

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

1.1. Product identifier

Product form : Substance
 Trade name : Crude C4
 CAS : 68476-52-8

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

Use of the substance/mixture : Manufacture, Distribution, Use as an intermediate, Formulation, Use in coatings, Use as a fuel, Polymer production, Polymer processing

1.3. Details of the supplier of the safety data sheet

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

Manufacturer:
 Braskem S.A.
 Rua Eteno, 1561, Polo Petroquímico de Camaçari
 Camaçari, BA, CEP: 42810-000, Brasil

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

Braskem S.A.
 Rua Marumbi, 1001
 Duque de Caxias, RJ, CEP: 25221-000, 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

Simple Asphy H380
 Flam. Gas 1 H220
 Liquefied gas H280
 Muta. 1B H340
 Carc. 1A H350

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) :

H220 - Extremely flammable gas
 H280 - Contains gas under pressure; may explode if heated
 H340 - May cause genetic defects
 H350 - May cause cancer
 H380 - May displace oxygen and cause rapid suffocation

Precautionary statements (GHS-US) :

P201 - Obtain special instructions before use
 P202 - Do not handle until all safety precautions have been read and understood
 P210 - Keep away from heat, hot surfaces, open flames, sparks. - No smoking
 P280 - Wear eye protection, Respiratory protection, protective gloves
 P308+P313 - If exposed or concerned: Get medical advice/attention
 P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely

P381 - Eliminate all ignition sources if safe to do so
 P403 - Store in a well-ventilated place
 P405 - Store locked up
 P410+P403 - Protect from sunlight. Store in a well-ventilated place
 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

other hazards which do not result in classification : Gas/vapor heavier than air. May accumulate in confined spaces, particularly at or below ground level. Gas/air mixtures are explosive. High concentrations may cause asphyxiation. Contact with the liquid may cause frostbite and serious damage to eyes.

2.4. Unknown acute toxicity (GHS US)

Not applicable.

SECTION 3: Composition/information on ingredients

3.1. Substance

Substance type : Multi-constituent
 Name : Hydrocarbons, C4, ethylene-manufacture-by-product

Name	Product identifier	%
1,3-butadiene, buta-1,3-diene	(CAS No) 106-99-0	40 - 68
2-methylpropene	(CAS No) 115-11-7	2 - 30
but-1-ene	(CAS No) 106-98-9	8 - 16
butane	(CAS No) 106-97-8	2 - 10
Isobutane	(CAS No) 75-28-5	0 - 7
(Z)-but-2-ene	(CAS No) 590-18-1	2 - 6
(E)-but-2-ene	(CAS No) 624-64-6	3 - 5
Vinyl-acetylene	(CAS No) Not applicable	0 - 5
1,2-Butadiene	(CAS No) 590-19-2	0,1 – 3,5
C3	(CAS No) Not applicable	0 - 3
1-Butyne	(CAS No) 107-00-6	0 - 2

Full text of H-statements: see section 16

3.2. Mixture

Not applicable

4.1. Description of first aid measures

First-aid measures after inhalation : Remove casualty to fresh air and keep warm and at rest. In case of irregular breathing or respiratory arrest provide artificial respiration. In case of breathing difficulties administer oxygen. Seek medical advice (show the label where possible).

First-aid measures after skin contact : After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of water and soap. Contact with the liquefied gas may cause frostbite. Thaw frosted parts with lukewarm water. Do not rub affected area. Seek medical advice (show the label where possible).

First-aid measures after eye contact : Rinse immediately and plentifully with water, also under the eyelids, for at least 20 minutes. Contact with the product may cause cold burns or frostbite. Seek medical advice (show the label where possible).

First-aid measures after ingestion : not applicable.

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

Symptoms/injuries : May cause genetic defects. May cause cancer.

Symptoms/injuries after inhalation : Asphyxiant in high concentrations.

Symptoms/injuries after skin contact : Non-toxic in contact with skin. Slightly irritating to skin. Contact with the product may cause cold burns or frostbite.

Symptoms/injuries after eye contact : May cause slight irritation. Contact with the liquid may cause frostbite and serious damage to eyes.

Symptoms/injuries after ingestion : not applicable.

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Dry powder. Carbon dioxide (CO₂). Water mist.
 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

- Fire hazard : Extremely flammable gas. Risk of ignition at all temperatures. Risk of rapid formation of explosive mixtures when combined with air. Heavier than air, vapors may travel long distances along ground, ignite and flash back to source. Incomplete combustion releases dangerous carbon monoxide, carbon dioxide and other toxic gases.
 Explosion hazard : Contains gas under pressure; may explode if heated. Cylinders may rupture under fire conditions.
 Reactivity : The product is non-reactive under normal conditions of use, storage and transport.

5.3. Advice for firefighters

- Firefighting instructions : Cut off the gas flow and then apply extinguishing agents. Do not approach fire except upwind and only with proper skin and respiratory protection (supplied air only). Cool closed containers exposed to fire with water spray.
 Protective equipment for firefighters : Wear a self-contained breathing apparatus. Full protective flameproof clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- General measures : Do not allow the product to be released into the environment. Reduce vapor with fog or fine water spray. Gas or vapor heavier than air. Mechanically ventilate the spillage area.

6.1.1. For non-emergency personnel

- Protective equipment : Personal protective equipment. Wear closed safety glasses. Boots. Gloves. Self-contained breathing apparatus.
 Emergency procedures : Evacuate unnecessary personnel. Inform the public about the hazard and give advice to keep upwind. Eliminate all sources of ignition, avoid sparks, flames and do not smoke in risk area. Do not transfer under air or oxygen pressure. Containers must be properly grounded before beginning transfer. Use explosion-proof electrical equipment. Do not breathe fumes from fires or vapors from decomposition. Self-contained breathing apparatus. Wear suitable protective clothing. Gloves. Prevent the product from entering drains or confined areas. Risk of suffocation due to oxygen deficiency in confined areas.

6.1.2. For emergency responders

- Protective equipment : Personal protection equipment. Wear closed safety glasses. Boots. Gloves. Self-contained breathing apparatus.
 Emergency procedures : Evacuate unnecessary personnel. Inform the public about the hazard and give advice to keep upwind. Eliminate all sources of ignition, avoid sparks, flames and do not smoke in risk area. Do not transfer under air or oxygen pressure. Containers must be properly grounded before beginning transfer. Do not breathe fumes from fires or vapors from decomposition. Wear suitable protective clothing. Gloves. Prevent the product from entering drains or confined areas. Risk of suffocation due to oxygen deficiency in confined areas. Use explosion-proof ventilating equipment.

6.2. Environmental precautions

- Stop leak if safe to do so. Avoid contact with skin. Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

- For containment : Prevent the product from reaching inhabited areas. Control the vapors with a fine water spray. Vapors are heavier than air and may spread along floors. Mechanically ventilate the spillage area.
 Methods for cleaning up : Prevent the product from reaching inhabited areas. Use water spray to disperse the vapors. Vapors are heavier than air and may spread along floors. Mechanically ventilate the spillage area.

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 : Avoid ignition sources. No smoking. Do not use compressed air to transfer, discharge or transport the product. Keep away from open flames, hot surfaces and sources of ignition.

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

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Provide local exhaust or general room ventilation. Use grounded electrical/mechanical equipment. Use explosion-proof lighting equipment. Use explosion-proof ventilating equipment. Use only non-sparking tools. Ventilation along the floor.

Storage conditions : Store, if possible, in a cool, well ventilated place away from incompatible materials. Store in dry, cool, well-ventilated area. Keep container tightly closed. Keep away from open flames, hot surfaces and sources of ignition.

Incompatible materials : Oxidizing agent.

Storage area : Keep away from open flames, hot surfaces and sources of ignition. Keep the container tightly closed. Store in dry, cool, well-ventilated area. Do not store near oxidizing agents. Use explosion-proof lighting equipment. Use explosion-proof ventilating equipment.

Packaging materials : stainless steel.

7.3. Specific end use(s)

refer to section 1.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Crude C4 (68476-52-8)		
DNEL	DNEL	2.21 Long-term - systemic effects, inhalation
1,3-butadiene, buta-1,3-diene (106-99-0)		
ACGIH	ACGIH TWA (mg/m ³)	4.4 mg/m ³
ACGIH	ACGIH TWA (ppm)	2 ppm
ACGIH	Remark (ACGIH)	Cancer
OSHA	OSHA PEL (TWA) (ppm)	1 ppm
OSHA	OSHA PEL (STEL) (ppm)	5 ppm
2-methylpropene (115-11-7)		
ACGIH	ACGIH TWA (ppm)	250 ppm
ACGIH	Remark (ACGIH)	URT irr; body weight eff
but-1-ene (106-98-9)		
ACGIH	ACGIH TWA (ppm)	250 ppm
(E)-but-2-ene (624-64-6)		
ACGIH	ACGIH TWA (ppm)	250 ppm
Isobutane (75-28-5)		
ACGIH	ACGIH STEL (ppm)	1000 ppm
butane (106-97-8)		
ACGIH	ACGIH TWA (ppm)	1000 ppm
ACGIH	ACGIH STEL (ppm)	1000 ppm
(Z)-but-2-ene (590-18-1)		
ACGIH	ACGIH TWA (ppm)	250 ppm

8.2. Exposure controls

Appropriate engineering controls : Provide local exhaust or general room ventilation. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. When using do not eat, drink or smoke. Handle in accordance with good industrial hygiene and safety procedures. Use explosion-proof lighting equipment. Use explosion-proof ventilating equipment.

Materials for protective clothing : PVC (Polyvinyl chloride).

Hand protection : Protective gloves made of PVC.

Eye protection : Safety glasses with side shields.

Skin and body protection	: PVC (Polyvinyl chloride). Wear suitable protective clothing, gloves and eye/face protection. Boots.
Respiratory protection	: An approved organic vapor respirator/supplied air or self-contained breathing apparatus must be used when vapor concentration exceeds applicable exposure limits. Self-contained breathing apparatus.
Environmental exposure controls	: Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Gas
Appearance	: Liquefied gas
Color	: colorless
Odor	: Mildly aromatic
Odor threshold	: No data available
pH	: Not applicable
Relative evaporation rate (butyl acetate=1)	: Not applicable
Melting point	: No data available
Freezing point	: -185,53 °C
Boiling point	: -4,41 °C (101,3 kPa)
Flash point	: -76 °C
Auto-ignition temperature	: 415 - 420 °C
Decomposition temperature	: Not available
Flammability (solid, gas)	: Extremely flammable
Vapor pressure	: 248,9 kPa (2,46 atm; 21°C)
Relative vapor density at 20 °C	: 1,87 (15°C)
Relative density	: 0,6452 @ 0°C (water=1) 101,3 kPa 0,621 @ 20°C (water=1) 101,3 kPa
Solubility	: Soluble in ethanol, methanol, acetone, diethyl ether, benzene. Water: 735 mg/l @ 20°C
Log Pow	: Not available
Log Kow	: No data available
Viscosity, kinematic	: Not applicable
Viscosity, dynamic	: Not applicable
Explosive properties	: No data available
Oxidizing properties	: No data available
Explosive limits	: 2 – 11,5 vol %

9.2. Other information

Gas group	: Liquefied gas
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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 at ambient temperature and under normal conditions of use.

10.3. Possibility of hazardous reactions

None known.

10.4. Conditions to avoid

Avoid ignition sources. Avoid static electricity discharges. Incompatible materials.

10.5. Incompatible materials

oxidizing agents.

10.6. Hazardous decomposition products

Incomplete combustion releases dangerous carbon monoxide, carbon dioxide and other toxic gases.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

Isobutane (75-28-5)	
LC50 inhalation rat (mg/l)	658 mg/l/4h

Skin corrosion/irritation : Not classified
pH: Not applicable

Serious eye damage/irritation : Not classified
pH: Not applicable

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : May cause genetic defects.

Carcinogenicity : May cause cancer.

1,3-butadiene, buta-1,3-diene (106-99-0)	
IARC group	1 - Carcinogenic to humans
National Toxicology Program (NTP) Status	2 - Known Human Carcinogens

2-methylpropene (115-11-7)	
National Toxicology Program (NTP) Status	1 - Evidence of Carcinogenicity

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 inhalation : Asphyxiant in high concentrations.

Symptoms/injuries after skin contact : Non-toxic in contact with skin. Slightly irritating to skin. Contact with the product may cause cold burns or frostbite.

Symptoms/injuries after eye contact : Slightly irritating to eyes. Contact with the liquid may cause frostbite and serious damage to eyes.

Symptoms/injuries after ingestion : not applicable.

SECTION 12: Ecological information

12.1. Toxicity

No additional information available

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

Crude C4 (68476-52-8)	
Log Pow	Not available

Isobutane (75-28-5)	
BCF fish 1	1.57 - 1.97
Log Pow	2.88 (at 20 °C)

12.4. Mobility in soil

Crude C4 (68476-52-8)	
Ecology - soil	not applicable.

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 at authorized waste collection point

Waste treatment methods : Avoid release to the environment.

Additional information : Dispose in a safe manner in accordance with local/national regulations. Non-recyclable empty containers must be destroyed and forwarded to re-melting in authorized installations.

SECTION 14: Transport information

Classification for LAND transport: DOT

UN Number	: UN1010
Proper Shipping Name	: Butadienes and Hydrocarbon mixture, stabilized
Class or Division	: 2.1
Packing group	: Not applicable
Reportable quantity	: Not applicable

Classification for SEA transport: IMO - IMDG

UN Number	: UN1010
Proper Shipping Name	: BUTADIENES AND HYDROCARBON MIXTURE, STABILIZED
Class or Division	: 2.1
Packing group	: Not applicable
Marine pollutant	: Not considered marine pollutant based on available data

Transport in bulk according to Annex II of MARPOL 73/78 and the IGC Code:

Product name	: Butadiene
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Classification for AIR transport: IATA - ICAO

UN Number	: UN1010
Proper Shipping Name	: Butadienes and hydrocarbon mixture, stabilized
Class or Division	: 2.1
Packing group	: Not applicable

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

Crude C4 (68476-52-8)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
1,3-butadiene, buta-1,3-diene (106-99-0)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	0.1 %
2-methylpropene (115-11-7)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
but-1-ene (106-98-9)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
(E)-but-2-ene (624-64-6)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Isobutane (75-28-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
butane (106-97-8)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
(Z)-but-2-ene (590-18-1)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
1,2-Butadiene (590-19-2)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
1-Butyne (107-00-6)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	

15.2. International regulations

CANADA

Crude C4 (68476-52-8)	
Listed on the Canadian DSL (Domestic Substances List)	
1,3-butadiene, buta-1,3-diene (106-99-0)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class A - Compressed Gas Class B Division 1 - Flammable Gas Class D Division 2 Subdivision A - Very toxic material causing other toxic effects Class F - Dangerously Reactive Material
2-methylpropene (115-11-7)	
Listed on the Canadian DSL (Domestic Substances List)	
but-1-ene (106-98-9)	
Listed on the Canadian DSL (Domestic Substances List)	
(E)-but-2-ene (624-64-6)	
Listed on the Canadian DSL (Domestic Substances List)	
Isobutane (75-28-5)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class A - Compressed Gas Class B Division 1 - Flammable Gas
butane (106-97-8)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class A - Compressed Gas Class B Division 1 - Flammable Gas
(Z)-but-2-ene (590-18-1)	
Listed on the Canadian DSL (Domestic Substances List)	
1,2-Butadiene (590-19-2)	
Listed on the Canadian DSL (Domestic Substances List)	
1-Butyne (107-00-6)	
Listed on the Canadian DSL (Domestic Substances List)	

EU-Regulations

Crude C4 (68476-52-8)	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
1,3-butadiene, buta-1,3-diene (106-99-0)	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
2-methylpropene (115-11-7)	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
but-1-ene (106-98-9)	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
(E)-but-2-ene (624-64-6)	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
Isobutane (75-28-5)	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
butane (106-97-8)	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
(Z)-but-2-ene (590-18-1)	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
1,2-Butadiene (590-19-2)	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
1-Butyne (107-00-6)	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	

15.2.2. National regulations

Crude C4 (68476-52-8)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on the Korean ECL (Existing Chemicals List)

1,3-butadiene, buta-1,3-diene (106-99-0)

Listed on IARC (International Agency for Research on Cancer)
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Japanese Pollutant Release and Transfer Register Law (PRTR Law)
Listed as carcinogen on NTP (National Toxicology Program)
Listed on the Canadian IDL (Ingredient Disclosure List)
Listed on INSQ (Mexican national Inventory of Chemical Substances)
Listed on CICR (Turkish Inventory and Control of Chemicals)

2-methylpropene (115-11-7)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican national Inventory of Chemical Substances)

but-1-ene (106-98-9)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican national Inventory of Chemical Substances)
Listed on CICR (Turkish Inventory and Control of Chemicals)

(E)-but-2-ene (624-64-6)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican national Inventory of Chemical Substances)

Isobutane (75-28-5)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican national Inventory of Chemical Substances)
Listed on CICR (Turkish Inventory and Control of Chemicals)

butane (106-97-8)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the Canadian IDL (Ingredient Disclosure List)
Listed on INSQ (Mexican national Inventory of Chemical Substances)
Listed on CICR (Turkish Inventory and Control of Chemicals)

(Z)-but-2-ene (590-18-1)

Listed on the AICS (Australian Inventory of Chemical Substances)
 Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
 Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
 Listed on the Korean ECL (Existing Chemicals List)
 Listed on NZIoC (New Zealand Inventory of Chemicals)
 Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
 Listed on INSQ (Mexican national Inventory of Chemical Substances)

1,2-Butadiene (590-19-2)

Listed on the AICS (Australian Inventory of Chemical Substances)
 Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
 Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
 Listed on the Korean ECL (Existing Chemicals List)
 Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

1-Butyne (107-00-6)

Listed on the AICS (Australian Inventory of Chemical Substances)
 Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
 Listed on the Japanese ISHL (Industrial Safety and Health Law)
 Listed on the Korean ECL (Existing Chemicals List)
 Listed on NZIoC (New Zealand Inventory of Chemicals)
 Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
 Listed on INSQ (Mexican national Inventory of Chemical Substances)

15.3. US State regulations

1,3-butadiene, buta-1,3-diene (106-99-0)

U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	Non-significant risk level (NSRL)
Yes	Yes	Yes	Yes	0.4 µg/day

SECTION 16: Other information

Sources of Key data	: Data arise from reference works and literature.
Abbreviations and acronyms	: ACGIH (American Conference of Government Industrial Hygienists) DNEL – Derived-No Effect Level GHS - Globally Harmonised System IARC (International Agency for Research on Cancer) OSHA - Occupational Safety and Health Administration PEL - Permissible Exposure Level STEL - Short-Term Exposure Limit TWA – Time weighted average URT irr - upper respiratory tract irritation

Full text of H-statements:

-----	H220	Extremely flammable gas
-----	H280	Contains gas under pressure; may explode if heated
-----	H336	May cause drowsiness or dizziness
-----	H340	May cause genetic defects
-----	H350	May cause cancer
-----	H380	May displace oxygen and cause rapid suffocation

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.