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

1.1. Product identifier

Product form: Substance
Trade name: PIB/ Polybutene
CAS No: 9044-17-1

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

Use of the substance/mixture: Manufacture of substances

1.3. Details of the supplier of the safety data sheet

US office:
Braskem S.A.
5100 Westheimer Rd - Suite 495
Houston, 77056 - USA
Tel: 713 255 4747
Fax: 713 255 4740

Manufacturer:
Braskem S/A
Av. Presidente Costa e Silva, 1178 – Capuava
CEP: 09270-901 - Santo André/SP
Brazil
Phone: +55 (71) 3504-7796
E-mail: mayla.salmeron@braskem.com

1.4. Emergency telephone number

Emergency number: 1 800-424-9300
Chemtrec (Outside USA) +1 703-527-3887

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification
Not classified

2.2. Label elements

GHS-US labelling
No labelling applicable

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS-US)

No data available

SECTION 3: Composition/information on ingredients

3.1. Substance

Substance type: Polymer
Name: Butene, homopolymer heated
CAS No: 9044-17-1

3.2. Mixture

Not applicable
4.1. Description of first aid measures

First-aid measures after inhalation: If adverse effect occur,. Remove person to uncontaminated area. In case of irregular breathing or respiratory arrest provide artificial respiration. Seek medical advice.

First-aid measures after skin contact: In case of contact with cold material: . Wash skin with plenty of water and soap. In case of contact with hot material: . Rinse immediately with plenty of water for 15 minutes. Seek immediate medical advice.

First-aid measures after eye contact: In case of contact with cold material: . Rinse immediately with plenty of water. In case of contact with hot material: . Rinse immediately with plenty of water for 15 minutes. Seek medical advice.

First-aid measures after ingestion: Do not induce vomiting. Drain stomach by gastric lavage under qualified medical supervision. Immediately get medical attention.

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

Symptoms/injuries after skin contact: Hot material can cause burns.

Symptoms/injuries after eye contact: Hot material can cause burns.

Symptoms/injuries after ingestion: This product is not expected to cause significant health hazards.

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

In case of burn skin, to minimize physical damage to the skin, do not remove the polybutene. Cover the injured area with appropriate burn gel.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media: carbon dioxide (CO2), dry chemical powder, foam. Water spray.

Unsuitable extinguishing media: Do not use a water jet since it may cause the fire to spread.

5.2. Special hazards arising from the substance or mixture


Reactivity: May react with strong acids or strong oxidizing such as chlorates and peroxides.

5.3. Advice for firefighters

Firefighting instructions: Cool closed containers exposed to fire with water spray.

Protective equipment for firefighters: Fully enclosed impervious protective suit with integral or tight-fitting gloves, boots, self-contained or supplied air respirator must be worn. Refer to section 8.

Other information: Do not allow run-off from fire fighting to enter drains or water courses.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment: Wear protective clothing as described in Section 8 of this safety data sheet.

Emergency procedures: Stop leak if safe to do so. stay away from low ground with wind on your back. Clean up even minor leaks or spills if possible without unnecessary risk.

6.1.2. For emergency responders

Protective equipment: Wear protective clothing as described in Section 8 of this safety data sheet.

Emergency procedures: Eliminate leaks immediately. stay away from low ground with wind on your back. Clean up any spills as soon as possible, using an absorbent material to collect it. Collect all waste in suitable and labelled containers and dispose according to local legislation. Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.

6.2. Environmental precautions

Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains. Do not discharge into drains or the environment.

6.3. Methods and material for containment and cleaning up

For containment: Eliminate leaks immediately. Ventilate affected area.

Methods for cleaning up: Eliminate leaks immediately. apply water mist to increase dispersion rate. Provide adequate ventilation.

6.4. Reference to other sections

refer to section 8. For disposal of residues refer to section 13: Disposal considerations"
SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling: product shall only be used by fully trained professional users that are knowledgeable on all hazards posed by it. Use only in well-ventilated areas. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin and eyes.

Handling temperature: ≤ 120 °C

Hygiene measures: Handle in accordance with good industrial hygiene and safety practices.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures: Provide adequate ventilation.

Storage conditions: Keep container tightly closed. Store in a well-ventilated place. Keep cool. Bulk storage does not require any special measure. If product is held heated above 60°C the use of nitrogen blanket is recommended.

Incompatible materials: May react with strong acids or strong oxidizing such as chlorates and peroxides.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

PIB/ Polybutene (9044-17-1)

| DNEL | DNEL | No significant hazards. |

8.2. Exposure controls

Appropriate engineering controls: Provide adequate ventilation. Either local exhaust or general room ventilation is usually required. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

Personal protective equipment: Gloves. Protective goggles. Protective clothing.

Hand protection: Insulating protective gloves.

Eye protection: Wear chemical goggles if material is handled hot. Not required for normal conditions of use.

Skin and body protection: When skin contact is possible, protective clothing including gloves, apron, sleeves, boots, head and face protection must be worn.

Respiratory protection: No special respiratory protection equipment is recommended under normal conditions of use with adequate ventilation.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state: Liquid

Appearance: Clear. viscous.

Molecular mass: 730 - 4200 g/mol (typical)

Colour: colourless

Odour: Odourless.

Odour threshold: No data available

pH: not applicable

Relative evaporation rate (butyl acetate=1): not applicable

Melting point: No data available
Freezing point : No data available
Boiling point : No data available
Flash point :
PIB 32  383 °F (195 °C)
PIB 122  455 °F (235 °C)
PIB 128  264 °F (240 °C)
Auto-ignition temperature : No data available
Decomposition temperature : > 260 °C
Flammability (solid, gas) : No data available
Vapour pressure : No data available
Relative vapour density at 20 °C : No data available
Relative density : ca. 0.841 g/cm³ (water =1)
Solubility : Water: < 0.1 % Negligible in water
Log Pow : No data available
Log Kow : No data available
Viscosity, kinematic :
PIB 32  22000 mm²/s
PIB 122  150000 mm²/s
PIB 128  >150000 mm²/s
Viscosity, dynamic : No data available
Explosive properties : not explosive.
Oxidising properties : not oxidizing.
Explosive limits : No data available

9.2. Other information
No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity
May react with strong acids or strong oxidizing such as chlorates and peroxides.

10.2. Chemical stability
Stable.

10.3. Possibility of hazardous reactions
Hazardous polymerization will not occur.

10.4. Conditions to avoid
No additional information available

10.5. Incompatible materials
Strong acid. Strong oxidizing agents.

10.6. Hazardous decomposition products
Heating this product up 260°C may cause rapid depolymerization with production of extremely flammable isobutene vapors. Thermal combustion may release carbon monoxide and dioxide.
SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity

<table>
<thead>
<tr>
<th>Substance</th>
<th>LD50 oral rat</th>
<th>LD50 dermal rabbit</th>
<th>LC50 inhalation rat (mg/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIB/ Polybutene (f) 9044-17-1</td>
<td>&gt; 34 g/kg</td>
<td>&gt; 10000 mg/kg</td>
<td>&gt; 17 g/m³</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation: Not classified

Serious eye damage/irritation: Not classified

Respiratory or skin sensitisation: Not classified

Germ cell mutagenicity: Not classified

Carcinogenicity: Not classified

Reproductive toxicity: Not classified

Specific target organ toxicity (single exposure): Not classified

Specific target organ toxicity (repeated exposure): Not classified

Aspiration hazard: Not classified

Symptoms/injuries after skin contact: Hot material can cause burns.

Symptoms/injuries after eye contact: Hot material can cause burns.

Symptoms/injuries after ingestion: This product is not expected to cause significant health hazards.

SECTION 12: Ecological information

12.1. Toxicity

PIB/ Polybutene (9044-17-1)

<table>
<thead>
<tr>
<th>Organism</th>
<th>EC50 (mg/l)</th>
<th>LC50 (mg/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fishes 1</td>
<td>&gt; 1000</td>
<td>&gt; 1000</td>
</tr>
<tr>
<td>Daphnia 1</td>
<td>&gt; 1000</td>
<td>&gt; 1000</td>
</tr>
</tbody>
</table>

12.2. Persistence and degradability

Polyisobutene (PIB) (9044-17-1)

Persistence and degradability: Product is not easily biodegradable.

12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Effect on ozone layer: No additional information available

Effect on the global warming: No known ecological damage caused by this product.

Other information: This product is not expected to move rapidly on water flows/surface due to the high viscosity and very low solubility.
SECTION 13: Disposal considerations

13.1. Waste treatment methods

- Regional legislation (waste): Dispose of contents/container to comply with applicable local, national and international regulations.
- Waste disposal recommendations: Consult the appropriate local waste disposal expert about waste disposal.
- Additional information: Do not cut, grind, drill, weld, reuse or dispose off containers unless adequate precautions are taken against these hazards.

SECTION 14: Transport information

- In accordance with DOT
- Not regulated for transport

Additional information

- Other information: No supplementary information available.

ADR

- Transport document description: UN 3257 ELEVATED TEMPERATURE LIQUID, N.O.S., 9, III, (D)
- Packing group (ADR): III
- Class (ADR): 9 - Miscellaneous dangerous substances and articles
- Hazard identification number (Kemler No.): 99
- Classification code (ADR): M9
- Danger labels (ADR): 9 - Miscellaneous dangerous substances and articles

- Orange plates:

  99
  3257

- Tunnel restriction code (ADR): D
- Excepted quantities (ADR): E0

Transport by sea

- UN-No. (IMDG): 3257
- Class (IMDG): 9 - Miscellaneous dangerous substances and articles
- Packing group (IMDG): III - substances presenting low danger

Air transport

- UN-No. (IATA): 3257
- Class (IATA): 9 - Miscellaneous Dangerous Goods

SECTION 15: Regulatory information

15.1. US Federal regulations

- No additional information available

15.2. International regulations

- CANADA
  - No additional information available

EU-Regulations

- No additional information available

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

- Not Classified
PIB/ Polybutene
Safety Data Sheet
according to the federal final rule of hazard communication revised on 2012 (HazCom 2012)
Date of issue: 05/28/2015 Revision date: 05/28/2015 Supersedes: 01/19/2011 Version: 1.0

Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]
Not classified

15.2.2. National regulations
No additional information available

15.3. US State regulations
No additional information available

SECTION 16: Other information

Indication of changes : All requirements according to Regulation (EC) No 453/2010 were applied. CAS number has been changed.
Sources of Key data : MSDS, CSR - Chemical Safety Report.
Other information : The regulatory information is based on the available information for CAS No. 9003-29-6. This material is very similar in composition to CAS 9003-29-6 and as such may be described as CAS 9003-29-6. This material consist more than 50% (w/w) of polymer molecules with more than 3 monomer unit and less than 50% of polymer molecules with the same molecular weight.

Braskem - SDS US

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product. It warns that the handling of any chemical substance requires the previous knowledge of its hazards for the user. It is up to the user of the product company providing this SDS to and promote the training of its employees about possible risks come upon of the product. The information contained herein is not absolute, but only general information on the use of the chemical and indication of safety and security measures.

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