SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier
Bizol Radiator Repair+ r71

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture
Heat transfer fluids

1.3. Details of the supplier of the safety data sheet

Company name: BIZOL BITA Trading GmbH
Street: Martin-Buber-Str. 12
Place: D-14163 Berlin
Telephone: +49 (30) 804 869-0
Telefax: +49 (30) 804 869-2860
e-mail: support@bizol.de
Internet: www.bizol.com

1.4. Emergency telephone number:
Germany: +49 (30) 804 869-0 (08.00-17.00, Mo-Fr)
In England and Wales: NHS Direct: 0845 4647 or 111 In Scotland: NHS 24 - 08454 24 24 24 In Republic of Ireland: 01 809 2166

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Regulation (EC) No. 1272/2008
Hazard categories:
Specific target organ toxicity - repeated exposure: STOT RE 2
Hazard Statements:
May cause damage to organs through prolonged or repeated exposure.

2.2. Label elements

Regulation (EC) No. 1272/2008

Hazard components for labelling
ethanediol

Signal word: Warning
Pictograms:

Hazard statements
H373 May cause damage to organs through prolonged or repeated exposure.

Precautionary statements
P101 If medical advice is needed, have product container or label at hand.
P102 Keep out of reach of children.
P260 Do not breathe vapour/aerosol.
P314 Get medical advice/attention if you feel unwell.
P501 Dispose of waste according to applicable legislation.

2.3. Other hazards
Results of PBT and vPvB assessment: not applicable.

SECTION 3: Composition/information on ingredients

3.2. Mixtures
### Hazardous components

<table>
<thead>
<tr>
<th>CAS No</th>
<th>Chemical name</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>107-21-1</td>
<td>Ethanediol</td>
<td>10 - &lt; 20 %</td>
</tr>
<tr>
<td>203-473-3</td>
<td></td>
<td>603-027-00-1 01-2119456816-28</td>
</tr>
<tr>
<td>12179-04-3</td>
<td>Disodium tetraborate pentahydrate</td>
<td>0,1 - &lt; 1 %</td>
</tr>
<tr>
<td>215-540-4</td>
<td></td>
<td>005-011-02-9</td>
</tr>
<tr>
<td>7632-00-0</td>
<td>Sodium nitrite</td>
<td>0,1 - &lt; 1 %</td>
</tr>
<tr>
<td>231-555-9</td>
<td></td>
<td>007-010-00-4 01-2119471836-27</td>
</tr>
</tbody>
</table>

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Full text of H and EUH statements: see section 16.

### SECTION 4: First aid measures

4.1. Description of first aid measures

**General information**

When in doubt or if symptoms are observed, get medical advice. If unconscious place in recovery position and seek medical advice. Remove contaminated, saturated clothing immediately.

**After inhalation**

Remove casualty to fresh air and keep warm and at rest.

**After contact with skin**

After contact with skin, wash immediately with plenty of water and soap.

**After contact with eyes**

After contact with the eyes, rinse with water with the eyelids open for a sufficient length of time, then consult an ophthalmologist immediately.

**After ingestion**

If swallowed, rinse mouth with water (only if the person is conscious). Let water be drunken in little sips (dilution effect). Call a physician immediately. Do NOT induce vomiting.

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

When in doubt or if symptoms are observed, get medical advice.

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

No information available.

### SECTION 5: Firefighting measures

5.1. Extinguishing media

**Suitable extinguishing media**

- Alcohol resistant foam, Extinguishing powder, Carbon dioxide (CO2).

**Unsuitable extinguishing media**

- High power water jet.

5.2. Special hazards arising from the substance or mixture

- Hazardous decomposition products: Carbon monoxide Carbon dioxide (CO2). Do not inhale explosion and combustion gases.

5.3. Advice for firefighters

- In case of fire: Wear self-contained breathing apparatus.

**Additional information**

Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water. Do not allow to enter into soil/subsoil.
6.1. Personal precautions, protective equipment and emergency procedures

See protective measures under point 7 and 8.

6.2. Environmental precautions

Do not allow to enter into surface water or drains. Do not allow to enter into soil/subsoil. Clean contaminated articles and floor according to the environmental legislation.

6.3. Methods and material for containment and cleaning up

Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents). Treat the recovered material as prescribed in the section on waste disposal.

6.4. Reference to other sections

See protective measures under point 7 and 8.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling

Use personal protection equipment. Do not eat, drink or smoke when using this product. Provide fresh air. Handle and open container with care. Conditions to avoid: generation/formation of aerosols.

Advice on protection against fire and explosion

No special measures are necessary.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Protect against: Frost. Keep away from heat. Protect against direct sunlight. Keep container tightly closed in a cool, well-ventilated place.

7.3. Specific end use(s)

Observe technical data sheet.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure limits (EH40)

<table>
<thead>
<tr>
<th>CAS No</th>
<th>Substance</th>
<th>ppm</th>
<th>mg/m³</th>
<th>fibres/ml</th>
<th>Category</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>107-21-1</td>
<td>Ethane-1,2-diol, vapour</td>
<td>20</td>
<td>52</td>
<td></td>
<td>TWA (8 h)</td>
<td>WEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40</td>
<td>104</td>
<td></td>
<td>STEL (15 min)</td>
<td>WEL</td>
</tr>
</tbody>
</table>

DNEL/DMEL values

<table>
<thead>
<tr>
<th>CAS No</th>
<th>Substance</th>
<th>DNEL type</th>
<th>Exposure route</th>
<th>Effect</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>107-21-1</td>
<td>ethanediol</td>
<td>Worker DNEL, long-term</td>
<td>inhalation</td>
<td>local</td>
<td>35 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Consumer DNEL, long-term</td>
<td>inhalation</td>
<td>local</td>
<td>7 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Consumer DNEL, long-term</td>
<td>dermal</td>
<td>systemic</td>
<td>53 mg/kg bw/day</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker DNEL, long-term</td>
<td>dermal</td>
<td>systemic</td>
<td>106 mg/kg bw/day</td>
</tr>
</tbody>
</table>

PNEC values

<table>
<thead>
<tr>
<th>CAS No</th>
<th>Substance</th>
<th>Environmental compartment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>107-21-1</td>
<td>ethanediol</td>
<td>Freshwater</td>
<td>10 mg/l</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Soil</td>
<td>1.53 mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Freshwater sediment</td>
<td>20.9 mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Marine water</td>
<td>1 mg/l</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Micro-organisms in sewage treatment plants (STP)</td>
<td>199.5 mg/l</td>
</tr>
</tbody>
</table>
8.2. Exposure controls

Appropriate engineering controls
See chapter 7. No additional measures necessary.

Protective and hygiene measures
When using do not eat, drink, smoke, sniff.

Eye/face protection
Eye glasses with side protection.

Hand protection
Breakthrough time (maximum wearing time): > 480 min (Thickness of the glove material: 0.4 mm).
Breakthrough times and swelling properties of the material must be taken into consideration. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves. Barrier creams can help protecting exposed skin areas. In no case should they be used after contact.

Skin protection
Protective clothing.

Respiratory protection
With correct and proper use, and under normal conditions, breathing protection is not required. When splashes or fine mist form, a permitted breathing apparatus suitable for these purposes must be used. Suitable respiratory protection apparatus: Filtering Half-face mask (DIN EN 149), e.g. FFA P / FFP3.

Environmental exposure controls
Do not allow to enter into surface water or drains.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Physical state:</th>
<th>liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour:</td>
<td>light brown</td>
</tr>
<tr>
<td>Odour:</td>
<td>characteristic</td>
</tr>
</tbody>
</table>

| pH-Value:       | not applicable |

Changes in the physical state

<table>
<thead>
<tr>
<th>Melting point:</th>
<th>not determined</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial boiling point and boiling range:</td>
<td>not determined</td>
</tr>
<tr>
<td>Pour point:</td>
<td>not applicable</td>
</tr>
<tr>
<td>Flash point:</td>
<td>not applicable</td>
</tr>
<tr>
<td>Lower explosion limits:</td>
<td>not determined</td>
</tr>
<tr>
<td>Upper explosion limits:</td>
<td>not determined</td>
</tr>
<tr>
<td>Ignition temperature:</td>
<td>not determined</td>
</tr>
<tr>
<td>Decomposition temperature:</td>
<td>No information available.</td>
</tr>
<tr>
<td>Vapour pressure:</td>
<td>not determined</td>
</tr>
<tr>
<td>Density:</td>
<td>1,035 g/cm³</td>
</tr>
<tr>
<td>Water solubility:</td>
<td>miscible</td>
</tr>
<tr>
<td>Partition coefficient:</td>
<td>not determined</td>
</tr>
<tr>
<td>Viscosity / dynamic:</td>
<td>not determined</td>
</tr>
<tr>
<td>Viscosity / kinematic:</td>
<td>not determined</td>
</tr>
<tr>
<td>Flow time:</td>
<td>not determined</td>
</tr>
<tr>
<td>Vapour density:</td>
<td>not determined</td>
</tr>
<tr>
<td>Evaporation rate:</td>
<td>not determined</td>
</tr>
</tbody>
</table>

9.2. Other information

No information available.
SECTION 10: Stability and reactivity

10.1. Reactivity
No information available.

10.2. Chemical stability
No information available.

10.3. Possibility of hazardous reactions
No hazardous reaction when handled and stored according to provisions.

10.4. Conditions to avoid
Heat.

10.5. Incompatible materials
No information available.

10.6. Hazardous decomposition products
No information available.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity
Based on available data, the classification criteria are not met.

<table>
<thead>
<tr>
<th>CAS No</th>
<th>Chemical name</th>
<th>Exposure route</th>
<th>Dose</th>
<th>Species</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>107-21-1</td>
<td>ethanediol</td>
<td>oral</td>
<td>LD50</td>
<td>1600 mg/kg</td>
<td>Practical experience/human evidence</td>
</tr>
<tr>
<td></td>
<td></td>
<td>dermal</td>
<td>LD50</td>
<td>3500 mg/kg</td>
<td>Mouse</td>
</tr>
<tr>
<td>12179-04-3</td>
<td>disodium tetraborate pentahydrate</td>
<td>oral</td>
<td>LD50</td>
<td>3200 - 3400 mg/kg</td>
<td>Rat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>dermal</td>
<td>LD50</td>
<td>&gt; 2000 mg/kg</td>
<td>Rabbit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>inhalative (4 h) aerosol</td>
<td>LC50</td>
<td>&gt; 2 mg/l</td>
<td>Rat</td>
</tr>
<tr>
<td>7632-00-0</td>
<td>sodium nitrite</td>
<td>oral</td>
<td>LD50</td>
<td>180 mg/kg</td>
<td>GESTIS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>inhalative (4 h) aerosol</td>
<td>LC50</td>
<td>5,5 mg/l</td>
<td>Rat</td>
</tr>
</tbody>
</table>

Irritation and corrosivity
Based on available data, the classification criteria are not met.

Sensitising effects
Based on available data, the classification criteria are not met.

Carcinogenic/mutagenic/toxic effects for reproduction
Based on available data, the classification criteria are not met.

STOT-single exposure
Based on available data, the classification criteria are not met.

STOT-repeated exposure
May cause damage to organs through prolonged or repeated exposure. (ethanediol)

Aspiration hazard
Based on available data, the classification criteria are not met.

Practical experience
Keeping to the general worker's protection rules and the industrial hygienics, there is no risk in handling this product through the personnel.
SECTION 12: Ecological information

12.1. Toxicity

There are no data available on the mixture itself.

<table>
<thead>
<tr>
<th>CAS No</th>
<th>Chemical name</th>
<th>Dose</th>
<th>[h]</th>
<th>[d]</th>
<th>Species</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>107-21-1</td>
<td>ethanediol</td>
<td>Acute fish toxicity</td>
<td>LC50</td>
<td>72860 mg/l</td>
<td>96 h</td>
<td>Pimephales promelas (fathead minnow)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acute algae toxicity</td>
<td>ErC50</td>
<td>6500-13000 mg/l</td>
<td>96 h</td>
<td>Selenastrum capricornutum</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acute crustacea toxicity</td>
<td>EC50</td>
<td>&gt; 100 mg/l</td>
<td>48 h</td>
<td>Daphnia magna (Big water flea)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fish toxicity</td>
<td>NOEC</td>
<td>15380 mg/l</td>
<td>7 d</td>
<td>Pimephales promelas (fathead minnow)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Crustacea toxicity</td>
<td>NOEC</td>
<td>8590 mg/l</td>
<td>7 d</td>
<td>Ceriodaphnia Dubia</td>
</tr>
<tr>
<td>7632-00-0</td>
<td>sodium nitrite</td>
<td>Acute fish toxicity</td>
<td>LC50</td>
<td>0,56 - 1,78 mg/l</td>
<td>96 h</td>
<td>Onchorhynchus mykiss</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acute algae toxicity</td>
<td>ErC50</td>
<td>&gt;100 mg/l</td>
<td>72 h</td>
<td>Desmodesmus subspicatus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acute crustacea toxicity</td>
<td>EC50</td>
<td>12,5 - 100 mg/l</td>
<td>48 h</td>
<td>Daphnia magna</td>
</tr>
</tbody>
</table>

12.2. Persistence and degradability

There are no data available on the mixture itself.

<table>
<thead>
<tr>
<th>CAS No</th>
<th>Chemical name</th>
<th>Method</th>
<th>Value</th>
<th>d</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Evaluation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>107-21-1</td>
<td>ethanediol</td>
<td>Biodegradation</td>
<td>90-100</td>
<td>10</td>
<td>OECD 301A/ ISO 7827/ EEC 92/69/V, C.4-A</td>
</tr>
</tbody>
</table>

12.3. Bioaccumulative potential

There are no data available on the mixture itself.

Partition coefficient n-octanol/water

<table>
<thead>
<tr>
<th>CAS No</th>
<th>Chemical name</th>
<th>Log Pow</th>
</tr>
</thead>
<tbody>
<tr>
<td>107-21-1</td>
<td>ethanediol</td>
<td>-1,36</td>
</tr>
<tr>
<td>7632-00-0</td>
<td>sodium nitrite</td>
<td>-3,7</td>
</tr>
</tbody>
</table>

12.4. Mobility in soil

No data available

12.5. Results of PBT and vPvB assessment

No data available

12.6. Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Advice on disposal

Do not allow to enter into surface water or drains. This material and its container must be disposed of in a safe way. Waste disposal according to EC directives 75/442/EEC and 91/689/EEC in the corresponding versions, covering waste and dangerous waste.

Waste disposal number of waste from residues/unused products
070701 WASTES FROM ORGANIC CHEMICAL PROCESSES; wastes from the MFSU of fine chemicals and chemical products not otherwise specified; aqueous washing liquids and mother liquors
Classified as hazardous waste.

Contaminated packaging
Non-contaminated packages may be recycled. Consult the appropriate local waste disposal expert about waste disposal.

SECTION 14: Transport information

Land transport (ADR/RID)
14.1. UN number: No dangerous good in sense of this transport regulation.
14.2. UN proper shipping name: No dangerous good in sense of this transport regulation.
14.3. Transport hazard class(es): No dangerous good in sense of this transport regulation.
14.4. Packing group: No dangerous good in sense of this transport regulation.

Marine transport (IMDG)
14.1. UN number: No dangerous good in sense of this transport regulation.
14.2. UN proper shipping name: No dangerous good in sense of this transport regulation.
14.3. Transport hazard class(es): No dangerous good in sense of this transport regulation.
14.4. Packing group: No dangerous good in sense of this transport regulation.

Air transport (ICAO-TI/IATA-DGR)
14.1. UN number: No dangerous good in sense of this transport regulation.
14.2. UN proper shipping name: No dangerous good in sense of this transport regulation.
14.3. Transport hazard class(es): No dangerous good in sense of this transport regulation.
14.4. Packing group:
14.5. Environmental hazards
ENVIRONMENTALLY HAZARDOUS: no

14.6. Special precautions for user
No data available

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code
No data available

SECTION 15: Regulatory information

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

EU regulatory information
Authorisations (REACH, annex XIV):
Substances of very high concern, SVHC (REACH, article 59):
disodium tetraborate pentahydrate

Restrictions on use (REACH, annex XVII):
Entry 30: disodium tetraborate pentahydrate
2010/75/EU (VOC): 0 %

National regulatory information
Water contaminating class (D): 1 - slightly water contaminating

15.2. Chemical safety assessment
Chemical safety assessments for substances in this mixture were not carried out.

SECTION 16: Other information

Abbreviations and acronyms
ADR: Accord européen relatif au transport international des marchandises dangereuses par route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
RID: Règlement concernant le transport international ferroviaire des marchandises dangereuses (Regulations concerning the International Carriage of Dangerous Goods by Rail)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
ICAO: International Civil Aviation Organization
CAS: Chemical Abstracts Service (a division of the American Chemical Society)
DNEL/DMEL: Derived No-Effect Level / Derived Minimal Effect Level
PNEC: Predicted No Effect Concentration
WEL (UK): Workplace Exposure Limits
TWA (EC): Time-Weighted Average
STEL (EC): Short Term Exposure Limit
ATE: Acute Toxicity Estimate
LD50: Lethal Dose, 50% (median lethal dose)
LC50: Lethal Concentration, 50% (median lethal concentration)
EC50: half maximal Effective Concentration
ErC50: EC50 in terms of reduction of growth rate
VwVwS: Verwaltungsvorschrift wassergefährdende Stoffe

Relevant H and EUH statements (number and full text)

H272 May intensify fire; oxidiser.
H301 Toxic if swallowed.
H302 Harmful if swallowed.
H319 Causes serious eye irritation.
H360FD May damage fertility. May damage the unborn child.
H373 May cause damage to organs through prolonged or repeated exposure.
H400 Very toxic to aquatic life.

Further Information
The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

(The data for the hazardous ingredients were taken respectively from the last version of the sub-contractor’s safety data sheet.)