Product name: Synthetic Butadiene-Alpha-Methyl-Styrene Rubber

Ingredients:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>%max</th>
<th>MAC*</th>
<th>Class of danger</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Butadiene 1,3 in copolymer</td>
<td>70-75</td>
<td>100</td>
<td>4</td>
</tr>
<tr>
<td>-α-methyl-styrene in copolymer (non-polymerized)</td>
<td>21-24</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>- petroleum oil PN-6</td>
<td>14-17</td>
<td>200</td>
<td>4</td>
</tr>
<tr>
<td>- antioxidant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BS-1</td>
<td>0,15-0,50</td>
<td>not established</td>
<td>4</td>
</tr>
<tr>
<td>or Santoflex</td>
<td>0,1-0,5</td>
<td>not established</td>
<td>-</td>
</tr>
<tr>
<td>or Wingstay T</td>
<td>0,7-1,2</td>
<td>not established</td>
<td>-</td>
</tr>
<tr>
<td>or Trinonylphenylphosphite</td>
<td>1,0-2,0</td>
<td>not established</td>
<td>4</td>
</tr>
</tbody>
</table>

(* max allowable concentration)

Formulae:

Empiric: \((C_4H_6)_m (C_9H_{10})_n\)

Structural: \((-CH_2 – CH=CH – CH-)_m (-CH – C -)_n\)

| CH_3 |
| C_6H_5 |

General hazard identification: The rubber contains antioxidant of amine, phenol or amino-phenol types to prevent destruction during storage, transporting and at first stages of processing. The rubber also contains non-polymerized α-methyl-styrene. At normal safe conditions these substances are not harmful.

Other information: The following antioxidants are used as stabilizers: BS-1, Trinonylphenylphosphite, Santoflex, Wingstay T. As for the influence upon human organism these antioxidants are not dangerous. The rubber is available in the form of briquettes weighing 30±1 kg.

Producer/Supplier: “TogliattiKauchuk”

Address: 8, Novozavodskaya str., Togliatti, Samara region, 445007, Russia.

Tel/Fax: 007-8482- 22 14 41, 007-8482- 22 49 49
3. Hazard Identification

3.1. Kinds of influence

3.1.1. Synthetic Butadiene-a-Methyl-Styrene Rubber is a substance of little danger. At elevated temperatures and when processed the rubber has a weak odour of residual monomer -alpha-methyl-styrene. The content of non-polymerized monomer in the rubber is 0,05% max, and it is not harmful when industrial hygiene is observed.

The antioxidants are dangerous only when the rubber is produced. In case of fire polymer combustion products - carbon oxides, carbon black may be dangerous.

3.1.2. Effect on human organism

Inhalation, skin contact (in a melted state), eyes.

3.1.3. Affected organs and tissues

The rubber is not poisonous and it causes no pathological changes. At elevated temperature the products of destruction, such as butadiene, alpha-methyl-styrene, may affect nervous system, liver, blood, kidneys.

3.1.4. Manifestation of influence

- skin contact
  Direct contact of the rubber with unprotected skin causes no pathological changes. Hot product may cause burns.

- eye contact
  The rubber may scratch eyeballs.

- ingestion
  Sickness.

- inhalation
  The rubber is a product of low volatility, it is not irritant. At elevated temperatures butadiene and alpha-methyl-styrene may be isolated, which are irritant for eyes and respiratory system.

- in case of fire
  Skin burns and injures.

3.2. Ecological information

3.2.1. General description

The rubber has no environmental hazard. Products of destruction (α-methyl-styrene, butadiene) may contaminate air, water, soil.

3.2.2. Ways of influence upon environment

If the rules of storage and transportation are not violated.

3.2.3. Indications observed

Water and soil contamination. Degradation products may change odour and taste of water and air.

3.2.4. Hygienic norms

Maximum Allowable Concentrations (MAC) of the rubber for production premises, air, water reservoirs, fishery soil are not established.

Class of danger(prod.premises) –4
### Decomposition products:

<table>
<thead>
<tr>
<th></th>
<th>Butadiene 1.3</th>
<th>α-methyl-styrene</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAC&lt;sub&gt;prod.premises&lt;/sub&gt; mg/m&lt;sup&gt;3&lt;/sup&gt;</td>
<td>100</td>
<td>5</td>
</tr>
<tr>
<td>Class of danger</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>MAC&lt;sub&gt;air&lt;/sub&gt; mg/ m&lt;sup&gt;3&lt;/sup&gt;</td>
<td>3/1</td>
<td>0.04</td>
</tr>
<tr>
<td>Class of danger</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>MAC&lt;sub&gt;water&lt;/sub&gt; mg/l</td>
<td>0.05</td>
<td>0.1</td>
</tr>
<tr>
<td>Class of danger</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>MAC&lt;sub&gt;fishey&lt;/sub&gt; mg/l</td>
<td>not established</td>
<td>not established</td>
</tr>
<tr>
<td>Class of danger</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MAC&lt;sub&gt;soil&lt;/sub&gt; mg/kg</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### 4. First Aid Measures

#### 4.1. Inhalation

Not possible in normal conditions. Poisoning with decomposition products- fresh air, warmth.

In case of fainting, put victim horizontally with lowered head. Give ammonia to breath in. In case of breath stop- artificial breathing. Call ambulance.

#### 4.2. Skin contact

Skin contact with the rubber is not dangerous. Hot rubber may cause burns- in this case wash the skin with plenty of cold water, apply aseptic bandage. Call ambulance if necessary.

#### 4.3. Eye contact

Remove from eye, wash with plenty of water.

#### 4.4. Ingestion

Drink plenty of water.

#### 4.5. Personal protection measures

First aid kit.

### 5. Fire-Fighting Measures

#### 5.1. General description

Inflammable product. Burns when brought into fire source.

#### 5.2. Fire danger indices

- Spontaneous ignition tº: 336ºC
- Flash point: 285ºC

#### 5.3. Thermal destruction products

Carbon oxides

#### 5.4. Fire extinguishing media

- **Small fire extinguishing media**
  - Chemical powders, carbonic acid fire extinguisher, asbestos fabric, sand, earth.

- **Fire extinguishing media**
  - Air-mechanical and chemical foams, water spray, water steam.

- **Personal protection measures**
  - Protective fire fighting clothing, breathing equipment.
6. Emergency Situation Prevention Measures

6.1. Emergency situation prevention measures

6.1.1. General recommendations
Pressurized, hermetically sealed grounded production equipment in order to avoid accumulation of static electricity. Ventilation of production premises.

6.1.2. Recommendations:
- fire fighting
  Observe fire fighting measures.
- handling and storage
  Avoid inhalation of hot rubber fumes. Store in paper bags and containers in special warehouses, protected from open fire.
- personal protection measures
  Pressurized hermetically sealed equipment and communications, ventilation of production premises, local suck off means, automatic machinery. Sound and light signaling, indicators of dangerously explosive concentrations.
- environmental protection
  Follow environmental protection recommendations: hermetically sealed equipment, prohibited sewage into natural water reservoirs.
- decontamination/waste disposal
  Rubber wastes are processed. (see section 13)
- transportation
  Original package, all means of transportation.

6.2. Emergency situation prevention measures

6.2.1. General recommendations
Isolation of dangerous zone (distance-50 m). Correction of the distance according to chemical reconnaissance reports. Withdraw people from dangerous zone. Wear protective clothing.

6.2.2. Spillage
Collect briquettes of rubber into a pile.

6.2.3. In case of fire
Call fire brigade, withdraw people from fire zone. Before arrival of fire brigade begin putting out the fire with first fire fighting measures (asbestos fabric, foam and carbon acidic fire fighters)

6.2.4. Personal protective equipment
Special protective clothing, breathing equipment.

6.2.5. Emergency situation liquidation
After liquidation, measure MAC of carbon oxides, bury the burnt rubber in an appropriate, safe place.

7. Storage and Handling Regulations

7.1. Safety measures
Ventilation of production premises. Hermetically sealed grounded equipment, protected from fire and explosion. Sound and light signaling.
7.2. Conditions/terms of safe storage

The rubber is packed in wooden or metal containers and stored in piles containing 3-4 palettes. The rubber packed in paper bags is stored in piles no more than 1,2 meters high.

The rubber must be kept in premises at temperature max 40ºC. Guaranteed storage time – 1 year.

7.3. Special storage conditions and incompatible products

Aromatic solvents, chlorine derivatives. Avoid open fire.

7.4. Recommended materials for packing

Polyethylene film, paper bags, metal and wooden palettes.

7.5. Transport recommendations

Observe rules of transportation. Transport in covered means of transport, avoid heat.

Rail way cars - 60 tons,
Automobiles- according to capacity.

8. Personal Protection Measures

8.1. Parameters of working zone subject to obligatory control

MAC\textsubscript{prod.premises} for the rubber is not established. Production and emergency control of MAC is determined for butadiene and alpha-methyl-styrene in compliance with sanitary regulations.

\begin{align*}
\text{MAC}_{\text{prod.premises}}, \text{ mg/m}^3 & \quad \text{Butadiene-1,3} \\
100 & \quad \text{a-methyl-styrene} \\
5 & \quad
\end{align*}

8.2. Measures of control of harmful components content

Hermetically sealed, grounded equipment and communications, good ventilation system, fire-protected machinery.

8.3. Personal protection measures

8.3.1. General recommendations

Strict observance of industrial hygiene and sanitary norms. Prophylactic medical examination of personnel.

8.3.2. Respiratory protection

Not needed in normal conditions. In emergency situations and during repair works inside polymerizers use filter gas masks.

8.3.3. Eye protection

Protective glasses.

8.3.4. Hand protection

Protective gloves.

8.3.5. Protective clothing

Special cotton clothing, leather boots.

9. Physical and Chemical Properties

Appearance

Rubber-like material. Colour depends on the antioxidant used.
Odour of residual α-methyl-styrene  Weak.
Mooney viscosity, MB1+4 (100°C)  36-54
Solubility in water  Not soluble.
Weight losses at drying, % max  0.4
Mass content of non-polymerized α-methyl-styrene, % max  0.05

10. Stability and Reactivity

10.1. Stability  Stable
10.2. Reactivity  Oxidizing, hydrating capacity
10.3. Conditions causing hazardous changes  Burning of product
10.4. Hazardous decomposition products  Carbon oxides
10.5. Incompatibility with other products  Aromatic solvents and chlorine derivatives

11. Toxicity

11.1. Evaluation of hazard (toxicity) degree  Synthetic butadiene alpha-methyl-styrene rubber is not a hazardous product.
11.2. Acute toxicity  Not studied for the rubber.

Information on decomposition products:

<table>
<thead>
<tr>
<th>Decomposition Product</th>
<th>DL₅₀ (mg/kg)</th>
<th>CL₅₀ (mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>α-methyl-styrene</td>
<td>4900 – mice</td>
<td>270 000 - mice</td>
</tr>
<tr>
<td></td>
<td>5480 - rats</td>
<td>285 000 - rats</td>
</tr>
<tr>
<td>Butadiene-1,3</td>
<td></td>
<td>4501 - man</td>
</tr>
</tbody>
</table>

11.3. Hazards of direct contact with the product  The rubber is not irritant or toxic.
Decomposition products (α-methyl-styrene) irritate eyes, skin, respiratory system.

11.4. Influence on reproductive function, carcinogenicity, cumulativeness  Not studied.
Decomposition products: Butadiene –1,3 is carcinogenic (Group 2A)
12. Ecological Information

12.1. General characteristic
At normal conditions the rubber does not contaminate air, water reservoirs, soil.

Alpha-methyl-styrene.
Practical perception threshold:
Odour of water –0,2 mg/l,
taste of water- 0,14 g/l.

12.2. Sanitary norms
Not established for the rubber. Sanitary norms are given for products of thermal decomposition.

<table>
<thead>
<tr>
<th></th>
<th>Butadiene-1,3</th>
<th>a-methyl-styrene</th>
</tr>
</thead>
<tbody>
<tr>
<td>MACair, mg/l</td>
<td>3/1</td>
<td>0.04</td>
</tr>
<tr>
<td>Class of danger</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>MACwater, mg/l</td>
<td>0.05</td>
<td>0.1</td>
</tr>
<tr>
<td>Class of danger</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>MACfishery, mg/l</td>
<td>not established</td>
<td>not established</td>
</tr>
<tr>
<td>Class of danger</td>
<td>not established</td>
<td>not established</td>
</tr>
<tr>
<td>MACsoil, mg/kg</td>
<td>not established</td>
<td>not established</td>
</tr>
</tbody>
</table>

12.3. Acute toxicity for water reservoirs
Not studied for the rubber.
for a-methyl-styrene – not studied
for butadiene 1,3-71,5 mg/l (toxic concentration for fish)

12.4. Transformation in environment and products of transformation
The rubber does not transform. At elevated temperatures may contaminate the environment.

12.5. Biodegradation
Not studied for the rubber.
a-methyl-styrene- 1.57 mg 0/dm3
1.4 mg 0/dm3
3.1 mg 0/dm3
Butadiene 1.3- not studied

13. Waste Disposal

13.1. Safety measures
Rubber wastes should be processed in production premises with ventilation system. The rubber that is not suitable for further processing must be buried or burned in an appropriate, safe place.

13.2. Package treatment (neutralization, possibility of re-use)
Wooden containers, paper bags are used only once.
Metal containers may be re-used.

14. Transport Regulations

14.1. Transport name
Synthetic butadiene- alpha-methyl-styrene rubber
SKMS-30ARKM-15 or SKMS-30ARKM-15P or SBR-1500 or SBR-1502 or BSK-1500A or SBR-1712 or wastes.

14.2. Transport means
Railway, automobile
14.3. Safety measures  
Transportation should be effected in covered transport means according to the transport regulations. Transport marking with the signs “Keep dry”, “Avoid heating”.

14.4. Hazards identification  
Class 9, sub-class 9.1.  
Product code No.9133  
Emergency Card No. 902