SAFETY DATA SHEET
BORYGO PLANE GA

Section 1. Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier
Borygo Plane GA

1.2. Relevant identified uses of the substance or mixture and uses advised against
General use: Aircraft de-icing liquid.

1.3. Details of the supplier of the safety data sheet
Boryszew S.A.
ERG Boryszew Branch in Sochaczew
ul. 15 Sierpnia 106; 96-500 Sochaczew
Tel. 46 863 02 01
Fax. 46 863 00 96
website: boryszewerg.com.pl
email: certyfikacja@boryszewerg.com.pl

1.4 Emergency telephone number
112 (general emergency telephone number)

Section 2. Hazards identification

2.1. Classification of the substance or mixture

<table>
<thead>
<tr>
<th>Name of the mixture</th>
<th>Hazard symbols according to Regulation (EC) 1272/2008</th>
</tr>
</thead>
</table>
| Borygo Plane GA     | Acute Tox.4, H 302
                      | STOT RE 2, H 373

Hazard for human health or life:
Harmful product. Harmful if swallowed.

Environmental hazards:
The product is not classified as hazardous for the environment.

Other hazards:
None

2.2. Label elements
According to the Regulation (EC) 1272/2008:

Pictograms:
Contains: monoethylene glycol

H Phrases: H 302 - Harmful if swallowed.
          H 373 - May cause damage to organs <kidney> through prolonged or repeated exposure

P Phrases: P 201 – Obtain special instructions before use.
          P 270 – Do no eat, drink or smoke when using this product.
          P 301+ P 312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
          P 314 – Get medical advice/attention if you feel unwell.
          P 404 - Store in a closed container.
          P 501 - Dispose of contents/container to selective waste collection
2.3. Other hazards
No information on meeting the PBT or vPvB criteria according to Annex XIII of the REACH Regulation. Relevant studies were not conducted.

Prolonged exposure or high concentrations of vapours or mists may cause minor respiratory irritation and headaches or dizziness, nausea, drowsiness, central nervous system disorders, involuntary eye movement, coma.

Contact with skin: skin burns and irritation.

Eye contamination in conditions of prolonged contact causes moderate eye irritation.

Flammable product, causes the risk of fire. May be explosive with strong oxidizing agents.

Section 3. Composition/information on ingredients

3.1. Substances
Not applicable

3.2. Mixtures

<table>
<thead>
<tr>
<th>Substance name</th>
<th>Concentration range [%]</th>
<th>CAS Number:</th>
<th>EC Number:</th>
<th>Hazard symbols</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylene glycol*</td>
<td>85</td>
<td>107-21-1</td>
<td>203-473-3</td>
<td>Acute Tox. 4: H302  STOT Rep. Exp.2: H373</td>
</tr>
<tr>
<td>Propan-2-ol**</td>
<td>5</td>
<td>67-63-0</td>
<td>200-661-7</td>
<td>Flam.Liq.2; H225 Eye irrit.2; H 319 STOT SE 3; H336</td>
</tr>
</tbody>
</table>

* Reg.no: 01-2119456816-28-XXXX  **Reg.no: 01-2119457558-25-xxxx  ** see section 16

Section 4. First-aid measures

4.1. Description of first aid measures

Swallowing: If swallowed, induce vomiting, give approximately 100 ml of vodka (40%) or of any other similar alcoholic drink. Call for medical help immediately.

Inhalation: In case of breathing difficulties give oxygen. Move the affected person to fresh air.

Skin: Wash immediately with plenty of soapy water.

Eye: Wash eyes with plenty of running water with eyelids wide open.

4.2. Most important symptoms and effects, both acute and delayed

At the first stage of intoxication after ingestion symptoms similar to alcohol intoxication occur: agitation, slurred speech, impaired balance and coordination of movements, headaches and dizziness, drowsiness, etc., followed by nausea and vomiting, diarrhea. Breathing disorders may occur. In case of severe intoxication, blood circulation disorders, increased heart beat, drop in blood pressure, loss of consciousness, coma with seizures, collapse. Possible death due to pulmonary arrest.

Lethal dose for humans is 100 ml.

Contact with skin: skin burns and irritation. Contamination of eyes causes moderate eye irritation with prolonged contact.

Effect of chronic exposure includes severe skin, eye, respiratory irritation. May cause kidney and liver damage and disorders, possible brain damage.

4.3. Indication of any immediate medical attention and special treatment needed

To an unconscious person do not give anything orally and do not induce vomiting. Show this material safety data sheet, product label or packaging to the help providing medical personnel.

Treatment for ethylene glycol intoxication, depending on the condition of the injured person shall include:

Gastric lavage within up to 2 hours from ingestion, treatment of cardiopulmonary disorders, administration of ethylene alcohol (intravenously by drip infusion of 5-15% ethylene alcohol solution in 5% glucose).

In case of severe intoxication apply hemodialysis, diuresis.

(data in section 4 apply to 100% ethylene glycol)
Section 5. Firefighting measures

5.1. Extinguishing media
Suitable extinguishing media: carbon dioxide, dry powders, alcohol-resistant foams, water.
Unsuitable extinguishing media: not known.

5.2. Special hazards arising from the substance or mixture
Flammable product. In fire carbon oxides are produced. Avoid inhaling of combustion product as they pose a threat to health.

5.3. Advice for firefighters
Alert everyone in the vicinity of the incident. Evacuate all persons not taking part in fire-fighting action from the danger area, if necessary, call the rescue teams. Persons participating in fire fighting activities shall be trained, wear protective clothing and a self-contained breathing apparatus.

Section 6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Avoid direct contact with the releasing substance. Do not inhale vapours. Provide adequate ventilation.

6.2. Environmental precautions
Do not allow the product to enter the sewage and drainage systems, and also the ground and surface water or soil.

6.3. Methods and material for containment and cleaning up
Stop or limit the leakage and isolate the contaminated area. Cover with a liquid absorbing material, e.g. sand, earth, vermiculite, diatomaceous earth, sawdust. Mechanically collect to a correctly labelled, tight container and submit for disposal. Wash off the remains with plenty of water.

6.4. References to other sections
Personal protective measures - see section 8. Waste handling - see section 13.

Section 7. Handling and storage

7.1. Precautions for safe handling
Follow general occupational health and safety regulations for chemicals handling and good manufacturing practice; strictly adhere to the established procedures and all manufacturer's recommendations. Use in an appropriately ventilated place. Wear cotton protective clothing, rubber-coated front apron, safety glasses, protective gloves. Do not eat, drink or smoke when using the substance. Avoid contact with fire and sources of ignition. Do not allow the released liquid to enter drains.

7.2. Conditions for safe storage, including any incompatibilities
Store only in sealed, properly labelled containers in a cool, ventilated room. Store in HDPE containers or tanks. Protect the product from moisture from the air and sunlight. Store at <40°C. Storage period: up to 12 months. Prohibit smoking, using open fire and eating in the place of product storage.

7.3. Special end use(s)
No data available on special uses.

Section 8. Exposure controls/personal protection

8.1. Control parameters
Maximum acceptable concentration (mg/m³) in the workplace effective in Poland:

<table>
<thead>
<tr>
<th>Specifications</th>
<th>MAC</th>
<th>STEL</th>
<th>TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylene glycol</td>
<td>15 mg/m³</td>
<td>50 mg/m³</td>
<td>-</td>
</tr>
</tbody>
</table>

CAS No.: 107-21-1
Occupational exposure indicators effective in the EU:

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Acceptable values:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8-hour</td>
</tr>
<tr>
<td></td>
<td>mg/m³</td>
</tr>
<tr>
<td>Ethylene glycol</td>
<td>52</td>
</tr>
</tbody>
</table>

Possibility of a significant uptake of the compound through the skin.

**DNEL**
- personnel, long-term exposure through the skin: 106 mg/kg bw/day
- personnel, long-term exposure by inhalation: 35 mg/m³,
- general population including consumer, long-term exposure by skin: 53 mg/kg bw/day
- general population including consumer, long-term exposure by inhalation: 7 mg/m³,

**PNEC**
- freshwater environment: 10 mg/l
- seawater environment: 1 mg/l
- freshwater environment: 10 mg/l
- sludge (freshwater): 20.9 mg/kg
- soil: 1.53 mg/kg
- wastewater treatment plant environment: 199 mg/l
(values for 100% ethylene glycol)

**8.2. Exposure control**
Avoid direct product contact with eyes or skin. Observe general precautionary measures required when using chemicals.

Skin protection: Appropriate protective clothing, rubber-coated front apron and boots.

Eye protection: In case of possible exposure to product vapours or sprays wear goggle type protective glasses.

Respiratory Protection: Respiratory tract protection equipment in case of insufficient ventilation or during long-term exposure. Effective ventilation in the workplace is recommended (general, local).

**Section 9. Physical and chemical properties**

9.1. Information on basic physical and chemical properties

- **Appearance**: homogeneous liquid, colourless to light straw-yellow
- **Odour**: faint or odourless
- **odour threshold**: not determined
- **pH**: 6.0 - 7.5 (at 20°C diluted with water by volume 1:1)
- **freezing point**: does not freeze in - 40°C
- **initial boiling point**: not determined
- **boiling temperature range**: above 120 °C
- **ignition temperature**: above 85 °C
- **ignition point**: not determined
- **auto-ignition temperature**: 398°C (for 100% ethylene glycol)
- **evaporation rate**: not determined
- **flammability (solid, gas)**: not applicable - the substance is a liquid
- **Explosion limits**: not determined
- **vapour buoyancy**: not determined
- **vapour density to air**: not determined
- **density**: 1,092 - 1,097 g/cm³ (at 15,5°C)
- **solubility**: water - complete

Other solvents - alcohol, acetone, ether
insoluble in - aliphatic hydrocarbons (hexane, extraction petroleum)
SAFETY DATA SHEET  
BORYGO PLANE GA

This Material Safety Data Sheet according to 1907/2006/EC (REACH) & 1272/2008 (CLP) & 830/2015

and carbon tetrachloride (for 100% ethylene glycol)

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>partition coefficient: n-octanol/water:</td>
<td>not determined</td>
</tr>
<tr>
<td>decomposition temperature</td>
<td>not determined</td>
</tr>
<tr>
<td>viscosity</td>
<td>11 - 13 mm²/s (at 20°C)</td>
</tr>
<tr>
<td>explosive properties</td>
<td>not determined</td>
</tr>
<tr>
<td>oxidising properties</td>
<td>not determined</td>
</tr>
</tbody>
</table>

9.2. Other information
No data available

Section 10. Stability and reactivity

10.1. Reactivity
Unknown in the recommended usage conditions.

10.2. Chemical stability
Product stable under normal conditions of storage and use.

10.3. Possibility of hazardous reactions
The product ignites on contact with chromium trioxide, potassium permanganate, sodium peroxide at room temperature; with ammonium dichromate, silver chlorate, uranyl nitrate at 100°C.

10.4. Conditions to avoid
Contact with sources of heat, ignition. Humidity from the air.

10.5. Incompatible materials
Strong acids (chlorosulphonic acid, sulphuric acid, oleum, perchloric acid), strong bases (sodium hydroxide), dimethyl terephthalate, phosphorus pentasulphide, strong oxidizers.

10.6. Hazardous decomposition products
Unknown in the recommended usage conditions.
(data in section 10 apply to 100 % ethylene glycol)

Section 11. Toxicological information

11.1. Information on toxicological effects
ATE mix= 588,30

Acute Toxicity
Oral (rat) LD₅₀ < 7,112 mg/kg
Inhalation (rat, 6h) LC₅₀ > 2.5 mg/l
After application to the skin (mouse) LD₅₀ > 3,500 mg/kg

Repeated dose toxicity
Oral (rat) NOAEL = 150 mg/kg bw/day
After application to the skin (mouse) NOAEL approx. 3,549 mg/kg bw/day

Corrosive/irritant to skin: non-irritant.
Serious eye damage/irritant to eyes: corrosive.
Sensitising to the respiratory tract or skin:
Mutagenicity to reproductive cells: shows no genotoxicity In vitro or In vivo.
Carcinogenicity: long-term toxicity studies conducted on rodents have shown that this substance is not carcinogenic.
Harmful effects on reproduction: no reproductive toxicity.
Teratogenicity: no developmental toxicity.

Toxicity to organs or systems – repeated exposure:
It is suspected that during repeated oral exposure to the above product oxalate nephrosis may occur. Target
organ may be the kidneys.

Delayed, direct and chronic effects of short and prolonged exposure:

Effects of acute exposure:

Inhalation: due to the low vapour pressure the product has a low inhalation toxicity. Prolonged exposure or high concentrations of vapours or mists may cause minor respiratory irritation and headaches or dizziness, nausea, drowsiness, vomiting, central nervous system disorders, involuntary eye movement, coma.

Ingestion: causes irritation of the gastrointestinal tract, central nervous system disorders, liver and kidney damage.

At the first stage of intoxication after ingestion symptoms similar to alcohol intoxication occur: agitation, slurred speech, impaired balance and coordination of movements, headaches and dizziness, drowsiness, vomiting, central nervous system disorders, collapse. Possible death due to pulmonary arrest.

*Lethal dose for humans is approx. 100 ml.*

Contact with skin: skin burns and irritation.

Eye contact. I prolonged contact with eyes causes moderate eye irritation.

Effects of chronic exposure:

May exacerbate existing skin, eye, respiratory disorders. May cause damage to the kidneys and liver. Possible damage to the central nervous system.

(data in section 11 apply to 100 % ethylene glycol)

**Section 12. Ecological information**

12.1. Toxicity

Acute toxicity to the aquatic environment:

- fish (Pimephales promelas, 96 hrs.) LC_{50} - 72,860 mg/l
- aquatic invertebrates (Daphnia magna, 48 h) EC_{50} > 100 mg/l
- algae (Pseudokirchneriella subcapita, 96 h) EC_{50}: 6,500 - 13,000 mg/l

Chronic toxicity to the aquatic environment:

- fish (Pimephales pro molasses, 7 d) NOEC - 15,380 mg/l
- daphnia (Ceriodaphnia sp, 7 d) NOEC - 8,590 mg/l

Toxicity to microorganisms:

- bacteria (Pseudomonas putida, 16 h) TTC (EC_{50}): 10,000 mg/l
- activated sludge in the wastewater treatment plant (exposure time 30 min,) EC20: 1,995 mg/l

Data on acute and chronic toxicity to aquatic organisms show that the product is not hazardous to the aquatic environment and the operation of biological wastewater treatment plants.

**Toxicity to terrestrial organisms**

Experimental data on the toxicity to macro and micro-organisms in the terrestrial environment are not available. New studies have not been performed. However, due to the high sensitivity of the substance to biodegradation, direct exposure of soil organisms, including arthropods, to the substance is unlikely.

The product should not pose a risk for soil organisms.

12.2. Persistence and degradability

No data on hydrolysis. Ethylene glycol as other ethers and glycols is considered to be stable in the processes of hydrolysis and is readily biodegradable.

Ethylene glycol in the air decomposes after evaporation (intermediate photodegradation processes) reacting with free radicals (DT_{50} is approx. 46.3 h)

12.3. Bioaccumulative potential

There are no studies available on the bioaccumulation potential in the aquatic environment and soil. Based on the estimated value of the adsorption coefficient (log Koc = 0) and the octanol/water partition coefficient (log Koc
12.4. Mobility in soil

Based on the available physicochemical data, the estimated value of the adsorption coefficient log Koc is 0. It is considered that the substance is not adsorbed in the solid phase of soil.

12.5. Results of PBT and vPvB assessment

Not applicable

12.6. Other adverse effects

Information on any other adverse effects on the environment, endocrine disruption or impact on global warming are not available.

(data in section 12 apply to 100 % ethylene glycol)

Section 13. Disposal considerations

13.1. Waste treatment methods

Do not discharge into drains. Do not allow the substance to enter surface or ground water. Product waste to be collected for disposal (recycling) or incinerate in appropriate plants.

Used packaging should be submitted to the packaging waste recycling companies.

Classification to be specified according to the place of manufacture as per criteria defined by the applicable regulations. If the product was used in any further operations/processes, the end user should define the produced waste and assign the correct code.

Section 14. Transport information

The product is not classified in the hazardous materials list. it is not regulated by the ADR regulation.

14.1. UN number

None

14.2. UN proper shipping name

None

14.3. Transport hazard class(es)

None

14.4. Packing Group

None

14.5. Environmental hazards

Not applicable

14.6. Special precautions for user

Not applicable

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Not applicable

Section 15. Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture


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 (Text with EEA relevance).


15.2. Chemical safety assessment

No data available on conducting the chemical safety assessment for the substance.

Section 16. Other information

Explanation of abbreviations and acronyms:

Acute Tox.4 - Acute toxicity, category 4
STOT Rep. Exp.2 - Specific target organ toxicity - repeated exposure, category 2
Eye Irrit.2 - Eye irritation, category 2
Flam Liq.2 - Flammable liquids, category 2
STOT SE 3 - Specific target organ toxicity - single exposure, category 3

Full text of P-phrases and H-statements

H302 - Harmful if swallowed.
H373 - May cause damage to organs through a prolonged or repeated exposure
H 319 - Causes serious eye irritation
H 336 - May cause drowsiness or dizziness
H 225 - Highly flammable liquid and vapour
P 201 - Obtain special instructions before use.
P 270 - Do no eat, drink or smoke when using this product.
P 301+ P 312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P 314 - Get medical advice/attention if you feel unwell.
P 404 - Store in a closed container.
P 501 - Dispose of contents/container to selective waste collection

Classification was made by calculation method.

Information presented above are based on the currently available data describing the product, as well as the manufacturer’s experience and knowledge in this area. They shall be treated as a supporting information in safe handling during transport, storage and product usage. However, this does not indemnify the user from the responsibility for the incorrect usage of the above information and adherence to all relevant regulations.