1. Identification of preparation and of the company:

**Product name**
BORGO TRUCK car radiator fluid

**Product use**
The BORYGO TRUCK car radiator fluid can be applied to the internal combustion engine cooling system.

**Manufacturer**
Boryszew ERG S. A.
ul. 15 Sierpnia 106; 96-500 Sochaczew
tel. 46 863 02 01
fax. 46 863 00 96
www.boryszewerg.com.pl

**Responsible person**
certyfikacja@boryszewerg.com.pl

**Emergency telephone number**
46 863 02 01 ext. number 222 Mon.-Fri. operating hours: (7.00-17.00) or 112, 999.

2. Hazards identification:

According to risk calculation the product is not classified as hazardous:

- **Xn** - Harmful
- **R 22** – Harmful if swallowed

Individual packages must be provided with the information about the hazards – see point 15.

**Other information:**
Interaction with strong oxidants causes explosion. The preparation is not classified as harmful for the environment.

3. Composition/ information on ingredients:

*hazardous substances:

<table>
<thead>
<tr>
<th>Name of substance</th>
<th>Concentration [%]</th>
<th>CAS Number</th>
<th>EC Number</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylene glycol (1,2-ethanediol);</td>
<td>49</td>
<td>107-21-1</td>
<td>203-473-3</td>
<td>Xn; R 22</td>
</tr>
<tr>
<td>Disodium tetaborate, anhydrous borax</td>
<td>&lt; 1</td>
<td>1330-43-4</td>
<td>215-540-4</td>
<td>T; Rep. Kat.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>R 60-61</td>
</tr>
</tbody>
</table>

* The substance mentioned lacks the identification number currently, according to the REACH Regulation, it is subjected to the transitional period.

4. First-aid measures:

**Poisoning symptoms:**

Ethylene glycol induces narcosis. It causes the damage to central nervous system. First symptoms are similar to those occurring during alcohol intoxication: headache and vertigo, sleepiness, irritation of the digestive track, vomiting, diarrhoea. In case of more serious injury the loss of consciousness, the pupils unreactive to light, rapid heartbeat and breathing symptoms could be observed. Metabolic acidosis occurs in every case of ethylene glycol poisoning.

**General information**
If any of the symptoms occur seek medical attention immediately. Show physician product label, or packaging.
Inhalation:
Remove to fresh air. Keep the victim in the mid sitting position. If breathing is difficult, provide oxygen. Seek medical attention if symptoms persist.

Skin Contact:
Remove all contaminated clothing. Clean the skin with water and soap. Seek medical attention if symptoms persist.

Eye Contact:
Check for and remove contact lenses. Keeping victim’s eyes opened flush them with water for at least 15 minutes. Seek medical attention if symptoms persist.

Ingestion:
Induce vomiting. Give victim ethyl alcohol, 40% (100g of vodka). If victim is unconscious place victim in a stable side position, check breathing and apply artificial respiration if necessary. In case of difficult breathing, provide oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.
Do not give any fluid and induce vomiting if the victim is unconscious.

Notes to physician:
The ethylene glycol poisoning treatment must include: stomach pump during two hours from the act of poisoning, the cardiovascular and respiratory disorders treatment, intravenous administration of ethyl alcohol (ethyl alcohol 5-15 % and glucose 5%). In case of severe acute poisoning, homodialysis and forced diuresis may be required.

5. Fire fighting measures:

Fire extinguishing media:
- CO₂,
- ABC dry chemical,
- BC dry chemical,
- foam.

Inappropriate fire extinguishing media:
Straight streams of water.

Unusual fire and explosion hazards:
The product is not classified as a fire hazard. Glycol vapour is heavier than air. The vapour/air mixture is explosive. The products of combustion may include: carbon oxide, carbon dioxide, soot and water. Aldehyde and ketone as the glycol decay products can be exhaled during the fire. Reduce the alcohol vapour using a fog stream of water.

Special fire fighting procedure:
Small fire: Use the CO₂, ABC or BC dry chemical fire extinguisher.
Large fire: Use a foam fire extinguisher or a fog stream of water.

DO NOT USE A SOLID STREAM OF WATER. It may cause spreading and increase fire intensity. Cool fire expose containers with water spray. Remove containers from fire area if it can be done without risk.

Special fire fighting equipment:
Wear self-contained breathing apparatus and high temperature protective clothing. Use explosion-proof apparatus.

Additional information:
Make bystanders leave fire area. Cool fire expose containers with water spray and remove them from fire area if it can be done without risk. Prevent contaminated water and extinguishing agents from entering waterways.
6. Accidental release measures:

**Personal precautions:**
Make bystanders leave hazard area. Ensure good ventilation. Wear protective clothing.

**Other precautions:**
Wear appropriate protective clothing and respiratory protection, chemical goggles and CE compliant protective gloves.

**Environmental precautions:**
Stop leak if possible without personal risk. Remove all sources of ignition. Prevent the product from entering waterways, surface waters, ground waters. Notify proper local authorities if big quantities of the product were released or environmental contamination occurred.

**Procedures for cleaning/removing:**
Embark and pump over into marked containers big quantities of the released product. Small amounts: take up with non-flammable absorbent material and collect in the marked, tightly sealed container for disposal. Rinse off the affected area with water. Place damaged packaging In a container for disposal. Remove as recommended in p.13.

7. Handling and storage:

**Handling**
Observe industrial safety and health regulations related to dealing with chemicals.
Use in well-ventilated place
Wear suitable protective clothing
Do not eat, drink or smoke while working with the product
Keep away from fire and sources of ignition.

**Storage**
Store in tightly sealed, suitably marked polyethylene containers.
Store in a well-ventilated place.
Do not allow smoking, eating or using open fire in the storage place.
Prevent from contact with flammable substances or oxidants.
Do not expose to direct sunrays. The product should not be subjected to temperature higher than 40°C.
When spilled, it may cause slipping.

8. Exposure control/personal protection:

**Additional recommendations regarding civil engineering system:**
Provide adequate ventilation in storage rooms and workplaces. Other requirements – see p. 7.

**Exposure control parameters:**
Indicative Occupational Exposure Limit Value

**Ethylene Glycol**
Limit value (eight hours) – 52 mg/m³  Limit value (short term) – 104 mg/m³

**Technical measures:**
Ensure local exhaust ventilation. Equip workplace with shower and eyewash stations.
Respiration apparatus should be worn when vapours/fumes occur.
Personal protective equipment:
Wash hands after working with the product and before each break in work. Keep away from food, drink or feed. Immediately change contaminated clothing. Do not eat, drink or smoke while working with the product.

Hand protection:
Wear protective gloves, e.g. nitrate, rubber, pvc. Test the condition of gloves during work. Gloves should be impermeable to the product. The penetration time, the exact break through time and degradation of glove material should be taken into consideration. Gloves manufacturer is demanded to inform about the exact break through time, which have to be observed.

Eye protection:
Goggles.

Skin protection:
Approved clothing, rubber overall and rubber boots.

9. Physical and chemical properties:

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>clear, homogeneous liquid</td>
</tr>
<tr>
<td>Colour</td>
<td>blue</td>
</tr>
<tr>
<td>Odour</td>
<td>slight</td>
</tr>
<tr>
<td>pH</td>
<td>7,5 - 9,</td>
</tr>
<tr>
<td>Crystallization point (°C)</td>
<td>max - 35</td>
</tr>
<tr>
<td>Boiling point (°C), min.</td>
<td>107,5</td>
</tr>
<tr>
<td>Melting point (°C)</td>
<td>data not available</td>
</tr>
<tr>
<td>Flammable</td>
<td>non-flammable</td>
</tr>
<tr>
<td>Density, min.</td>
<td>1,070 g/cm³ (20°C)</td>
</tr>
<tr>
<td>Solubility in water</td>
<td>all-water soluble</td>
</tr>
<tr>
<td>Other solvents</td>
<td>aliphatic alcohols, aldehydes, ketones, acetic acid, pyridine</td>
</tr>
<tr>
<td>Vapour pressure*</td>
<td>0,1 kPa</td>
</tr>
<tr>
<td>Ignition temperature (°C) *</td>
<td>115</td>
</tr>
<tr>
<td>Explosive limits*</td>
<td>lower limit 3,2%</td>
</tr>
<tr>
<td></td>
<td>upper limit 53%</td>
</tr>
<tr>
<td>Auto ignition temperature (°C)*</td>
<td>&gt; 400</td>
</tr>
<tr>
<td>Oxidising parameters</td>
<td>none</td>
</tr>
<tr>
<td>Thermal decomposition (°C)*</td>
<td>approx. 500-600</td>
</tr>
<tr>
<td>Vapour density relative to air:</td>
<td>2,14</td>
</tr>
<tr>
<td>Explosiveness in mixture with air*</td>
<td>1,8-12,8%</td>
</tr>
<tr>
<td>Vapour density (20°C)</td>
<td>0,15 g/m³</td>
</tr>
<tr>
<td>Viscosity (20°C)*</td>
<td>21 mPa-s</td>
</tr>
<tr>
<td>Vapour pressure (20°C)*</td>
<td>0,06 hPa</td>
</tr>
<tr>
<td>Partition coefficient logP(w/o)*</td>
<td>-1,36</td>
</tr>
</tbody>
</table>

* monoethylene glycol 100 %
10. Stability and Reactivity:

**Stability:**
The product remains stable under recommended use and storage conditions.

**Substances to be avoided:**
Strong oxidants.

**Conditions to be avoided:**
Contact with open flame and sources of ignition.

11. Toxicological information:

Acute toxicity (glycol): Odour detection limit - 65 mg/m³

- $LD_{50}$ (ingestion, rat) 4700 mg/kg
- $LD_{50}$ (ingestion, mouse) 5500 mg/kg
- $LD_{50}$ (skin, rabbit) 9530 mg/kg
- $LD_{50}$ (orally, human) 786 mg/kg
- $LC_{50}$ (inhalation, rat) 10876 mg/m³
- TCLO (inhalation, human) 10000 mg/m³

The preparation is not classified as cancer causing, producing mutagenic effects, or influencing the reproductive system (CMR).

**Health hazards:**

**After inhalation:**
Coughing, sneezing and shortness of breath occur. Symptoms similar to those occurring after swallowing of the product may occur. Inhaled poisoning lead to lung disease or respiratory insufficiency.

**Skin:**
It may cause reddening and irritation of skin.

**After eye-contact:**
It may cause the eye irritation. Absorbing ethylene glycol by skin may effect in symptoms similar to those occurring after swallowing of the product.

**After swallowing:**

**Lethal dose for human - 100 g.**
Diarrhoea, metabolic acidosis may occur. First symptoms are similar to those occurring during alcohol intoxication. Subsequently, the period of short improvement can be observed. Usually the period of short improvement is followed by coma and shortness of breath. Symptoms of ingested poisoning include: headache and vertigo, sleepiness, irritation of gastrointestinal tract, vomiting and diarrhea. In case of acute poisoning, symptoms include also: loss of consciousness, delirium and coma. Renal insufficiency may occur from 6 to 12 hours after poisoning. In case of low level of contamination it may cause irritation of nasal and oral tracts and headache.
12. Ecological information:

Environmental toxicity (glycol):

- Crustacea *Daphnia magna*: EC\textsubscript{50} \(\leq 2500\) mg/l
- Fish *Salmo gaidneri*: LC\textsubscript{50}/96 hours: 18500 mg/l
- Algae: *Microcystis aeruginosa*: 2000 mg/l/8d, *Scenedesmus quadricauda*: > 10000 mg/l/7d
- Bacterium: *Pseudomonas putid* > 10000 mg/l 16h

13. Disposal Considerations:

Do not empty into sewage system. Do not allow entering into surface water or ground water. Do not burn used containers.

Waste classification:

- 16 01 14* - Antifreeze fluids containing dangerous substances.

Dealing with containers:

- Multiple-use containers are recommended. Forward used containers to local recycling centres.

14. Transport information:

**ADR/ADNR/RID Road & Rail Transport, IATA, MDG Air & Sea Transport:**

The product is not classified as dangerous goods.

15. Regulatory information:

Label include the following:

- identification and classification of hazardous substance,
- identification of preparation manufacturer (name of company, address, telephone number),
- pictogram (black symbol on a yellowish-orange background and signal words),
- quantity of preparation in container (amount, volume),
- perceptible warning of risk/hazard.

Risk phrases:

- **R 22** - Harmful if swallowed

Safety phrases:

- **S 2** - Keep out of the reach of children
- **S 29** - Do not empty into drains
- **S 36** - Wear suitable protective clothing
- **S 37** - Wear suitable gloves
- **S 46** - If swallowed, seek medical advice immediately and show this container or label

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**Risk phrases:**

- **Xn** - Harmful
- **Contains monoethylene glycol**
Legislation:


COMMISSION DIRECTIVE 2000/39/EC of 8 June 2000, establishing a first list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work,


16. Other information:

Risk phrases referring to the preparation ingredients – see p. 3:

R 22 - Harmful if swallowed
R 60 - May impair fertility
R 61 - May cause harm to the unborn child