MATERIAL SAFETY DATA SHEET

Listed in the Safety data sheet registry

RPB No.00148889.20.48152 dated September 14, 2017

Valid till September 14, 2022

Association «Non-profit partnership «Information and coordination center of the member states of the CIS for binding of the regulatory practices»

Deputy Director________________________/ N.M. Muratova/stamp

NAME

product name (as per RD) Artificial oil-extended styrene-butadiene rubber CKC-30APKM-27/ SBR-1723 (SBR-1712)

chemical name (as per IUPAC) Ethenylbenzene polymer with buta-1,3-diene

Trademark Artificial rubber CKC-30APKM-27/SBR-1723 (SBR-1712) of various brands

Synonyms Styrene copolymer with 1,3-butadiene

OKPD Code 2 20.17.10.130

TN VED Code 4002191000

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


HAZARD STATEMENT

Signal word N/A

Brief (verbal): Low hazard effect on human body in accordance with GOST 12.1.007-76. Combustible matter. Combustion and thermal degradation products are hazardous for human and environment.

Detailed: in 16 enclosed sections of the Safety data sheet

<table>
<thead>
<tr>
<th>MAIN HAZARDOUS COMPONENTS</th>
<th>Workplace exposure limit, mg/m³</th>
<th>Hazard class</th>
<th>No. CAS</th>
<th>No. EC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Styrene copolymer with butadiene-1,3</td>
<td>not established</td>
<td>no</td>
<td>9003-55-8</td>
<td>no</td>
</tr>
</tbody>
</table>

APPLICANT JSC Voronezhsintezkauchyuk, Voronezh (company name) (city)

Applicant type manufacturer, supplier, seller, exporter, importer (delete inappropriate information)

OKPO Code 00148889

Emergency telephone number (473) 220-67-30

Applicant Company head ______________________________/M.N. Lenkov/(signature) (print full name)
Safety data sheet (SDS) conforms to the Recommendations of UN ST/SG/AC.10/30 «SGS (GHS)»

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IUPAC</td>
<td>International Union of Pure and Applied Chemistry</td>
</tr>
<tr>
<td>GHS (SGS)</td>
<td>Recommendations of UN ST/SG/AC.10/30 «Globally Harmonized System of Classification and Labelling of Chemicals»</td>
</tr>
<tr>
<td>OKPD 2</td>
<td>All-Russian Product Classifier by Types of Economic Activities</td>
</tr>
<tr>
<td>OKPO</td>
<td>All-Russian Classifier of Enterprises and Organizations</td>
</tr>
<tr>
<td>TN VED</td>
<td>Foreign Economic Activity Commodity Classification</td>
</tr>
<tr>
<td>No. CAS</td>
<td>Matter number in Chemical Abstracts Service registry</td>
</tr>
<tr>
<td>No. EC</td>
<td>Matter number in European Chemical Agency registry</td>
</tr>
<tr>
<td>Workplace exposure limit</td>
<td>Maximum allowable concentration of a chemical matter in working area air, mg/m³</td>
</tr>
<tr>
<td>Signal word</td>
<td>A word used for focusing on the degree of a chemical product hazard and selected in accordance with GOST 31340-2013</td>
</tr>
</tbody>
</table>
1 Chemical product identification and manufacturer and/or supplier information

1.1 Chemical product identification
1.1.1 Product name:
Artificial oil-extended styrene-butadiene rubber CKC-30APKM-27/SBR-1723 (SBR-1712) [1].

1.1.2 Brief recommendations for application:
Rubber is used in tire and industrial-rubber branches of industry. Manufactured in various brands (A,B,N) differing by physical and mechanical performance. No information on application restrictions [1].

1.2 Information on manufacturer and/or supplier
1.2.1 Full legal name of the organization:
Joint-Stock Company «Voronezhsky sintetichesky kauchyuk (Voronezh artificial rubber)>> (JSC «Voronezhsintezkauchyuk»)

1.2.2. Address:
Leninsky pr. 2, 394014 Voronezh, Russia.

1.2.3 Telephone, incl. for urgent consulting services and time limits:

1.2.4 Fax:
+7 (473) 220-68-69, +7 (473) 220-68-19

1.2.5 E-mail:
VSK-office@vsk.sibur.ru

2 Hazard (hazards) identification
2.1 Total chemical product exposure value:
Low-hazard effect on human body in accordance with GOST 12.1.007-76 [6,34].
Not classified as per SGS [6,34, 41-44].

2.2 Information on warning marking as per GOST 31340-2013:

2.2.1 Signal word:
N/A [5].

2.2.2 Hazard symbol:
N/A [5].

2.2.3 Hazard statement (H-phrases)
N/A [5].

3 Composition (information on components)

3.1 Product information in whole
3.1.1 Chemical name:
Ethynylbenzene polymer with buta-1,3-diene [6].

3.1.2 Chemical formula:
\(\{(-C_4H_6)_m \cdot (-C_9H_{18})_n\}_x\) [6].

3.1.3 General composition characteristics:
Rubber is the product of copolymerization of butadiene and styrene in emulsion under low temperature.
Rubber CKC-30APKM-27 contains extender oil type TDAE or HI-AR. Rubber can be added with another extender oil of the type agreed with the consumer upon ordering [1,2].
3.2 Components:
(name, CAS and EC numbers, mass content (totally 100 %), Workplace exposure limit or SRLI of working area, hazard classes, references to data sources)

<table>
<thead>
<tr>
<th>Components</th>
<th>Mass content, %</th>
<th>Exposure standards in working area</th>
<th>No. of CAS</th>
<th>No. of EC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Styrene copolymer with 1,3 – butadiene</td>
<td>64,6– 69,2</td>
<td>not established</td>
<td>no</td>
<td>9003-55-8</td>
</tr>
<tr>
<td>Antioxidant BC-1</td>
<td>[2]</td>
<td>0,3–0,7</td>
<td>not established</td>
<td>no</td>
</tr>
<tr>
<td>Antioxidant C-789</td>
<td>[2]</td>
<td>0,35-0,55</td>
<td>not established</td>
<td>no</td>
</tr>
<tr>
<td>Organic acids (mixture of resin and fatty acids)</td>
<td>4,3–5,9</td>
<td>4</td>
<td>3</td>
<td>8050-09-07 (by resina)</td>
</tr>
<tr>
<td>Extender oil:</td>
<td>type TDAE</td>
<td>25–30</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>type HI-AR</td>
<td>25–30</td>
<td>not established</td>
<td>no</td>
</tr>
</tbody>
</table>

Table 1 [1,4,6,8,11,30,38,45]

Note: application of antioxidant analogs is allowed [2].

4 First aid measures

4.1 Symptoms:
4.1.1 Inhalation: In emergency situations (toxic exposure to rubber combustion products) – mucous membrane irritation of upper respiratory airways, headache; in case of acute toxic exposure – nausea, vomit, nasal hemorrhage [6,14,24,25].

4.1.2 Skin contact: Des not irritate skin cover. Burn is possible upon skin contact with molten product [2,6].

4.1.3 Eye contact: Eye irritation, smarting eyes, lacrimation [6].

4.1.4 Ingestion: Atonia, nausea, vomit [6].

4.2 First aid measures to the injured

4.2.1 Inhalation: Inhalation is unlikely under normal conditions.

To remove the injured in the open air, keep at rest and warm in case of intoxication with decomposition and thermal degradation products. Warm milk with sodium bicarbonate upon reactive airway disease. Putting of a cotton plug wetted in 3% solution of hydrogen peroxide in nasal passage in case of nasal hemorrhage. Seek medical attention [2,6,24].

4.2.2 Skin contact: Rubber is not hazardous in case of skin contact. Do not tear it away from skin in case of hot product contact, cool the product with water and wash skin with plenty of cold water for heat removal. Apply aseptic dressing in case of burns and seek medical advice [2,6,22,24].

4.2.3 Eye contact: Remove the product as debride, carefully wash the eyes with plenty of water with palpebral fissure widely open for not less than 15 minutes. Seek medical...
4.2.4 Ingestion:
Place the injured into a ventilated room in case of accidental ingestion; increased water intake, clean ventricle with warm water and sodium bicarbonate (one tablespoon per glass of water), take activated carbon and saline purgative. Seek medical attention [2,6,22,24].

4.2.5 Counterindications:
Information N/A [6].

5 Measures and means of explosion and fire safety ensuring

5.1 General characteristics of explosion and fire hazard (as per GOST 12.1.044-89):
Rubber is not explosion hazardous under operation temperature. Combustible product. Burns only in case if placed into the fire source. Thermal degradation of rubber at the temperature exceeding 300 °C [1,2,6,17].

5.2 Indicators of explosion and fire hazard: (nomenclature of indices as per GOST 12.1.044-89 and GOST 30852.0-2002)
Flammability group: combustible material of average flammability.

Rubber burning point: (310–340) °C, rubber self-ignition temperature: (345–375) °C.
Smoke-developed index: high smoke generation ability.
Toxicity equivalent of combustion products: highly hazardous material [7,17].

5.3 Combustion products and/or thermal degradation and hazard caused:
Carbon monoxide of irritant and toxicological action forms during products combustion [26,27,32].

Carbon monoxide (carbon monoxide gas) disturbs transportation and transfer of oxygen to tissues, thus oxygen deprivation evolves mostly affecting the nervous and cardiovascular system. Intoxication symptoms: headache, skin angiectasia, amblyopia, faintness, nausea, vomit, loss of consciousness [32].

Carbon dioxide (CO2) in case of fire causes breath acceleration and enhancement of lung ventilation thus promoting greater penetration of toxic substances into the body contained in combustion products; vasorelaxant action. Intoxication symptoms: cardiac acceleration, increase in arterial blood pressure, migraneous headache, headache, faintness, atony, loss of consciousness, fatal result in case of long-term exposure to high concentrations [32].

For CO: WEL (workplace exposure limit) = 20 mg/m³, MAC_ATM.C.c=3 mg/m³ [8,32].
For CO2: WEL= 27000/9000 mg/m³ [8].

5.4 Recommended fire extinguishing equipment:
In case of insignificant inflammations: sand, fire blanket, powder or carbon dioxide fire extinguishers. In case of large-scale fire: air and mechanical foam and chemical foam from fixed or mobile foam fire extinguishers, water spray [2,18,24]

5.5 Prohibited fire extinguishing equipment:
Data N/A [2,24].

5.6 Personal protective equipment for fire extinguishing (PPE of the fire-fighting personnel):
Fire-fighting suit with self-rescue breathing apparatus СПИ-20 [24].
5.7 Specificity of fire extinguishing:

To attach fire at a safe distance. To keep cold the rubber pellets that have not ignited yet by watering them. To enter the fire zone using personal protective equipment [18,24].

Burns and injuries are possible during fire and explosions [24].

6 Measures for prevention and response to accidents and emergencies and their consequences

6.1 Measures for prevention of harmful effect of accidents and emergencies on people, environment, buildings, constructions and etc.

6.1.1 Required general activities in case of accidents and emergencies:

To act in accordance with accident response plan. To stop all works not connected with accident response [2,24].

To isolate the hazardous zone within not less than 50 m radius. To adjust the indicated distance as per the results of chemical reconnaissance. To remove the unauthorized persons. To wear protective equipment when entering the hazardous zone. To keep to upwind position. To avoid depressions. To observe fire protection measures. Not to smoke. To remove the fire and sparks sources. To render first-aid treatment to the injured. To remove people from affected area for medical examination [24].

6.1.2 Personal protective equipment in case of accidents:
(PPE of emergency response teams)

For emergency response teams – field-protective suit JI-1 or JI-2 with industrial gas mask with cartridges A, B. Workwear. Oil-and-gasoline resistant gloves, special shoes [2,6,21,24].

6.2 Procedures for accidents and emergencies response

6.2.1 Actions in case of leakage, spillage and scattering:
(incl. measures for their liquidation and precaution measures ensuring environmental protection)

To collect the scattered product and place into containers or piles. To fasten the cargo, if necessary, and remove to be used for intended purpose or for disposal [2].

To call emergency response units (gas rescue, fire, medical), remove the unauthorized persons and isolate the hazardous zone. To remove the non-igniting rubber from the fire zone. To start fire extinguishing using emergency firefighting equipment before arrival of fire-fighting unit (foam, powder and carbon dioxide fire extinguishers and etc.).

To measure MAC by thermal degradation products after fire liquidation [24].

To use atomized water for dispersion (isolation) of fumes and dust. To clean the territory from the burnt product residue. To cut the contaminated surface layer of soil, if necessary, to collect and remove it for disposal observing the fire protection measures. Cut places should be covered with a new soil layer. To remove the burnt rubber unsuitable for processing to a landfill for disposal [24].

7 Rules of chemical products storage and handling during loading/unloading operations

7.1 Safety measures for chemical products handling
7.1.1 Engineering safety measures systems

Availability of supply and exhaust ventilation and local ventilation in the production premises, use of workwear during product handling, observation of safety measures and industrial sanitary by the personnel [2,6,18].

Equipment and utilities should be grounded to protect from static electricity [2,35].

The premises should be equipped with emergency firefighting equipment and automatic firefighting systems for premise fire protection [2,18].

7.1.2 Environmental protection measures:

Manufacturing equipment and utilities pressurization. Nonadmission of product discharge into water bodies, sewerage and soil; sewage sanitation; air monitoring (see section 12 PB).

7.1.3 Recommendations for safe transportation and transit:

Rubber can be transported by all means of transport in covered vehicles in accordance with cargo transportation regulations applicable for a certain mean of transport (see section 14 PB) under the ambient temperature not exceeding plus 50 °C [1].

Rubber is placed and fixed in railway cars in accordance with the technical conditions of cargo loading and fixing and GOST 22235-2010.

Joint transportation with other chemical substances is not allowed [1,2].

7.2 Rules of chemical products storage:

7.2.1 Terms and conditions of safe storage:

Rubber should be stored under the temperature not exceeding plus 40 °C in storage rooms. Rubber should be protected from contamination, direct sunrays and atmospheric precipitations during storage [1].

Rubber should be packed into polyethylene film and put into a container. Rubber packed in polyethylene film and a container is stored in piles consisting of not more than three pallets heightwise [1].

Rubber guaranteed storage life is 1 years from manufacturing date [1].

7.2.2 Packaging and package:

Rubber should be stored under the temperature not exceeding plus 40 °C in storage rooms. Rubber should be protected from contamination, direct sunrays and atmospheric precipitations during storage [1].

Rubber should be packed into polyethylene film and put into a container. Rubber packed in polyethylene film and a container is stored in piles consisting of not more than three pallets heightwise. Rubber packed in a metal container is stored in piles consisting of not more than four pallets heightwise. [1].

Polyethylene film, general-purpose containers, corrugated containers, plastic and metal containers [1].

Rubber guaranteed storage life is 1 years from manufacturing date [1].

7.3 Safety measures and rules of household storage:

Not applied for household purposes [1].

8 Means of control of hazardous exposure and personal protective equipment

8.1 Parameters of working area to be controlled obligatorily (WEL or SRLI of working area):

There is no official WEL for rubber [1,6,8]).

According to residual monomer [1,19]:

Styrene - WEL=30/10 mg/m³

8.2 Measures for ensuring of allowable concentration of harmful substances:

Periodical monitoring of air condition in working premises. Manufacturing equipment and utilities pressurization and grounding, ventilation system arrangement. Laboratory works are performed in enclosures [2].

8.3 Personal protective equipment for the personnel:
8.3.1 General recommendations:

- Work permit for trained personnel with prebriefing.
- Workers provision with personal protective equipment in accordance with the standard industry sector codes (workwear, special shoes, safety spectacles and goggles, gloves, respiratory protection equipment).
- To avoid contact with product. To observe personal hygiene rules. Not to eat, drink or smoke during works performance, wash hands before eating with water and soap with due diligence.
- To avoid contact with product.
- To observe personal hygiene rules. Not to eat, drink or smoke during works performance, wash hands before eating with water and soap with due diligence.

8.3.2 Respiratory protection (types of RPE (respiratory protective equipment)):

- RPE is not required under standard conditions. Filtering protective mask brand А₂В₂Е₂Κ₂Π₂ is used in case of accidents.

8.3.3 Protective equipment (material and type): (workwear, special shoes, hands and eyes protection)

- Workwear and special shoes in accordance with industry sector codes (cotton suit, protective gloves, leather shoes and safety goggles and spectacles).

8.3.4 Personal protective equipment for household use:

- Not used for household purposes.

9 Physical and chemical properties

9.1 State of matter:
(physical form, color, odor)

- Solid homogeneous flexible mass, color from brown to dark brown.
- Rubber commodity form – pellet, weight (30 ± 1) kg.
- Faint odor of organic compounds is possible during rubber processing and heating.

9.2 Parameters characterizing the main product properties:
(temperature indices, pH, solubility, coefficient n-octanol/water and other parameters specific for such product type)

- Density at 20 °C: (0,93 ± 0,02) g/cm³ [2,6]. Melting point > 200 °C [6,33].
- Coefficient n-octanol/water – data N/A
- pH – not used [1].
- Rubber is insoluble in water. Dissolves in aromatic and aliphatic solvents: benzene, toluene, hexane, heptane and gasoline [6].

10 Stability and reactivity data

10.1 Chemical stability:
(to indicate decomposition products for unstable products)

- The product is stable in case of presence of antioxidant and observation of storage conditions [1,2,6].
- Oxidizes and hydrogenizes [6].

10.2 Reactivity:

- Oxidizes and hydrogenizes [6].

10.3 Conditions to avoid:
(incl. hazardous demonstrations at contact with incompatible substances and materials)

- Oxidizes and hydrogenizes [6].
- Open flame, long-term exposure to direct sunrays, heating, contact with incompatible substances. Hazardous products of thermal degradation include carbon monoxides. Incompatible with oxidants, acids and alkali [2,6].
11 Toxicity data

11.1 Information concerning particular hazards: (assessment of hazard degree (toxicity) of effect on human body and specific manifestations of hazard)

Low-hazard product by human body exposure severity in terms of acute toxicity indicator [2].

The possibility of acute intoxication with the products in case of inhalation is improbable under normal operation modes in rubber manufacturing and storage conditions [2,6,15].

By inhalation, upon skin and eyes contact; peroral penetration into the body (accidental swallowing) [2,6].

Rubber combustion products (carbon monoxide) affect the central nervous system, liver and kidneys, irritate ocular mucosa [6,24].

No sensibilizing action, slightly irritating effect on skin and ocular mucosa [6,7].

11.2 Exposure routes: (inhaled, peroral, skin and eyes contact)

11.3 Affected organs, tissues and systems of a human:

No teratogenicity, embryotrophic effect, gonadotrophic effect, mutagenic effect and carcinogenicity were studied for rubber [6].

Slight cumulativity of the product [6].

No remote consequences were studied for the product in whole [6].

11.4 Information about health hazardous exposure upon immediate contact with the products as well as exposure consequences: (irritant action on upper respiratory airways, eyes and skin; absorption through skin and sensibilizing action)

11.5 Information on remote hazardous exposure consequences for human body: (influence on reproduction function, carcinogenicity, mutagenicity, cumulativity and other chronic effects)

11.6 Acute toxicity indices:

(DL$_{50}$ ($UD_{50}$), route of entry (intragastrically, epidermally), animal species; CL$_{50}$ ($IK_{50}$), exposure period (h), animal species)

DL$_{50}$ > 5000 mg/kg, intragastrically, rats [6].

CL$_{50}$ (mg/m$^3$) not reached [6].

12 Information about environmental impact

12.1 General characteristic of environmental impact: (on atmospheric air, water bodies, soils, included observed impact signs)

Rubber is stable under normal conditions. No information on rubber impact on the environment [6].

Soil mechanical pollution with polymer flake is possible upon rubber use. The formed suspended solids caused by polymer flake penetration into water bodies deposit polluting the water bodies. The products of processing, combustion and thermal degradation can pollute atmospheric air [6].

Thick black smoke evolves upon burning of rubber, items on its basis and wastes. Hazardous combustion products include carbon monoxide able to affect the biological objects [6].

Violation of storage, transportation and application rules; land disposal and discharge into the water bodies; uncontrolled waste dumping and disposal; consequences of accidents and emergencies.

12.2 Environmental exposure routes:

12.3 The most important characteristics of environmental impact:

12.3.1 Hygiene standards: (allowable concentrations in atmospheric air and water incl. fishery water bodies and soils)
12.3.2 Environmental toxicity indices:  
Data N/A for rubber [6].

12.3.3 Migration and transformation in the environment at the expense of biodegradation and other processes (oxidation, hydrolysis and etc.):  
Rubber transforms in the environment. Biological catabolism: not studied [6].

13 Recommendations for waste removal (residue)

13.1 Safety measures for handling of waste formed during use, storage and transportation:  
Combustible substance: to observe fire protection requirements, prevent heating and use PPE (for details see the sections 7 and 8 PB). 
Waste not used for further processing is subject to collection into containers with further disposal in accordance with established procedure. Wastewater containing admixture of harmful substances is subject to mechanical and physical and biological treatment [28]. 
Package waste should be collected, transferred for processing or used as secondary raw materials. Polyethylene package waste can be disposed at SHW (solid household waste) landfill [28]. 
Not used for household purposes [1].

13.3 Recommendations for disposal of waste formed during products household use:

14 Information about transportation

14.1 UN number:  
(in accordance with UN recommendations for hazardous cargo transportation) 
No [1,16].

14.2 Proper shipping name:  
Artificial rubber CKC-30APKM-27 / SBR-1723 TDAE (SBR-1712/HI-AR) [1].

14.3 Used means of transport:  
Rubber is transported in covered vehicles by any mean of transport in accordance with cargo transportation rules applicable for such mean of transport [1].
14.4 Cargo hazard classification as per GOST 19433-88:
- class
- subclass
- classification code
  (as per GOST 19433-88 and for rail transportation)
- number(s) of drawing(s) of danger symbol(s)

14.5 Cargo hazard classification as per UN
Recommendations for hazardous cargo transportation:
- class and subclass
- additional hazard
- UN packing group

14.6 Transport marking:
(handling marks as per GOST 14192-96)

14.7 Emergency cards:
(in case of rail, sea and other transportation)

15 Information about domestic and international legislation

15.1 Domestic legislation
15.1.1 Russian Federation laws:

15.1.2 Information about documentation regulating human and environmental protection requirements:
Not subject to state registration in accordance with the requirements of the Agreement on sanitary measures of the Customs Union Dated 11.12.2009. [40].

15.2 International conventions and agreements (whether the products are regulated by the Montreal protocol, Stockholm Convention and etc.)
Not covered by international conventions and agreements, not regulated by the Montreal protocol and Stockholm Convention [36,37].

16 Additional information

16.1 Information about SDS revision (reedition): (to indicate:
  “SDS is first developed” or “SDS is reregistered upon expiration. Previous Safety data sheet registration number (SDSRN) No. ...” or “amendments introduced into the paragraphs..., entry date...”)
Safety data sheet (SDS) was reregistered upon expiration. Previous SDSRN No.00148889.22.29103 dated 28.09.2012.

16.2 List of data sources used for Safety data sheet execution: 
2. SK 903. Permanent process regulations for manufacturing of artificial styrene-butadiene (butadiene-methylstyrene) rubber.
5. GOST 31340-2013. Chemical products warning marking. General requirements.
8. MAC/SRLI of harmful substances in working area: Hygienic standards. GN 2.2.5.1313-03/ GN

4 Order numbers of data sources are given in each SDS paragraph as references
Artificial oil-extended styrene-butadiene rubber CKC-30APKM-27
TU 38.303-03-070-2001


12. GN 2.1.7.2041-06. «Maximum allowable concentrations (MAC) of chemical substances in soil”, approved by the Chief State Health Inspector of the Russian Federation on January 19, 2006.


25. Rules of hazardous cargo rail transportation. Appr. by the Rail transport council of the Commonwealth member states, protocol dated 05.04.96 No.15. As amended and supplemented (revision valid from 01.03.2014).


40. Consolidated list of products subject to sanitary and epidemiological supervision (control) at the customs frontier and in the customs territory of the Customs Union dated November 22, 2010.
41. GOST 32419-2013. Classification of chemical products hazard.
42. GOST 32423-2013. Hazard classification of mixed chemical products by effect on the human body.
43. GOST 32424-2013. Classification of chemical products hazard by environmental impact.
44. GOST 32425-2013. Hazard classification of mixed chemical products by environmental impact.