8 Exposure Controls and Personal Protection

8.1 Working zone exposure limits subject to obligatory control (MAC w.z. or ASLI w.z.)	MAC w.z. = -/6 mg/m^3 Hard coal coke (by carbon dust), aerosol. [9]
8.2 Measures aimed at keeping harmful substances within the exposure limits	Installation of dedusting and ventilation systems that ensure the removal of harmful substances and dust from the dust emission sources. Periodic removal of dust from dust collecting devices. Compliance with sanitary standards for microclimate, noise and vibration, taking into account the characteristics of the work performed. Indoor cleaning on a shift basis. [1]

8.3 Personal protective equipment for personnel

8.3.1 General recommendations	Preliminary (upon hiring) and periodic medical examinations (check-up). Employees must be trained and certified for the occupational health and safety rules and fire safety rules. Pregnant and lactating women are not allowed to work. Workplaces and conditions for work experience internship for under-18s shall comply with hygienic standards. Organization and furnishing of first aid centres. Weekly washing and replacing PPE sets. Daily PPE dedusting. Mending and centralized laundry of protective clothing only in production conditions at the scheduled time. Sanitary facilities and amenities shall be equipped for eating and ensuring personal hygiene of workers; there shall also be drinking water supply facilities, water supply, sewerage and heating. Workers involved in the production and use of the product shall be informed about its hazardous properties. Production premises shall be equipped with emergency firefighting equipment. [1,25]
8.3.2 Respiratory protection (types of respiratory protective equipment)	Filtering equipment – dust respirators or aerosol respirators, half-face masks with filters, respirators. When working in confined spaces, use fresh-air hose breathing apparatus with a mask. [28-32]
8.3.3 Protective equipment (material, type) (protective clothing, protective footwear, hand protection, eye protection)	Protective clothing against general industrial pollution. Foot protection: shoes or boots protecting feet from high temperatures. Hand skin protection: mittens made of thick fabric, gloves made of cotton fabric, protective and preventive dermatological products, fattening creams, ointments and pastes. Eye protection: closed safety glasses. [1,26-32]
8.3.4 Personal protective equipment for household use	It is not used in the household. [1]

9 Physical and chemical properties

9.1 Physical state (aggregate state, colour, odour)	Solid porous lumps with a size range of 10 - 25 mm from light gray to dark gray in various shapes. [1]

9.2 Parameters characterizing the product basic properties (temperature indicators, pH, solubility, n-octanol / water factor and other parameters specific to this type of product)

Weight percent of total moisture in the fuel operating condition is maximum 20%.
Ash content is maximum 18%.
Solubility – insoluble in water, organic solvents, fat. [1]

10 Stability and reactivity

10.1 Chemical stability
(specify decomposition products for unstable products)

Stable subject to proper handling and storage conditions. [1]

10.2 Reactivity

At ambient temperature it does not interact with other chemicals. It interacts with fluorine, forming fluorides, sulfur (at temperature range from 700 °C to 800 °C), reacts slowly with hydrogen, it is resistant to concentrated acids and alkalis, it is oxidized with a chromic mixture at temperature range (from 180 to 230 °C). It reduces carbon dioxide. [1,10,33]

10.3 Conditions to Avoid
(including hazardous manifestations upon contact with incompatible substances and materials)

Open flame in contact with incompatible substances and materials. [1]

11 Toxicological information

11.1 General description of effects (evaluation of a level of hazardous (toxic) effects on the body and the most typical manifestations of hazard)

It is a low hazardous product by impact on the body. May cause damage to organs (lungs) through prolonged or repeated exposure. [1,2]

11.2 Routes of exposure
(inhalation, ingestion, skin contact and eye contact)

Inhalation, ingestion, skin contact and eye contact. [1,3,9]

11.3 Target human organs, tissues and systems

Respiratory system, gastrointestinal tract, liver, central nervous system [8]

11.4 Information on dangerous to health effects from direct exposure to the product, as well as consequences of this exposure:
(irritation of upper respiratory tract, eyes, skin, including skin resorptive and sensitizing effects)

Product dust is abrasive and may cause irritation to the skin and ocular mucous membranes. Skin resorptive effect has not been determined. Skin contact with product may cause sensitization, however data for classification are insufficient. [1,11,12]

11.5 Information on long-term dangerous to health effects from exposure to the product
(influence on reproduction function, carcinogenicity, mutagenicity, cumulativeness and other chronic effects)

The product (hard coal coke) effect on the reproductive function of humans and animals and the carcinogenic effect on humans and animals have not been studied, the mutagenic effect has not been determined. Cumulativeness is weak. With long work experience, diseases of the upper respiratory tract (fibrosis) may occur. It has a fibrogenic effect [1,11,12]

11.6 Values of acute toxicity
(DL_{50}, route of entry (intragastric, cutaneous), animal; CL_{50}, exposure time (h), animal)

Table 2 [10]

Material	Effect	Value, mg/kg	Route of entry	Type of an animal
Hard coal coke	DL_{50}	more than 5000	intragastric	rats
		more than 2500	cutaneous	rats

12 Ecological information

12.1 General description of effects on environment
(air, water bodies, soil including observable symptoms

Product dust can be present in the air in the form of particles. The absorption of particles by aerosols reduces the atmosphere transparency, which reduces the number of sunny days and in-

of exposure)	fluence on the regional climate. After dust catching, small amounts get into the air. Part of the dissolved carbon from water bodies settles down to the bottom in the form of carbonates. Product dust, settling on water surfaces in large quantities, can be harmful to water bodies, reducing the supply of oxygen. Product dust is not dangerous for soils. Observable features. If dust gets into atmospheric air, it can settle on plant leaves slowing down their growth. In case of getting into water bodies can form a film on the water surface, make water turbid and cause changing of sanitary conditions of water bodies. [1,34]
12.2 Environmental exposure routes	In case of violation of handling, storage and transportation rules, in case of uncontrolled waste dumping, as a result of accidents and emergency situations.

12.3 The most important characteristics of environmental impact

12.3.1 Hygienic regulations
(allowable concentrations in atmospheric air, water, including fishery water bodies, soil)

Table 3 [1,9,10]

Ingredients	MAC (maximum allowable concentration) in atm. air or ASLI (approximately safe level of impact) in atm. air, mg/m^3 (LHI[1], hazard category)	MAC in water[2] or Approximate Allowable Level in water, mg/l (LHI, hazard category)	MAC in fishery[3] or ASLI in fishery, mg/l (LHI, hazard category)	MAC in soil or Approximate Allowable Concentration in soil, mg/kg (LHI)
Hard coal coke	0,15/0,05, (res.), hazard category – 3 (by carbon)	Control of suspended solids	Not determined	

12.3.2 Ecotoxicity values (CL, EC, NOEC etc. for fish (96 hours), daphnia (48 hours), algae (72 or 96 hours), etc.)	Not available. [1]
12.3.3 Migration and transformation in the environment due to biodegradation and other processes (oxidation, hydrolysis or similar)	Product does not transform in the environment. Its combustion products are assimilated from the troposphere by plants and returned from the biosphere to the geosphere. They get into human and animal bodies with plants and then, when rotting, enter the soil in the form of CO_2. They dissolve in water and return to the biosphere; they can precipitate in the form of carbonates, sulfates, nitrates. [10,35]

13 Disposal considerations

13.1 Safety precautions for handling waste generated during use, storage, transportation	Safety precautions for waste handling are similar to those used when handling the product (see sections 7, 8 of the Safety Data Sheet. Use PPE (see cl. 8.3 of the Safety Data Sheet), equipment and methods that ensure the minimum use of manual labour. [1]

[1] LHI – limiting hazard index (tox. – toxicological; s.-t. – sanitary - toxicological; org. – organoleptic with indication of changes in organoleptic properties of water (od. – changes water odour, tur. – increases water turbidity, col. – colours water, foam – causes foaming, film – creates film on the water surface, taste – changes water flavour, op. – causes opalescence); refl. – reflective; res. - resorptive; refl.-res. - reflective-resorptive, fishery – fish industry (change of commercial qualities of aquatic organisms) ; gen. – general sanitary).
[2] Water of water bodies for household and community use
[3] Water of water bodies for fish industry (including seas)

13.2 Information on locations and methods of neutralization, recovery or disposal of waste, including containers (packing)	Waste disposal is carried out in specially designated places, the location of which shall be agreed with the regional sanitary and environmental supervision authorities. Disposal method is combustion or screening to any size, internal use at the enterprise for energy purposes or as an additive to the coal charge, or shipment outside the enterprise as commercial products. Gaseous waste is neutralized by adsorption cleaning followed by combustion of vapours, condensing cleaning, catalytic post combustion, and combustion in furnaces. If sufficiently cleaned, they can be returned to the pipeline. Wastewater is subjected to mechanical treatment with or without coagulants and (or) chemical treatment (ozonation or chlorination) in combination with physical-and-chemical treatment (sorption) and biological treatment. [1]
13.3 Recommendations on disposal of waste from household use	It is not used in household. [1]

14 Transport information

14.1 UN number (according to UN Recommendations on the Transport of Dangerous Goods)	None. [36]
14.2 Proper shipping name and name while in shipment	Nut coke from the east region coals JSC Ural Steel. [1]
14.3 Applicable means of transport	Railway transport. [1]
14.4 Cargo hazard classification according to GOST 19433-88:	Not classified as hazardous cargo. [37]
14.5 Cargo hazard classification according to the UN Recommendations on the Transport of Dangerous Goods:	Not classified as hazardous cargo. [1,36]
14.6 Transport Labels (handling signs according to GOST 14192-96)	Handling signs are not applied. [1,38]
14.7 Emergency cards (if shipped by rail, sea etc.)	Not applicable, since the cargo is not classified as hazardous. [1,39]

15 Regulatory Information

15.1 National Regulations

15.1.1 Russian Federation laws	Federal Law On Environmental Protection; Federal Law On Industrial Safety of Hazardous Production Facilities; Federal Law On the Protection of Atmospheric Air; Federal Law On Fire Safety; Federal Law On Production and Consumption Waste.
15.1.2 Documentation regulating man safety and environmental protection requirements	Not required. [43]
15.2 International conventions and agreements (whether or not the product is regulated by the Montreal Protocol, Stockholm Convention etc.)	Not subject to international conventions and agreements. [40,41]

16 Additional information

16.1 Information on SDS revision (re-edition) (the following is specified: "SDS is drawn up for the first time" or "SDS is re-registered upon expiry. Previous SDS registration number..." or "Amendments made in clauses…, amendment date…")

SDS is drawn up for the first time.

16.2 List of information sources used to draw up the SDS[4]

1. TU 0762-218-00190437-2006 as amended 1-3 Nut coke from the east region coals JSC Ural Steel.
2. GOST 12.1.007-76 Occupational safety standards system. Noxious substances. Classification and general safety requirements.
3. GOST 32419-2022 Hazard classification of chemicals. General requirements.
4. GOST 32423-2013 Classification of mixtures (health hazards).
5. GOST 32424-2013 Classification of chemicals for environmental hazards. General principles.
6. GOST 32425-2013 Classification of mixtures (environmental hazards).
7. GOST 31340-2022 Labelling of chemicals. General requirements.
8. Automated Distributed Data Retrieval System (ARIPS) "Hazardous Substances" of the Russian Register of Potentially Hazardous Chemical and Biological Substances of Rospotrebnadzor. Available at http://www.rpohv.ru/arips/.
9. SanPiN 1.2.3685-21 Hygienic standards and requirements for ensuring safety and (or) harmlessness to humans from environmental factors.
10. Data from information system ECHA (European Chemicals Agency). [Electronic source]: Available at http://echa.europa.eu/.
11. Hazardous chemicals. Natural organic compounds. Reference and encyclopaedic publication, ed. Filov V.A. Vol.7. – St. Petersburg. SPKhFA, NPO "Peace and Family", 1998.
12. Hazardous substances in industry. Handbook for chemists, engineers and doctors. 7th ed., revised and enlarged: in 3 vol. Vol. I. Organic substances. ed. N.V. Lazarev and E.N. Levina – L., Chemistry, 1976.
13. Handbook of Coke Chemical Engineer. ed. Shelkov A.K., Vol.3- M.,: Metallurgy,1966.
14. GOST 12.1.044-89 (ISO 4589-84) Occupational safety standards system. Fire and explosion hazard of substances and materials. Nomenclature of indices and methods of their determination.
15. Sorokin N. D. Environmental protection at works. – SPb, Integral.
16. Ilichkin V.S. Toxicity of combustion products of polymeric materials. Principles and methods of determination. St. Petersburg: Chemistry, 1993.
17. Korolchenko A.Ya. Fire and explosion hazard of substances and materials and means of their extinguishing. Ref. ed. in 2 parts. - M.,: Association "Pozhnauka", 2000, 2004.
18. Fire and explosion hazard of substances and materials and means of their extinguishing. Ref. under ed. of A.N. Baratov and others. - M., Chemistry, 1990.
19. GOST R 53264-2019 Fire equipment. Special protective clothing for fire-fighter. General technical requirements. Test methods.
20. GOST R 53269-2019 Fire equipment. Helmets for firefighters. General technical requirements. Test methods.
21. GOST R 53268-2009 Fire equipment. Fire safety belt. General technical requirements. Test methods.
22. GOST R 53265-2019 Fire equipment. Personal protective means of fire-fighter's feet. General technical requirements. Test methods.
23. GOST R 53257-2019 Fire fighting equipment. Face masks of personal respiratory protective devices. General technical requirements. Test methods.
24. Safety precautions during coke production. Yu.A. Golbreicht,1969.
25. Order of the Ministry of Health of Russia No. 29n dated 28.01.2021 "On the approval of the Procedure for conducting mandatory preliminary and periodic medical examinations of employees, provided for in part four of Article 213 of the Labour Code of the Russian Federation, a list of medical contraindications to work with harmful and (or) hazardous production factors, as well as work in which mandatory preliminary

[4] Order numbers of information sources are given in each clause of SDS as references

and periodic medical examinations shall be carried out" (Registered on 29.01.2021 No. 62277).
26. GOST 12.4.103-83 Occupational safety standards system. Special protective clothes, personal means of hands and feet protection. Classification.
27. GOST 12.4.253-2013 (EN 166:2001) Occupational safety standards system. Personal eyes and face protection means. General technical requirements.
28. GOST 12.4.041-2001 Occupational safety standards system. Filtering respiratory protective equipment. General requirements.
29. GOST 12.4.294-2015 (EN 149:2001+A1:2009) Occupational safety standards system. Respiratory protective devices. Filtering half masks to protect against particles. General specifications.
30. GOST 12.4.235-2012 (EN 14387:2008) Occupational safety standards system. Respiratory protective devices. Gas filters and combined filters. General technical requirements. Test methods. Marking.
31. GOST 12.4.236-2012 (EN 138:1994) Occupational safety standards system. Respiratory protective devices. Fresh air hose breathing apparatus, used with masks and half masks. General technical requirements. Test methods. Marking.
32. GOST 12.4.238-2015 Occupational safety standards system. Respiratory protective devices. Closed-circuit breathing apparatus compressed air type. Technical requirements. Test methods. Marking. Sampling rules.
33. PubChem [Electronic source]. – Available at: https://pubchem.ncbi.nlm.nih.gov/.
34. Grushko Ya.M. Harmful organic compounds in industrial wastewater, 1979.
35. Order No. 512 dated 09.10.2020 On Federal norms and regulations in the field of industrial safety "Safety rules for processes of obtaining and application of metals"
36. Regulations on the Transport of Dangerous Goods. Typical rules. Twenty-first revised edition. United Nations, New York and Geneva, 2019.
37. GOST 19433-88 Dangerous goods. Classification and marking.
38. GOST 14192-96 Marking of cargoes.
39. Emergency cards for hazardous cargoes transported by railways of the CIS, the Republic of Latvia, the Republic of Lithuania, the Republic of Estonia (as amended on 27.11.2020).
40. The Montreal Protocol on Substances that Deplete the Ozone Layer was adopted on September 16, 1987, as amended by the Second Meeting of the Parties (London, 27-29 June, 1990) and the Fourth Meeting of the Parties (Copenhagen, 23-25 November, 1992), and further adjusted By the Meeting of the Parties (Vienna, 5-7 December, 1995) and with additional adjustments made by the Ninth Meeting of the Parties (Montreal, 15-17 September, 1997).
41. Stockholm Convention on Persistent Organic Pollutants. Ratified by the Federal Law No. 164-FZ dated 27.06.2011.
42. Hazardous substances in industry. Handbook ed. N.V. Lazarev, vol.3 – L: Chemistry, 1977.
43. Uniform list of products (goods) subject to state sanitary and epidemiological supervision (control) at the customs border and customs territory of the Eurasian Economic Union.