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

Product form : Substance
Trade name : Polybutene (PIB)
CAS No : 9044-17-1
Product code : PIB 02, PIB 02 TF, PIB 02 TR, PIB 04, PIB 04 TF, PIB 04 TR

US office:
Braskem S.A.
5100 Westheimer Rd - Suite 495
Houston, 77056 - USA

Manufacturer:
Braskem S.A.
Av. Presidente Costa e Silva, 1178 – Capuava
Santo André, SP, CEP: 09270-001, Brasil

Contact Email : productsafety@braskem.com
Emergency Telephone Number (CHEMTREC) : 1-800-424-9300

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification
Asp. Tox. 1 H304
Full text of H statements: see section 16

2.2. Label elements

GHS-US labelling
Hazard pictograms (GHS-US) :

Signal word (GHS-US) : Danger
Hazard statements (GHS-US) : H304 - May be fatal if swallowed and enters airways
Precautionary statements (GHS-US) : P301+P310 - If swallowed: Immediately call a doctor, a POISON CENTER
                                    P331 - Do NOT induce vomiting
                                    P405 - Store locked up
                                    P501 - Dispose of contents/container to hazardous or special waste collection point, in
                                    accordance with local, regional, national and/or international regulation

2.3. Other hazards
No additional information available

2.4. Unknown acute toxicity (GHS US)
Not applicable.

SECTION 3: Composition/information on ingredients

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

Full text of H-statements: see section 16

3.2. Mixture
Not applicable

[1] Please find additional information on section 16.
SECTION 4: First aid measures

4.1. Description of first aid measures
First-aid measures after inhalation: Remove victim to fresh air. 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 inhalation: Overexposure to vapours may result in cough.
Symptoms/injuries after skin contact: Hot material can cause burns.
Symptoms/injuries after eye contact: Hot material can cause burns.
Symptoms/injuries after ingestion: Ingestion may cause nausea and vomiting. Swallowing the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis.

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

In case of skin burns, 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
Explosion hazard: No direct explosion hazard.
Reactivity: The product is non-reactive under normal conditions of use, storage and transport.

5.3. Advice for firefighters
Firefighting instructions: Cool closed containers exposed to fire with water spray.
Protective equipment for firefighters: Fully enclosed impenetrable 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. Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.
Methods for cleaning up: Take up liquid spill into dry absorbent material e.g: dry sand/earth/vermiculite. Collect all waste in suitable and labelled containers and dispose according to local legislation.
6.4. Reference to other sections
For further information refer to section 8: Exposure-controls/personal protection. 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: Use only in well-ventilated areas. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin and eyes.

Hygiene measures: Handle in accordance with good industrial hygiene and safety practices. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

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.
Incompatible materials: Strong acids. Strong oxidizing agents.

7.3. Specific end use(s)
Refer to section 1.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters
No additional information available

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.

Hand protection: Insulating protective gloves. Impermeable 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: If excessive exposure exists, use only approved air-purifying or supplied air respirator operated in a positive pressure mode.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties
Physical state: Liquid
Appearance: Clear, viscous.
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 02, PIB 02 TF, PIB 02 TR: 100 °C (Cleveland Open Cup)
PIB 04, PIB 04 TF, PIB 04 TR: 125 °C (Cleveland Open Cup)
Auto-ignition temperature: ca. 140 °C
Decomposition temperature: No data available
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 02, PIB 02 TF, PIB 02 TR: 5 - 10 mm²/s (at 37.8 °C)  
PIB 04, PIB 04 TF, PIB 04 TR: 14 - 19 mm²/s (at 37.8 °C)

Viscosity, dynamic: Not available

Explosive properties: Not explosive.

Oxidising properties: Not oxidizing.

Explosive limits: Not available

9.2. Other information
No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity
The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability
Stable under use and storage conditions as recommended in section 7.

10.3. Possibility of hazardous reactions
No dangerous reactions known. Hazardous polymerization will not occur.

10.4. Conditions to avoid
Extremely high temperatures.

10.5. Incompatible materials
Strong acid. Strong oxidizing agents.

10.6. Hazardous decomposition products
Thermal combustion may release carbon monoxide and dioxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Acute toxicity: Not classified

Butene, polymer with 2-methyl-1-propene (9044-17-1)

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 dermal rabbit</td>
<td>&gt; 10000 mg/kg</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: May be fatal if swallowed and enters airways.

Symptoms/injuries after inhalation: Overexposure to vapours may result in cough.

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

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

Symptoms/injuries after ingestion: Ingestion may cause nausea and vomiting. Swallowing the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis.

Polyisobutene (PIB) (9044-17-1)

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
</table>
| Viscosity, kinematic                         | PIB 02, PIB 02 TF, PIB 02 TR: 5 - 10 mm²/s (at 37.8 °C)  
PIB 04, PIB 04 TF, PIB 04 TR: 14 - 19 mm²/s (at 37.8 °C)|
Safety Data Sheet
According to the federal final rule of hazard communication revised on 2012 (HazCom 2012)
Product: PIB
Revision date: 29/Nov/2017 Version: 6.3

SECTION 12: Ecological information

12.1. Toxicity
No additional information available

12.2. Persistence and degradability

<table>
<thead>
<tr>
<th>Butene, polymer with 2-methyl-1-propene (9044-17-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persistence and degradability</td>
</tr>
</tbody>
</table>

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 additional information available

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 treatment methods: 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.

SECTION 14: Transport information

Classification for LAND transport: DOT
Not regulated for transport

Classification for SEA transport: IMO - IMDG
Not regulated for transport

Classification for AIR transport: IATA – ICAO
Not regulated for transport

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product, therefore it cannot be considered exhaustive. See guidelines of US DOT, IMDG and IATA regulations before transporting the product. The transportation organization is responsible for compliance with laws, regulations and rules for the transport of the material.

SECTION 15: Regulatory information

15.1. US Federal regulations

<table>
<thead>
<tr>
<th>PIB/ Polybutene (9044-17-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listed on the United States TSCA (Toxic Substances Control Act) inventory</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Butene, polymer with 2-methyl-1-propene (9044-17-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listed on the United States TSCA (Toxic Substances Control Act) inventory</td>
</tr>
</tbody>
</table>

15.2. International regulations

CANADA

<table>
<thead>
<tr>
<th>PIB/ Polybutene (9044-17-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listed on the Canadian DSL (Domestic Substances List)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Butene, polymer with 2-methyl-1-propene (9044-17-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listed on the Canadian DSL (Domestic Substances List)</td>
</tr>
</tbody>
</table>

EU-Regulations
No additional information available
15.2.2. National regulations

Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Korean ECL (Existing Chemicals List)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

15.3. US State regulations

No additional information available

SECTION 16: Other information

Sources of Key data : MSDS, CSR - Chemical Safety Report.

Other information : The regulatory information is based on date available for CAS # 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.

Full text of H-statements:

---

| H304 | May be fatal if swallowed and enters airways |

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.