SAFETY DATA SHEET OF CHEMICAL PRODUCT

Entered in Safety Data Sheet Register

Registration No 1 3 6 5 7 8 4 2 . 2 0 . 8 7 8 5 5 dated «28» March 2024

Valid until «28» March 2027

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

NAME

technical (as per regulatory document)	**Crude coal-tar benzene**
chemical (as per IUPAC)	not available
commercial	Crude Benzene of BS, BS-1, BS-2 grades
synonyms	Cyclohexatriene, phenyl hydride

OKPD 2 Code 2 0 . 1 4 . 1 2 . 1 3 1

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

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

TU 20.14.12-167-00190437-2021 Crude coal-tar benzene

HAZARD STATEMENT

Signal word: **Danger**

Brief (word) **description**: Benzene is a highly hazardous substance by impact on the body according to GOST 12.1.007. Causes skin irritation. Causes serious eye irritation. May cause genetic defects. May cause cancer. May damage fertility or the unborn child. May cause drowsiness or dizziness. Causes damage to organs through prolonged or repeated exposure. May be fatal if swallowed and enters airways. Highly flammable liquid. Vapour may form explosive mixtures with air. May pollute the environment. Very toxic to aquatic life with long lasting effects.

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.
Benzene	15/5	2	71-43-2	200-753-7

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	Crude coal-tar benzene of BS, BS-1, BS-2 grades (hereinafter referred to as benzene, product, production). [1]
1.1.2 Brief recommended use (including restrictions on use)	Production of aromatic hydrocarbon of benzene series, indene-coumarone resins and for other applications. No use restrictions.. [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) 66-46-22; (3537) 66-65-88 (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) and GHS (GOST 32419, GOST 32423, GOST 32424, GOST 32425)

Highly hazardous substance by impact on human body, hazard category 2 according to GOST 12.1.007.

Classification by GHS:

– chemical product in the form of flammable liquid, category 2;

– chemical product causing skin corrosion (necrosis)/irritation, category 2;

– chemical product causing serious eye damage/irritation, category 2A;

– mutagen, category 1B;

– carcinogen, category 1A;

– chemical product damaging fertility, category 1B;

– chemical product with specific target organ and/or system toxicity in case of single exposure, category 3;

– chemical product with specific target organ and/or system toxicity in case of repeated or long-term exposure, category 1;

– chemical product that pose an aspiration hazard, category 1.

– chemical product with chronic toxicity to the aquatic environment, category 3. [2,3]

2.2 Information on the warning marking as per GOST 31340

2.2.1 Signal word: **Danger**

2.2.2 Hazard symbols

«Fire»

«Exclamation mark»

«Hazard for human health»

2.2.3 Brief description of hazard (H-phrases)

Brief description of hazard:

H225: Highly flammable liquid. Vapour may form explosive mixtures with air.

H315: Causes skin irritation.
H319: Causes serious eye irritation.
H340: May cause genetic defects.
H350: May cause cancer.
H360: May damage fertility or the unborn child.
H336: May cause drowsiness or dizziness.
H372: Causes damage to organs through prolonged or repeated exposure.
H304: May be fatal if swallowed and enters airways.
H412: Harmful to aquatic life with long lasting effects. [4]

3 Composition (information on ingredients)

3.1 Information on the product in general

3.1.1 Chemical name (as per IUPAC): Not available. [5]

3.1.2 Chemical formula: Not available. [5]

3.1.3 General description of composition (taking into account the grade range; production method): Benzene is a mixture of benzene, saturated hydrocarbons, fatty hydrocarbons and polycyclic compounds. It is obtained from purified and cooled coke oven gas by trapping benzene hydrocarbons with absorption oil and their subsequent stripping to 180 ºC. [1,15]

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 [1,5,23]

Ingredients (name)	Weight percentage, %	Hygienic standards in the air of working zone		CAS No.	EC No.
		MAC w.z., mg/m^3	Hazard category		
Benzene+	55-85	15/5 (v)*	2 (C)*	71-43-2	200-753-7
Toluene	7-18	150/50 (v)	3	108-88-3	203-625-9
Xylene	2-5	150/50 (v)	3	1330-20-7	215-535-7

Crude coal-tar benzene also contains benzene derivatives (ethylbenzene, mesitylene, pseudocumene, hemimellitene) - less than 0.5 each; unsaturated compounds (cyclopentadiene, amylene, styrene) – 6.0-8.4%; sulfur compounds (carbon disulfide, hydrogen sulfide, thiophene and its homologues) – 0.8-1.0%; pyridine bases, saturated hydrocarbons, phenols – 0.8-1.0%. [1]. The rest is unidentified compounds up to 100%.
Note: *(v) – vapours; (C) – carcinogen;
"+" - dangerous if in contact with skin.

4 First aid measures

4.1 Symptoms

4.1.1 In case of inhalation: Headache, dizziness, dyspnea, extreme fatigue, asthenia, nervousness, drowsiness or insomnia, indigestion, nausea, sometimes vomiting, lack of appetite, increased urination, menstruation. Loss of coordination. Continuous tremor, gradually weakening and giving way to convulsions. Loss of consciousness. Varying degrees of intoxication are possible, up to and including fatality. [10,11]

4.1.2 In case of skin contact	Redness, dryness, itching, cracks, pain, swelling, miliary vesicular rash. Hot product contacting skin causes a thermal burn. [1,11]
4.1.3 In case of eye contact	Redness, pain, painful itchy sensation, smarting, tearing. [10]
4.1.4 In case of ingestion	Nausea, vomiting, severe belching (danger of aspiration), sore throat, pain in the esophagus, pain in the abdominal area, diarrhea; in severe cases may be fatal as a result of paralysis of the respiratory centre or cessation of cardiovascular activity. [9,10,12]

4.2 First aid measures for the injured persons

4.2.1 In case of inhalation	Remove victim to fresh air, loosen tight clothing, give a strong tea, coffee, valerian extract, motherwort. If unconscious, place in horizontal position, put head down slightly (breathing in aqueous ammonia). If respiratory arrest occurs, immediately provide artificial respiration «mouth to mouth» or «mouth to nose» using personal protective equipment. Get medical attention immediately. [1,9,10,12]
4.2.2 In case of skin contact	Remove contaminated clothing, wash skin with warm water and soap for 15 minutes, then use dermatological remedy. Get medical attention. [12]
4.2.3 In case of eye contact	Remove any contact lenses, flush eyes (if possible) and continue to rinse with plenty of water while opening the eyelids widely. Get medical attention. [1,9,10]
4.2.4 In case of ingestion	Wash out mouth with water. Drink a lot of water. Take sodium sulfate (1 table spoon per glass of water), activated charcoal. Get medical attention. [1,9,10]
4.2.5 Contraindications	Do not use adrenalin and adrenolytic drugs. Do not induce vomiting, do not give emetic drug. [9,10,11]

5 Measures and means of fire and explosion safety

5.1 General characteristic of fire and explosion hazards (as per GOST 12.1.044-89)	Highly flammable liquid. [1,13]
5.2 Indices of fire and explosion hazards (list of indices as per GOST 12.1.044-89)	The flash point in a closed cup is (minus 12) °C; The temperature limits of flame propagation are from -14 to 13 °C; Auto-ignition temperature (534 – 562) °C; Concentration limits for flame propagation: 1,4 -7,1 % vol. [1]
5.3 Hazards caused by combustion products and/or thermal decomposition products	Combustion products (carbon oxides, nitrogen oxides and sulfur oxides), smoke and soot particles. Symptoms of toxicity: cardiac acceleration, increase in blood pressure, migraines, headache, dizziness, loginess, loss of consciousness, fatal in case of prolonged exposure to high concentrations. [37]

5.4 Suitable extinguishing media	Handheld fire extinguishers, dry powder, mechanical (air) foam, chemical foam, gas fire extinguishing agent (carbon dioxide), powder extinguishing agents. For smothering: foam fire extinguishers generating high expansion foam; powder fire extinguishers. [1,10,14]
5.5 Unsuitable extinguishing media	Water straight streams. [16]
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. [17-21]
5.7 Special fire fighting procedures	Liquid is easily inflamed by sparks or flames. Vapours may form explosive mixtures with air. Containers may explode when heated. [10]

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	Allocate vehicle in a safety place. Isolate the hazardous zone in a radius not less than 200 m. Correct the above distance on the basis of the results of chemical monitoring. Keep unauthorized people away. Enter the hazardous zone using protective equipment. Stay upwind and keep out of low areas. Follow the fire safety measures. No smoking. Eliminate flame and spark sources. Give first aid to the injured. Send people from the contaminated area for medical examination. [22]
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 KIKH-5 complete with self-contained gas mask IP-4M or breathing apparatus ABC-2. In case of fire - fire retardant clothing complete with self-rescuer SPI-20. In case of absence of the specified samples: military protective clothing L-1 or L-2 complete with industrial gas mask of the RPG brand with cartridges A. In case of low concentrations in the air (exceeding the MAC up to 100 times) – protective clothing, industrial gas mask of small size PFM- 1 with a universal protective cartridge PZU, an self-contained protective individual equipment with forced supply of purified air to the breathing zone. Oil and petrol resistant gloves, butyl rubber dispersion gloves, special footwear. [22]

6.2 Emergency Response Procedure

6.2.1 Spill, leakage, overflow response procedure (including response measures and precautions for environment protection)	Eliminate the leakage in compliance with the safety precautions. In case of intensive leakage dike with soil. Pump the contents into the proper tank or drain tank in compliance with the requirements for liquids mixture. Submit for recycling. Cover the remains with inert material (sand, soil) and collect using non-sparking tools. Contaminated absorbent shall be sent to a waste accumulation site approved by environmental authorities. Prevent substance entry into water bodies, basements and sewerage. All work shall be carried out with the mandatory use of insulating means. [22]
6.2.2 Fire response procedure	Keep away from burning containers. Cool down containers with water from maximum distance. Extinguish by water mist, mechanical (air) foams and chemical foams from maximum distance. [22]

7 Handling and Storage

7.1 Safety Precautions for Handling Chemical Products

7.1.1 Systems of engineering safety measures	Availability of supply and exhaust and local ventilation. Air analysis of the working zone in industrial premises. Sealing of equipment and apparatus, storage and transportation containers. Protection of equipment from the accumulation of static electricity, use of non-sparking tools. Fitting containers with automatic level gauges. To pump the product, use glandless pumps. During loading and unloading, all stationary handling facilities, as well as the discharge pipe and tank, must be grounded. Comply with industrial safety rules. Workplaces must be equipped with primary fire extinguishing equipment. [6,7,44,45]
7.1.2 Environmental precautions	Maximum sealing of containers, pipelines and other equipment; periodic monitoring of the content of harmful substances in the air of the working zone; analysis of industrial wastewater to check that the content of harmful substances is in acceptable concentrations; air cleaning in production premises to established standards before vent to the atmosphere. [1,12]
7.1.3 Recommendations on safe handling and transportation	Transported by rail in railway tank wagons or tank containers with a upper drain or with a universal drain device in accordance with the rules for transporting dangerous goods by rail. When pouring the product into tanks, they must be filled taking into account the full use of the tank's carrying capacity and the coefficient of volumetric expansion of the product with the expected temperature change during transportation. Allowed to be transported via a special pipeline. [1,29]

7.2 Storage Precautions

7.2.1 Safe storage life and conditions: (including guaranteed shelf life, expiry date; substances and materials incompatible for storing)	Benzene is stored in closed steel containers equipped with air vents, safety nets, fire arresters, and product level gauges. The sites on which the storage facilities are located shall be fenced with a dike, the height of which shall be enough for the tank contents kept inside the dike in the event of the tank damage. The storage facilities are equipped with lightning arrester and painted in light colours to reduce the effects of solar heat. Guaranteed shelf life is 3 months from the date of manufacture. With increasing shelf life, the hazardous properties of the product do not change. Substances and materials incompatible for storage: – strong oxidizing agents, acids, alkalis, halogens. [1,10]
7.2.2 Containers and packing (including materials they are manufactured from)	The product is not packaged, but is transferred to the consumer in bulk in vehicles or through a pipeline. [1]
7.3 Household precautions	Benzene 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. = 15/5 mg/m^3, vapour (benzene); MAC w.z. = 150/50 mg/m^3, vapour (xylene); MAC w.z. = 150/50 mg/m^3, vapour (toluene). [23]
8.2 Measures aimed at keeping harmful substances within the exposure limits	MAC w.z. control. Combined extract and input ventilation. Automation of technological processes. Tightness of equipment and devices. Cleaning of premises on a shift basis. Following the rules of waste accumulation and storage. [1]

8.3 Personal protective equipment for personnel

8.3.1 General recommendations	Do not eat in the workplace, do not smoke, comply with the personal hygiene rules, and use personal protective equipment. Store protective clothing in lockers with natural ventilation. Centralized washing of protective clothing. Sanitary facilities and amenities and first aid stations must be equipped for personnel involved in work with products. Persons at least 18 years old who have passed a preliminary medical examination; occupational health and safety induction, initial and refresher briefings are allowed to work. Pregnant and lactating women are not allowed to work. Workers must comply with occupational health and safety and fire safety rules. [7,8,15,24,44]
8.3.2 Respiratory protection (types of respiratory protective equipment)	Respirators (half masks) with particulate air filter grade A, ensuring protection against organic vapours, dust and mists; half masks of FFP2 class filter; gas masks (masks, helmet masks) with forced air supply.

	When working in confined spaces, use fresh-air hose breathing apparatus with a mask or self-contained breathing apparatus with compressed air. Do not use filtering protective equipment when working inside tanks, tunnels, wells and in emergency situations. [26,27,28,30,31,46,47]
8.3.3 Protective equipment (material, type) (protective clothing, protective footwear, hand protection, eye protection)	Protective clothing: suit for protection against mechanical influences (abrasion). Eye protection: closed safety glasses. Hand protection: special gloves, knitted gloves. Protective and preventive dermatological products, fattening creams, ointments and pastes. Foot protection: special footwear brand Nm. [32,34,35,43,48,50]
8.3.4 Personal protective equipment for household use	Benzene is not used in the household. [1]

9 Physical and chemical properties

9.1 Physical state (aggregate state, colour, odour)	Transparent liquid, from light to dark brown in colour, does not contain suspended particles and foreign impurities settled to the bottom, including water, with a typical hydrocarbon odour. [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)	Boiling point: 80 °C; Melting point: 6 °C; Relative density (Water = 1): 0,88; Solubility in water, g/100 ml at 25 °C: 0,18; Vapour pressure, kPa at 20 °C: 10. [10]

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	Capable of halogenation, sulphation, oxidation, nitration, alkylation, chloration. Reaction products: halogen benzene, aromatic sulfonic acids, nitro-compounds, ketones, homologues of components. [5]
10.3 Conditions to Avoid (including hazardous manifestations upon contact with incompatible substances and materials)	Keep away from open flame, sparks and heat. Contact with incompatible materials can cause a possible fire or explosion. [1,10,37]

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)	According to the impact on the body, it is classified as a highly hazardous substance. Causes skin irritation. Causes serious eye irritation. May cause genetic defects. May cause cancer. May damage fertility or the unborn child. May cause drowsiness or dizziness. Causes damage to organs through prolonged or repeated exposure. May be fatal if swallowed and enters airways. [4]

11.2 Routes of exposure (inhalation, ingestion, skin contact and eye contact)	Inhalation, ingestion, skin contact and eye contact
11.3 Target human organs, tissues and systems	Central and peripheral nervous, respiratory, cardiovascular system, gastrointestinal tract, morphological composition of peripheral blood, liver, kidneys, spleen, adrenal glands, blood system, immune system. [12]
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)	It has a pronounced irritating effect on the eyes and an irritating effect on the skin. It has a narcotic and skin resorptive effect. It does not have a sensitizing effect. Ingestion of the liquid may cause aspiration into the lungs with the risk of chemical pneumonia. Headache, dizziness, asthenia and fatigue observed after ingestion or aspiration. [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)	It affects the reproductive function. It has carcinogenic and mutagenic effects. Cumulativeness is weak. With the inhalation route of entry, functional liver disorders, blood changes, numerous hemorrhages (on the skin, retina, internal organs), decreased acidity and digestive ability of gastric acid, pain in hands and arms, swelling of the fingers, decreased skin temperature occur. [5,8,11]
11.6 Values of acute toxicity (DL_{50}, route of entry (intragastric, cutaneous), animal; CL_{50}, exposure time (h), animal)	Product data are given using the calculation method. Benzene: DL_{50} > 2000 mg/kg, rats, intragastric; CL_{50} = 43700 mg/m^3, 4 h., rats, inhalation; DL_{50} > 8260 mg/kg, rabbits, cutaneous. Toluene: DL_{50} > 5580 mg/kg, rats, intragastric; CL_{50} > 25700 mg/m^3, inhalation, 4 h., rabbits; DL_{50} > 5000 mg/kg, rats, cutaneous. Xylene: DL_{50} > 6631 mg/kg, rats, intragastric; CL_{50} > 27100 mg/m^3, inhalation, 4 h., rats; DL_{50} = 12126 mg/kg, cutaneous, rabbits; ATE_{mix} = 2509 mg/kg, intragastric, rats. ATE_{mix} = 8856 mg/kg, cutaneous, rabbits. ATE_{mix} = 44425 mg/m^3, inhalation, 4 h., rats. [3,5]

12 Ecological information

12.1 General description of effects on environment (air, water bodies, soil including observable symptoms of exposure)	Atmospheric air pollution with aromatic hydrocarbons. Exceeding the maximum one-time allowable concentrations, including those detected by a distinct smell. Pollution of water bodies changing organoleptic properties of water (distinct smell and flavour) and sanitary conditions of water bodies. Soil pollution through atmospheric transport and deposition. [9]

12.2 Environmental exposure routes — In case of violation of handling, storage and transportation rules, in case of uncontrolled waste disposal and storage, 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 4 [23,39]

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)
Benzene	0,3/0,06/0,005<б> (res., 2)	0,001<к> (s.-t., 1)	0,5 (tox., category 4)	0,3/ (air migration)
Toluene	0,6/-/0,4 (refl., 3)	0,024 (org. od., 4)	0,5 (org. (odour), category 3)	0,3/ (air migration,)
Xylene	0,2/-/0,1 (refl., 3)	0,05 (org. od., 3)	NA	0,3/ (translocation)

<к> – carcinogens;
<б> – skin toxicity.

12.3.2 Ecotoxicity values (CL, EC, NOEC for fish, daphnia magna, algae, etc.)

For benzene:
CL_{50} = 34,4 mg/l (96 hours, silver Prussian carp)
EC_{50} = 10 mg/l, (48 hours, Daphnia Magna);
EC_{50} = 100 mg/l (72 hours, algae)
For Xylene:
CL_{50} = 8,4 mg/l (96 hours, fish);
CL_{50} = 10,839 mg/l (48 hours, Daphnia Magna)
For Toluene:
NOEC = 10 mg/l (72 hours, algae). [5,12]

12.3.3 Migration and transformation in the environment due to biodegradation and other processes (oxidation, hydrolysis or similar) — Benzene is readily degradable. No bioaccumulative potential has been identified. Moves in soils. It distributes mainly by air. Benzene, toluene, xylene migrate from soil and water bodies into the atmosphere. May be present in rainwater. They can migrate from soil to soil water and contaminate drinking water sources. Biodegradation occurs in soil under the influence of the vital activity of microorganisms. Individual ingredients are subject to transformation. [1,5,9,10]

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 Safety Data Sheet. Use PPE, equipment and methods that ensure the minimum use of manual labour. Avoid exceeding the hygienic standards for the

[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)

	quality of the human environment. Appointment and training of persons admitted to work with wastes. [1]
13.2 Information on locations and methods of neutralization, recovery or disposal of waste, including containers (packing)	Waste obtained during product spills and mixed with absorbents shall be collected in an airtight container and sent to dumps with subsequent forwarding to the technological waste landfill, in agreement with the environmental authorities and the sanitary and epidemiological inspection bodies. Liquid waste shall be burnt by adding it to combustible mixtures. Gaseous waste is subjected to adsorption cleaning followed by combustion in furnaces. [1,25]
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)	1114. [40]
14.2 Proper shipping name and name while in shipment	UN proper shipping name: Benzene. [40] Name while in shipment: Crude Benzene of BS, BS-1, BS-2 grades. [1]
14.3 Applicable means of transport	By rail. [1]
14.4 Cargo hazard classification according to GOST 19433-88	
- class	3 [38]
- subclass	3.2 [38]
- classification code (according to GOST 19433-88 and if shipped by rail)	3212 (GOST 19433) [38] 3012 (railway transportation) [29]
- hazard pictogram(s) drawing(s) number(s)	3 [38]
14.5 Cargo hazard classification according to the UN Recommendations on the Transport of Dangerous Goods:	
- class or subclass	3 [40]
- extra hazard	none [40]
- UN packing group	II [40]
14.6 Transport Labels (handling signs according to GOST 14192-96)	Handling signs “Sealed packaging”. [33]
14.7 Emergency cards (if shipped by rail, sea etc.)	Emergency card No. 314 in case of transportation by rail. [22]

15 Regulatory Information

15.1 National Regulations

15.1.1 Russian Federation laws	On Environmental Protection, On Protection of Atmospheric Air, On Sanitary and Epidemiological Well-Being of Population, On Technical Regulation, On Production and Consumption Wastes.
15.1.2 Documentation regulating man safety and environmental protection requirements	Not required. [42]

15.2 International conventions and agreements (whether or not the product is regulated by the Montreal Protocol, Stockholm Convention etc.)	Not subject to the Montreal Protocol, the Stockholm Convention. [36,41]

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 re-registered upon expiry. Previous SDS registration No. 13657842.20.67179 dated 09.04.2021

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

1. TU 20.14.12-167-00190437-2021 (supersedes TU 1104-241419-395-167-2001) Crude coal-tar benzene. Technical Specification.
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.
   GOST 32423-2013 Mixtures classification of hazard for health.
4. GOST 31340-2022 Labelling of chemicals. General requirements.
5. Data from information system ECHA (European Chemicals Agency). [Electronic source]: Available at – http://echa.europa.eu/.
6. Order of the Federal Service for Environmental, Technological and Nuclear Supervision No. 512 dated 09.12.2020 Federal norms and regulations in the field of industrial safety "Safety rules for processes of obtaining and application of metals".
7. Guideline R 2.2.2006-05. Guide on Hygienic Assessment of the Factors of the Working Environment and the Work Load. Criteria and Classification of Working Conditions.
8. Order of the Ministry of Labour and Social Protection of the Russian Federation, the Ministry of Health of the Russian Federation No. 988n/1420n dated 31.12.2020 "On approval of the list of harmful and (or) hazardous production factors and work, in the performance of which mandatory preliminary medical examinations are carried out upon admission to work and periodic medical examinations".
9. International programme on Chemical safety (IPCS) International Chemical Safety Cards (ICSC:0078 Toluene, 10.2002).
10. International programme on Chemical safety (IPCS) International Chemical Safety Cards (ICSC:0015 Benzene, 11.2016).
11. 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.
12. 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/.
13. 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.
14. Korolchenko A.Ya. Fire and explosion hazard of substances and materials and means of their extinguishing. - M.,: Association "Pozhnauka", 2000. Book 1.
15. 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

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

contraindications to work with harmful and (or) hazardous production factors, as well as work in which mandatory preliminary and periodic medical examinations".

16. 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.
17. GOST R 53257-2019 Fire fighting equipment. Face masks of personal respiratory protective devices. General technical requirements. Test methods.
18. GOST R 53264-2019 Fire equipment. Special protective clothing for fire-fighter. General technical requirements. Test methods.
19. GOST R 53269-2019 Fire equipment. Helmets for firefighters. General technical requirements. Test methods.
20. GOST R 53268-2009 Fire equipment. Fire safety belt. General technical requirements. Test methods.
21. GOST R 53265-2019 Fire equipment. Personal protective means of fire-fighter's feet. General technical requirements. Test methods.
22. 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).
23. SanPiN 1.2.3685-21 Hygienic standards and requirements for ensuring safety and (or) harmlessness to humans from environmental factors.
24. SP 2.2.3670-20 Sanitary and epidemiological requirements for working conditions.
25. SanPiN 2.1.3684-21 Sanitary and epidemiological requirements for the maintenance of the territories of urban and rural settlements, for water bodies, drinking water and drinking water supply, atmospheric air, soils, residential premises, operation of industrial and public premises, organization and implementation of sanitary and anti-epidemic (preventive) measures.
26. GOST 12.4.296-2015 Occupational safety standards system. Respiratory system protective devices. Filtering gas half masks. General specifications.
27. GOST 12.4.121-2015 Occupational safety standards system. Respiratory system protective devices. Filtering gas masks. General specifications.
28. 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.
29. Rules for the transportation of dangerous goods by rail (put into effect at the 15th Meeting of the Council on Railway Transport of the Commonwealth of Independent States) (as amended as of 22.11.2021).
30. 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.
31. 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.
32. GOST 12.4.137-2001 Safety leather shoe for protection from petroleum, oils, acids, alkalies, non-toxic and explosive dust. Specifications.
33. GOST 14192-96 Marking of cargoes.
34. GOST 12.4.103-2020 Occupational safety standards system. Special protective clothes, personal means of hands and feet protection. Classification.
35. GOST 12.4.253-2013 (EN 166:2001) Occupational safety standards system. Personal eyes and face protection means. General technical requirements.
36. Stockholm Convention on Persistent Organic Pollutants. Ratified by the Federal Law No. 164-FZ dated 27.06.2011.
37. Hazardous substances in industry. Handbook for chemists, engineers and doctors. 7th ed., trans. and add: in 3 vol. Vol. III. Inorganic and organoelement compounds. Ed. Honorable Scientist Professor N.V. Lazarev and Doctor of Biological Sciences Professor I.D. Gadaskina. L., "Chemistry", 1977.

38. GOST 19433-88 Dangerous goods. Classification and marking.
39. Order of the Ministry of Agriculture of the Russian Federation No.552 dated 13.12.2016 Concerning Approval of Water Quality Standards for Commercial Fishery Water Bodies, including Standards for Maximum Permissible Concentrations of Harmful Substances in Waters of Commercial Fishery Water Bodies.
40. Regulations on the Transport of Dangerous Goods. Typical rules. Twenty-second revised edition. United Nations, New York and Geneva, 2021.
41. 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).
42. 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 was approved by Decision of the Customs Union Commission No. 299 dated 28.05.2010 (as amended as of 29.10.2021).
43. Order of the Ministry of Labour of the Russian Federation No. 767n dated 29.10.2021 " On approval of the Uniform Standard Guidelines for issuing personal protective equipment and detergents".
44. Federal Law No. 116-FZ dated 21.07.1997 (edition as of 14.11.2023) "On industrial safety of hazardous production facilities"
45. Federal Law No. 123-FZ dated 22.07.2008 "Technical regulations for fire safety requirements".
46. GOST 12.4.235-2012 Occupational safety standards system. Respiratory protective devices. Gas filters and combined filters. General technical requirements. Test methods. Marking.
47. GOST 12.4.234-2012 Occupational safety standards system. Respiratory protective devices. Powered filtering devices incorporating a helmet or a hood. General technical requirements. Test methods. Marking.
48. GOST 12.4.252-2013 Occupational safety standards system. Personal protective means of hands. Gloves. General technical requirements. Test methods
49. GOST 12.4.010-75 Occupational safety standards system. Personal protective means. Special mittens. Specifications
50. GOST R 12.4.301-2018 Occupational safety standards system. Dermatological personal protective products. General specifications.