

(MATERIAL) SAFETY DATA SHEET

Entered into the Registry	
MSDS Registration No.00148889•20•48717	Effective date: 19 October 2017 Expiry date: 19 October 2022
Association «Non-profit partnership «Information and coordination centre of the member states of the CIS for binding of the regulatory practices»	
Deputy Director / _____ / N.M. Muratova /	

Stamp:

NAME:

Technical (in regulations): **CKC-30APKM-15/SBR-1705 TDAE (HI-AR) synthetic butadiene-styrene rubber**
Chemical (according to IUPAC): ethenylbenzene polymer with 1,3 butadiene
Trade: CKC-30APKM-15 rubber of various grades
Synonyms: styrene-1,3-butadiene copolymer

OKPD 2 Code: 20.17.10.130 **Foreign Trade Commodities Nomenclature (Code):** 4002191000

Designation and name of basic regulatory, technical or informative document relevant to the product (GOST, TU (Technical Specifications), OST (Industry Standard), Corporate Standard, (M)SDS etc.)

TU (technical specifications) 38.403121-98. CKC-30APKM-15 synthetic butadiene-styrene and CKMC-30APKM-15 butadiene-methyl styrene rubbers with phenolic and amine antioxidants.

HAZARD IDENTIFICATION:

Signal word: n/a

Brief description (verbal):

Combustible substance presenting low-hazard to organisms. Products of combustion and thermal decomposition are hazardous to humans and environment.

Detailed description: is provided in 16 sections of the Material Safety Data Sheet laid down below.

BASIC HAZARDOUS INGREDIENTS	MAC, work area, mg/m ³	Hazard class	CAS No.	EC No.
1,3-polybutadiene styrene	not defined	none	9003-55-8	none

APPLICANT: _____ JSC Voronezhsynthetkauchuk _____ Voronezh
(organization name) (city)

Applicant's status: manufacturer, supplier, vendor, exporter, importer
(delete as appropriate)

OKPO Code: 00148889 **Emergency telephone #:** (473) 220-67-30

Head of Applicant's organization: _____ /M.N. Lenkov/
(signed) (printed name)

Stamp:

IUPAC	means International Union of Pure and Applied Chemistry
GHS	means UN ST/SG/AC. 10/30 recommendations "Globally Harmonized System of Classification and Labelling of Chemicals"
OKPD 2	means Russian Classifier of Products by types of economic activity
OKPO	means Russian Classifier of Plants and Establishments
TN VED	means Foreign Trade Goods Nomenclature
CAS No.	means number of a substance in the Chemical Abstracts Service Registry
EC No.	means number of a substance in the European Chemical Agency Registry
MAC	means maximum allowable concentration of a chemical substance in ambient work area air, mg/m ³ (maximum one-time/average monthly)

Safety Data Sheet – Russian Translation - certificate of safety of chemical products (substance, mixture, material, industrial waste)

The Safety data sheet complies with:

- UN ST/SG/AC. 10/30 recommendations GHS
- EC Regulations No. 1907/2006 concerning Registration, Evaluation, Authorization and Restriction of Chemicals, Annex II (REACH), Annex II

Signal word is one of the two words **Danger** or **Caution** (or **None** in compliance with GOST 31340-2013 "Chemicals warning labelling. General requirements")

1. Identification of chemical product and manufacturer or supplier

1.1 Identification of chemical product

1.1.1 Commercial name SKS-30ARKM-15 synthetic butadiene-styrene rubber [1].

1.1.2 Brief recommendations for use (including restrictions) It is used in tyre-making, rubber and other industries. No data on restrictions on application [1].

1.1.3 Other information The rubber is produced in various grades (A, B, C, D, N) which differ from each other in terms of physical and chemical properties [1].

1.2. Information on manufacturer or supplier

1.2.1. Full official name of organization: Joint Stock Company (JSC) "Voronezh Synthetic Rubber"
304014, Russia, Voronezh, Leninsky prospekt, 2

1.2.2. Address:

Emergency (24 h): (473) 220-67-30.

1.2.3. Telephone # including emergency telephone # and time-limits: Call-back number: 8:00–17:00 (Moscow time): domestic market (473) 220-68-84, foreign market (473) 220-65-26 (473) 220-68-69, (473) 220-68-19

1.2.4. Fax:

VSK-office@vsk.sibur.ru

1.2.5. E-mail:

SKS-30ARKM-15 rubber may be classified as a substance of low hazard to organisms according to GOST 12.1.007-76 [6.34].

2. Hazard(s) identification

2.1. General product hazard level:
(data on hazard classification in compliance with RF law (GOST 12.1.007) and GHS (after approval))

Hygienic regulations for rubber in ambient air of a work area are not available [1, 10].

2.2. Hygienic regulations for product in ambient air of a work area:
(MAC w.a. or SRLI w.a.)

Not regulated [5].

2.3. Labeling information (according to GOST 31340-2013):

Not regulated [5].

2.3.2. Safety precautions:

3. Composition (information on ingredients)

3.1. General information of product

3.1.1. Chemical name (according to IUPAC)

1,3-butadiene ethenyl benzene [6].

3.1.2. Chemical formula:

$[(-C_4H_6-)_m (-C_9H_{10}-)_n]$ [6]

3.1.3. General description of composition (according to the grade slate and including additives and impurities that enhance product hazard; production method)

The rubber is a product of emulsion copolymerization of butadiene and styrene at low temperature [1, 2]
SKS-30ARKM-15 rubber contains TDAE or HI-AR extender oil. The rubber may be filled with any other extender oil which type is to be approved by the client at making an order [1, 2].

3.2. Ingredients: (name, CAS and EC numbers (if available), weight percent, MAC w.a. or SRLI w.a., hazard classes, references)

Basic ingredients (name, CAS and EC numbers)	CAS	EC	Weight, %	MAC w.a., mg/m ³	Hazard Class	Reference
1,3-polybutadiene styrene	9003-55-8	-	77.0-80.1	not determined	none	[1, 6, 10, 33]
VS-1 antioxidant (alkyl-phenol-amine resin (30 %-50 % solution in oil)) or	-	-	0.15-0.35	not determined	none	[10, 30, 33]
VS-30A antioxidant or	68610-06-0	271-847-3	1.0-2.0	not determined	none	[10, 33, 44]
Agidol-2 antioxidant (2,2-methylenebis (4-methyl-6-tret-butyl phenol))	119-47-1	204-327-1	0.6-1.2	not determined	none	[10, 33, 45]
Organic acids (mixture of resin and fatty acids)	8050-09-07 (for rosin)	232-475-7 (for rosin)	5.0-6.4	4	3	[1, 2]
Extender oil of TDAE or HI-AR grade	64741-88-4 64742-10-5	265-090-8 265-110-5	14-17 14- 17	5 not determined	3 none	[10, 11, 33, 46]

Note: analogous antioxidants can be used.

4. First-aid measures

4.1. Symptoms:

4.1.1. Inhalation:

In case of emergency (poisoning from products of rubber combustion) - irritation of mucous membranes in upper respiratory tract, headache; acute poisoning - nausea, vomiting, nasal bleeding [6].

4.1.2. Skin contact:

Does not irritate skin. Skin contact with melt product may cause a burn [6, 7].

4.1.3. Eye contact:

Irritation of mucous membranes in eyes, acute pain in eyes, tearing [6].

4.1.4. Ingestion:

Drowsiness, nausea, vomiting [6].

4.2. First-aid measures

4.2.1. Inhalation:

Remove a victim to fresh air, keep the victim warm and quiet and provide it with clean clothes. At irritation of respiratory tract drink warm milk with cooking soda. On nasal bleeding place cotton in the nasal passage dampened in 3% solution of hydrogen peroxide. If consciousness is lost, inhale ammonia hydroxide from a piece of cotton. In the event of deterioration of medical condition or respiratory arrest - make mouth-to-mouth resuscitation and get medical attention [2 , 6, 24].

4.2.2. Skin contact:

In the event of skin contact with melt product, cool down the product by water; wash skin with plenty of warm water and soap. In the event of irritation get medical attention [2, 6, 24].
In case of a burn apply an aseptic dressing [24].

4.2.3. Eye contact:

Remove product as a foreign object. Carefully flush eyes with plenty of water for at least 15 minutes holding eyelids apart; seek medical advice [2, 6, 24].

4.2.4. Ingestion:

If the product is swallowed by accident, place a victim in a ventilated room; let him/her drink plenty of water, flush stomach with warm water and cooking soda (one table spoon per a glass of water), take activated carbon, saline laxative [2, 6, 24].

4.2.5. Counterindications:

Information is not available.

5. Fire fighting and explosion response measures

5.1. General description of fire and explosion safety:

The rubber is explosion-proof [1, 2, 19].
Combustible product. It burns if placed in fire. At temperature above 300 °C the rubber undergoes thermal decomposition [2, 24].

5.2 Fire and explosion safety indicators (nomenclature according to GOST 12.1.044-89 [11] and GOST 30852.0-2002)

Temperature of:
rubber ignition - (295 ÷ 325)°C, autoignition – (340 ÷ 370)°C [2, 24].

5.3. Hazard caused by products of combustion and/or thermal degradation:

Product combustion generates irritative and toxic carbon oxides [26, 27, 32].
Carbon oxide blocks conveyance and supply of oxygen to tissues causing hypoxia in organism which is particularly perceived by nervous and cardio-vascular systems. Symptoms of poisoning: headache, skin's vascular distention, reduced sight, dizziness, nausea, vomiting, and unconsciousness [32].
In case of fire carbon dioxide accelerates breathing and enhances lung ventilation and thus facilitates greater amounts of toxic substances contained in products of combustion to enter into organism; facilitates vascular distention. Symptoms of poisoning: heart acceleration, increase in arterial blood pressure, blind headache, headache, dizziness, drowsiness, unconsciousness, fatal outcome in the event of long-time exposure to high concentrations [32].

- 5.4. Recommended extinguishing media
To suppress minor fire, use sand, felted cloth, carbon dioxide or dry powder fire-extinguishers [2, 24]. To suppress major fire, use air or chemical foam from stationary or mobile plants, fine water spray [19,24]
- 5.5 Prohibited extinguishing media :
n.a. [24].
- 5.6 Personal protective equipment for fire-fighting (PPE for fire-fighters):
Canvas suit, gauntlets, helmet, visors, rubber or tarpaulin boots, industrial gas mask with BKF box.
For actions in the fire area wear a fire-resistant suit, self-contained breathing apparatus, compressed air apparatuses, and protective footwear [21, 24].
- 5.7. Special fire-fighting procedures:
On fire fighting keep as far from fire as possible. Keep rubber blocks free of flame in cold condition using water. To enter the fire area, wear personal protective equipment [18, 24].
Fire may cause burns and injuries [24].

6. Emergency prevention and response measures

6.1. Measures for prevention of adverse effect on humans, environment, buildings, structures etc. in accidents and emergency

- 6.1.1. General measures:
Take actions in accordance with the emergency response plan. Interrupt all work activities except associated with accident control [2, 24].
Provide containment of the dangerous area in a radius of at least 50 m. Keep unauthorized people away from the area. Wear PPE when entering the area. Keep on windward side. Avoid low area. Follow fire safety precautions. No smoking. Remove sources of flame and sparking. Provide first aid for victims. Move people from the affected area for medical examination [24].
- 6.1.2 Personal protective equipment: (for rescuers and personnel)
Canvas suit, gauntlets, helmet, visors, rubber or tarpaulin boots, industrial gas mask with BKF box if content of harmful vapours in ambient air is within 0.5%. For higher concentrations wear ASV-2 self-contained breathing apparatus [2, 6, 21, 24].

6.2. Emergency response procedure

6.2.1. Accidental release or spillage measures: (including environment protection measures)

Clean up rubber blocks and transfer into the containers or place in stacks. If required, secure them [2].
Call a fire brigade. Keep unauthorized people away from the area, and contain the dangerous area. Remove rubber free of fire from the fire area. To enter the fire area, wear protective equipment and respirator. For fire extinction use fine water spray, air or chemical foam keeping a safe distance to fire. Measure MAC of thermal decomposition products after fire suppression [24].
To dissipate (neutralize) vapors and dust, use water spray. Clean the area of remaining burnt product. If required, cut contaminated soil and dispose following fire safety precautions. Backfill cut area with fresh soil. Remove burnt rubber unsuitable for recycling to the dump for controllable burial or incineration [24].

7. Regulations for chemical product handling and storage

7.1. Safety precautions in handling chemical products

<p>7.1.1. Safety measures and collective protection equipment (including fire and explosion safety measures)</p>	<p>Provision shall be made for suction and exhaust ventilation and local ventilation in industrial premises, wear protective clothes when dealing with the product, enforcement of observation by personnel of safety rules and industrial hygiene [2, 6, 18].</p>
<p>7.1.2. Environment protection measures:</p>	<p>Equipment and lines are to be grounded to protect them against static electricity [2, 35]. In order to provide for fire safety, premises shall be equipped with fire-extinguishing facilities [2, 18]. Process equipment and lines shall be tight. Prevent release of the product into water bodies and soil (refer to Section 12 of the MSDS).</p>
<p>7.1.3 Recommendations on safety of conveyance and transportation:</p>	<p>The product can be transported by any mode in compliance with regulations applicable to a respective mode of transport (refer Section 14 PB). Transportation with other chemicals is prohibited [1, 2].</p>
<p>7.2. Regulations for chemical products' storage :</p>	
<p>7.2.1. Conditions and term of safe storage (including guaranteed shelf life)</p>	<p>Store at a temperature of maximum 40°C in warehouses. Rubber in storage shall be protected against contamination, direct sunlight and atmospheric precipitation [1]. Rubber shall be packed in polyethylene film and placed in a container. Rubber packed in polyethylene film and containerized is to be stored in stacks of a maximum of three pallets in height [1]. Guaranteed shelf life is 12 months from the manufacturing date [1].</p>

7.2.2. Incompatible substances and materials for product storage:

Avoid contact with oxidizers, acids, alkalis, aliphatic and aromatic hydrocarbons, and organic solvents [1, 2]. Polyethylene film, corrugated cardboard cartons, plastic and metal containers [1].

7.2.3. Packing materials:

7.3. Safety measures for home storage:

The substances are not intended for home use.

8. Exposure controls / Personal protective equipment

<p>8.1. The parameters of work area subject to monitoring (MAC w.a., SRLI w.a.):</p>	<p>MAC for the rubber in work area is not officially established [1, 6, 7, 9]. By residual monomer [1, 19]: Styrene – MAC w.a. =30/10 mg/m³ Hazard class – 3. Periodically monitor ambient air in the production rooms. Tightness and grounding of equipment and lines; provision of ventilation [2].</p>
<p>8.2. Measures for keeping maximum allowable concentrations of harmful substances:</p>	<p>Only trained and briefed personnel shall be allowed to work with the product. Avoid contact with the product. Follow individual hygiene rules. Do not eat, drink or smoke at workplace. Thoroughly wash hands with soap before eating [2]. Process rooms shall be fitted with water supply and first-aid kit. Workers shall be medically examined at employment and after that to pass medical examination on a regular basis (once a year) [2].</p>
<p>8.3. Personal protective equipment:</p>	<p>In normal conditions it is not required. In case of emergency wear a A₂B₂E₂K₂P₃ filter gas mask [2, 21].</p>
<p>8.3.1. General recommendations:</p>	<p>Protective clothing and protective footwear according to the specifications accepted in the industry (cotton overall or suit, multi-purpose gloves, leather footwear) [2, 21]. The substance is not intended for household use.</p>
<p>8.3.2. Respiratory protection (types of personal respiratory protective equipment):</p>	<p>Solid homogenous elastic mass of brown to dark brown colour. Rubber processing or heating may generate a slight odour of organic compounds [2]. Rubber is manufactured in the form of blocks of (30 ± 1) kg in weight.</p>
<p>8.3.3. Clothing (material, type):</p>	
<p>8.3.4. Personal protective equipment for home use:</p>	
<p>9. Physical and chemical properties</p>	
<p>9.1. Physical state: (color, odor)</p>	

9.2. Basic product properties, in particular hazardous properties: (temperature, pH, solubility, n-octanol-water coefficient etc.)

Density at 20°C: $(0.94 \pm 0.020 \text{ g/cm}^3)$ [2, 6].
Melting point > 200 °C [6, 33].
n-octanol-water coefficient – n.a. [2, 8].
The rubber is insoluble in water. It is soluble in aromatic and aliphatic solvents, namely: benzene, toluene, hexane, heptane, and gasoline [6].

10. Stability and reactivity

10.1. Stability:

(state products of decomposition for unstable products)

10.2. Reactivity:

10.3. Condition to be avoided (including contact with incompatible substances)

The product is stable under normal storage conditions.

It is oxidized and hydrogenated [6].

Naked flame, long exposure to sunlight, heating, contact with incompatible substances. Hazardous thermal decomposition products comprise carbon oxides [2,6].

11. Toxicological information

11.1 General description of exposure (evaluation of dangerous health effect (toxicity))

The product is low hazardous to organisms [2].
In normal conditions of manufacture and storage acute inhalation poisoning from the product is unlikely [2, 6, 7].

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

Inhalation, skin and eye contact, ingestion (if swallowed) [2, 6].

11.3 Target human organs, tissues and systems:

Rubber combustion products (carbon oxides) have effect on central nervous system, liver, kidneys. Irritate eye mucosa [6, 24].

11.4. Information on dangerous contact with the substance and its effect (irritation of upper airways, eyes, skin including percutaneous effect, sensitization)

It does not produce a sensitizing effect, mildly irritates skin and eye mucosa [6, 7].

11.5 Information on dangerous effect on humans (reproductive toxicity, carcinogenicity, cumulative effect etc.)

Teratogenic, embryotropic, gonadotropic, mutagenic, carcinogenic effects of the rubber have not been investigated [6, 7].

The product shows low cumulative capability [6].

Generally, long-term effects of the product have not been investigated [6].

11.6. Acute toxicity indicators (LD_{50}), routes of entry (oral, dermal), animal; LC_{50} , time of exposure (h), animal)

$DL_{50} > 5000 \text{ mg/kg}$, i.v., rats;
 $CL_{50} (\text{mg/m}^3)$ is not reached [6]

11.7. Dose (concentration) producing minimum toxic effect:

n.a.

12. Environmental impact information

12.1. General description of environmental effect (atmospheric air, bodies of water, soil)

In normal conditions the rubber is an extremely stable product. It does not form toxic compounds with other substances in air or aqueous environments. Data on rubber effect on environment is not available [6]. However, application of the rubber may contaminate water bodies and soil with polymeric crumbs; products of processing, combustion and thermal decomposition may pollute atmospheric air [6].

12.2 Routes of environment exposure:

Failure to observe rules for storage, transportation and use; release into terrain and water bodies; unorganized dumping and disposal of waste; aftermath of accidents and emergency.

12.3 Symptoms of exposure:

Burning rubber, rubber-based products and waste evolve thick black smoke and toxic gases. Hazardous products of combustion include carbon oxides which may produce an adverse effect on biological objects. On entering into water bodies polymer crumbs form suspension which precipitate and contaminate the water bodies [6].

12.4. Most important indicators of impact on environment:

12.4.1. Hygienic standards:

(allowable concentrations in the ambient air, water, including fishery water bodies, soil)

Ingredients	MAC _{atm. air} or SRLI _{atm.} air, mg/m ³ (LNV ¹ , hazard class)	MAC _{water} ² or APL water, mg/l, (LNV, hazard class)	MAC _{fish} ¹ or SRLI _{fish} , mg/l (LNV, hazard class)	MAC or APC of soil, mg/kg (LNV)
1,3-polybutadiene styrene	Not determined			

12.4.2. Environmental toxicity indicators:
(CL, EC for fish, Daphnia magna, algae etc.)

n.a.

12.4.3. Mobility and transformation in environment due to biodegradability and other processes (oxidation, hydrolysis etc.):

Rubber transforms in environment. Biological catabolism: has not been investigated. Rubber is extremely stable in abiotic conditions ($\tau_{1/2} > 30$ days) [6].

¹ LNV - a limiting nuisance value (tox – toxic; s-t – sanitary toxic; org – organoleptic; refl – reflex; res – resorptive; refl-res – reflex-and-resorptive; fish – fishery (changes in commercial quality of commercial aquatic organisms); gen – general sanitary).

² Water in water bodies suitable for drinking, public and domestic use

³ Water in fishery water bodies (including sea fishery)

13. Disposal considerations

13.1. Safe handling of waste that result from use, storage, transportation etc.

Follow the regulations in force, Safety precautions in waste handling are similar to precaution in handling the product see Sections 7, 8 of the MSDS).

13.2 Information on areas and methods of waste decontamination, recycling and disposal including containers (packages):

Waste that are not subject to recycling are to be transferred to containers and conveyed for disposal in smoke-free incinerators in locations approved by local environment conservation or sanitary authorities. Wastewater containing harmful substances is to be physically, chemically and biologically treated [28]. Packaging waste is to be recycled. Polyethylene packaging waste is to be buried in dumps [28]. The substance is not intended for household use.

13.3. Recommendations on disposal of waste from home use of the product:

14. Transport information

14.1 UN Number (in compliance with UN recommendations on carriage of dangerous goods (standard rules), last edition)

Not available,
the product is classified as non-hazardous [1, 16]

14.2 Shipping name

SKS-30ARKM-15/SBR-1705 TDAE (HI-AR)
synthetic rubber [1].

14.3 Types of vehicles:

The product is transported in closed vehicles by any mode in compliance with regulations applicable to a respective mode of transport [1].

14.4 Classification of dangerous goods (according to GOST 19433-88 and UN recommendations on carriage of dangerous goods)

The product is of low hazard; it is not classified according to GOST 19433-88 Standard; a hazard sign is not applied onto containers [1, 23, 25].

14.5 Shipping labeling (handling symbols: basic, additional and information messages)

It is to comply with GOST 14192-96 Standard and include «Keep away from sunlight», «Keep dry», «Limit on the number of tiers in the pile» signs [1, 31].

14.6 Packing group (according to UN recommendations on carriage of dangerous goods)

The product is non-hazardous; packing group is not regulated [18].

14.7 Information on danger of carriage by road (CAM):

It is transported by road without hazard signs (Emergency measures code (CAM)), since product is classified as non-hazardous [22].

15. Regulatory information

15.1. National regulations

15.1.1. RF Laws:

Federal Law No.7-FZ "On Environment Conservation" dated 10 January 2002;
Federal Law "On Sanitary Welfare of People" 30 March 1999. No.52-FZ dated 30 March 1999;
Federal Law No 184-FZ "On Technical Regulation" dated 27 December 2002

15.1.2. Regulations on protection of humans and environment: (certificates, Hygienic Certificates etc.)

Not subject to state registration in accordance with the requirements of the Agreement Customs Union on Sanitary Measures of December 11, 2009

15.2. International regulations

International conventions and agreements (whether or not the product is regulated by the Montreal Protocol, Stockholm Convention etc.)

It is not regulated by international conventions and agreements [36, 37]

16. Other information

16.1. Information on revision (reprinting) of the SDS (state New SDS or another status and reason for revision of the SDS)

Safety Data Sheet (SDS) supersedes the expired Safety Data Sheet of registration No. 00148889.22.29236 dated 16.10.2017.

16.2. Literature used for drawing up this Safety Data Sheet is set out below

1. TU (Technical Specifications) 38.403121-98 with amendments 1-6. Synthetic SKS-30ARKM-15 synthetic butadiene-styrene and SKMS-30ARKM-15 butadiene-methyl styrene rubbers with phenolic and amine antioxidants. Technical Specifications.
2. SK 903 Permanent process regulations for synthetic butadiene-styrene rubber production.
3. GOST 30333-2007. Chemical Safety data Sheet. General requirements.
4. ESIS (European Chemical Substances Information System).
5. GOST 31340-2013. Warning labels for chemicals. General requirements.
6. Information sheet of potentially hazardous chemical and biological substance. Ethyl benzene and 1,3-butadiene polymer. Certificate of State registration, Series No. BT 001343 of 31.03.1998.

7. Laboratory assay report No. 7882p of 29 September 2010 issued by the Accredited Laboratory Testing Center of FGUZ «Center of Hygiene and Epidemiology for Voronezh Region».
8. MAC/SRLI of harmful substances in ambient air of a work area: Hygienic Standards. HS 2.2.5.1313-03/ HS 2.2.5.2308-07. – M: Russian national registry of potentially hazardous chemical and biological substances of the Ministry for Health of the Russian Federation, 2003, 2008.
9. MAC/SRLI of pollutants in atmospheric air in populated areas: Hygienic Standards. HS 2.1.6.1338-03/ HS 2.1.6.2309-07. – M: Russian national registry of potentially hazardous chemical and biological substances of the Ministry for Health of the Russian Federation, 2003, 2008.
10. MAC/APL of chemical substances in water of bodies for domestic, drinking, and public use: Hygienic Standards. HS 2.1.5.1315-03/ HS 2.1.5.2307-07. – M: Russian national registry of potentially hazardous chemical and biological substances of the Ministry for Health of the Russian Federation, 2003, 2008.
11. SPEC 0258-047-58604719-2004 with amendments 1-9. Extender oil for synthetic rubbers normalized by polycyclic aromatic hydrocarbons, NORMAN.
12. HS 2.1.7.2041-06 «Maximum allowable concentrations (MAC) of chemical agents in soil» Hygienic Standard approved by the State Sanitary Officer-in-Chief of the Russian Federation on 19 January 2006.
13. Harmful chemical agents. Halogen and oxygen-containing organic compounds. Reference book/A.L. Bandman, G.A. Voitenko, N.V. Volkova et al.: Edited by V.A. Filov et al. – Saint-Petersburg: Chemistry, 1994.
14. Harmful substances in industry. Handbook for chemists, engineers and physicians. In three volumes. Volume I. Organic substances. Edited by N.V. Lazarev, the Merited Scientist, professor and E.N. Levina, PhD (Medicine). L., Chemistry, 1976.
15. Harmful substances in industry. Handbook for chemists, engineers and physicians. In three volumes. Volume II. Organic substances. Edited by N.V. Lazarev, the Merited Scientist, professor and E.N. Levina, PhD (Medicine). L., Chemistry, 1976.
16. Recommendations on transportation of dangerous goods. Standard regulations. 15th revised edition, UNO, New York and Geneva, 2007.
17. A.Ya. Korolchenko. Fire and explosion hazard of substances and fire-extinguishing media and facilities. Handbook in two parts. – M.: Ace. «Pozhnauka», 2004.
18. Fire safety regulations in the Russian federation (FSR 01-03) (approved in the order of the Ministry for Emergencies No. 313 of 18 June 2003).
19. Information sheet of potentially hazardous chemical and biological substance. Phenyl ethylene. Certificate of State registration, Series BT No. 000036 of 13.04. 1994.
20. Harmful substances in industry. Organic substances. Latest data of 1974 to 1984: Handbook/Edited by E.N. Levina and I.D. Gadaskina. – L.: Chemistry, 1985.
21. Personal protective equipment. Reference book. Edited by S.L. Kaminski – L.: Chemistry, 1989.
22. Regulations for carriage of dangerous goods by road (in wording of the orders of the RF Ministry of Transport dated 11.06.1999 No. 37, dated 14.10.1999 No. 77). – Saint-Petersburg: DEAN Publishers, 2002.
23. GOST 19433-88 Dangerous goods. Classification and labeling. – M.: Standards Publishing House, 1988.
24. Transport emergency cards for dangerous goods carried by railroads in CIS, Latvian Republic, Lithuanian Republic, Estonian Republic. Introduced in the resolution of the 22nd Meeting of the Council for Railway Transport, Moscow, «Transport», 2000.
25. Regulations for carriage of dangerous goods. Attachments 1 and 2 to the Agreement on International Goods Transport by Rail, RF Ministry of Railways, 1998.
26. Harmful chemical agents. Hydrocarbons. Halogenated hydrocarbons. Reference book/A.L. Bandman, G.A. Voitenko, N.V. Volkova et al.: Edited by V.A. Filov et al. – L.: Chemistry, 1990.
27. GOST 11138-78 with amendments No. 1-6 «Synthetic SKMS-30ARKM-15 butadiene-methyl styrene and SKS-30ARKM-15 butadiene-styrene rubbers. Technical Specifications.

28. «Hygienic requirements for disposal and decontamination of production and consumption wastes. SanPiN 2.1.7.1322-03 Sanitary Regulations». – M: Ministry for Health of the Russian Federation, 2003.
29. GOST 12.1.004-91. OSSS. Fire safety. General requirements. – M.: Standards Publishing House, 1991.
30. SPEC 2492-014-4815319-2000 with amendments 1-2. VS-1 antioxidant.
31. GOST 14192-96. Goods labeling. – M.: Standards Publishing House, 1998.
32. V.S. Ilichkin. Toxicity of polymeric materials combustion products. Saint-Petersburg: Chemistry, 1993.
33. A.K. Chernishev et al. «Hazard indicators of substances and materials». Multi-volume Reference Book. Edited by V.K. Gusev – M.: I.D. Sytin Foundation, 2002.
34. GOST 12.1.007-76. OSSS. Harmful substances. Classification and general requirements. – M.: Standards Publishing House, 1984.
35. Rules for protection against static electricity in chemical, petrochemical and refinery industries. Moscow, 1973.
36. Montreal Protocol on Substances that Deplete Ozone Layer. – UNO, 1989.
37. Stockholm Convention on Persistent Organic Pollutants. – UNO, 2001.
38. European Agreement concerning the International Carriage of Dangerous Goods by ROAD (ADR) (Geneva, 30 September 1957)
39. Regulations concerning the International Carriage of Dangerous Goods by Rail (RID), Attachment 1 to Exhibit B (Uniform Rules Concerning the Contract for International Carriage of Goods by Rail to the International Convention Concerning Carriage of Goods by Railway)
40. International Maritime Dangerous Goods Code (IMDG Code)
41. International Civil Aviation Organization (ICAO) – Technical Instructions for the Safe Transportation of Dangerous Goods by Air (ICAO-TI)
42. European Agreement Concerning the Transport of Dangerous Goods by Inland Waterway (AND)
43. International Convention for the Prevention of Pollution from Ships 1973 (MARPOL) (London, 2 November 1973)
44. SPEC 38.40367-87 with amendments 1-6. VS-30A stabilizer. Technical Specifications»
45. SPEC 2492-433-05742686-98 with amendments 1-3. Agidol-2 antioxidant.
46. 0258-018-48120848-2002 with amendment 1. Extract of residual selective treatment (PN-6). Technical Specifications.