



MATERIAL SAFETY DATA SHEET

STYRENE BUTADIENE RUBBER 1705

NAME:

Technical (in regulations): **CKC30APKM-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

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

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/m³ (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")

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	9003-55-	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)	9003-55-	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	64741-88-4 64742-10-5	-	14-17 14- 17	5 not determined	3 none	[10, 11, 33,

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]

5.6 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

7.1.1. Safety measures and collective protection equipment (including fire and explosion safety measures)

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]. 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].

7.1.2. Environment protection measures:

Process equipment and lines shall be tight. Prevent release of the product into water bodies and soil (refer to Section 12 of the MSDS).

7.1.3 Recommendations on safety of conveyance and transportation:

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].



7.2. REGULATIONS FOR CHEMICAL PRODUCTS' STORAGE :

7.2.1. Conditions and term of safe storage (including guaranteed shelf life)

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].

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].

7.2.3. Packing materials:

Polyethylene film, corrugated cardboard cartons, plastic and metal containers [1].

7.3. Safety measures for home storage:

The substances are not intended for home use.

8. EXPOSURE CONTROLS / PERSONAL PROTECTIVE EQUIPMENT

8.1. The parameters of work area subject to monitoring (MAC w.a., SRLI w.a.):

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.

8.2. Measures for keeping maximum allowable concentrations of harmful substances:

Periodically monitor ambient air in the production rooms. Tightness and grounding of equipment and lines; provision of ventilation [2].

8.3. Personal protective equipment:

8.3.1. General recommendations:

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].

8.3.2. Respiratory protection (types of personal respiratory protective equipment):

In normal conditions it is not required. In case of emergency wear a A2B2E2K2P3 filter gas mask [2, 21].



8.3.3. Clothing (material, type):

Protective clothing and protective footwear according to the specifications accepted in the industry (cotton overall or suit, multi-purpose gloves, leather footwear) [2, 21].

8.3.4. Personal protective equipment for home use:

The substance is not intended for household use.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Physical state: (color, odor)

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.

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

Density at 20°C: (0.94 ± 0.020) g/cm³ [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)

The product is stable under normal storage conditions.

10.2. Reactivity:

It is oxidized and hydrogenated [6].

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

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; LC50, time of exposure (h), animal)

DL₅₀ > 5000 mg/kg, i.v., rats;

CL₅₀ (mg/m³) 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 ^{water²} or APL water, mg/l, (LNV, hazard class)	MAC ^{fish¹} 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 (τ 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].

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

The substance is not intended for household use.



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]