

## SECTION 1 Chemical product and company identification

<b>Product Chinese name</b>	: No additional information available
<b>Product English name</b>	: Isoprene
<b>Chemical Chinese name</b>	: 2-甲基 1,3-丁二烯
<b>Chemical English name</b>	: isoprene (stabilised); 2-methyl-1,3-butadiene
<b>CAS No.</b>	: 78-79-5
<b>Chemical formula</b>	: C <sub>5</sub> H <sub>8</sub>
<b>Name of company</b>	: Braskem S.A.
Address	: Rua Eteno, 1561, Polo Petroquímico de Camaçari Camaçari, BA, CEP: 42810-000, Brasil
Zip code	: 42810-000
Tel.	: +55 (71) 3413-3600
E-mail	: <a href="mailto:productsafety@braskem.com">productsafety@braskem.com</a>
Emergency number	: CHEMTREC China: +(86) 4001-204937 CHEMTREC International: +1 703-741-5970
<b>Emergency number in China (24 hours)</b>	: No additional information available
<b>Recommended use of the chemical</b>	: Manufacturer. Distribution. Polymer production.
<b>Restricted use of the chemical</b>	: No additional information available

## SECTION 2 Hazards identification

### Emergency overview

Extremely flammable colourless liquid. Suspected of causing genetic defects. Suspected of causing cancer. Toxic to aquatic life with long lasting effects.

### GHS hazard classification

Physical hazards	: Flammable liquids, Category 1
Health hazards	: Germ cell mutagenicity, Category 2 : Carcinogenicity, Category 2
Environmental hazards	: Hazardous to the aquatic environment – Acute hazard, Category 2 : Hazardous to the aquatic environment – Chronic hazard, Category 2

Other hazards not mentioned above are Not applicable or No data is available.

### Label elements

Hazard pictograms (GHS CN)	: 
Signal word (GHS CN)	: Danger.
Hazard statements (GHS CN)	: H224 - Extremely flammable liquid and vapour

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- H341 - Suspected of causing genetic defects
- H351 - Suspected of causing cancer
- H411 - Toxic to aquatic life with long lasting effects.

### Precautionary statements (GHS CN)

- Prevention measures
  - : P201 - Obtain special instructions before use.
  - P202 - Do not handle until all safety precautions have been read and understood.
  - P210 - Keep away from heat/sparks/open flames/hot surfaces. No smoking.
  - P233 - Keep container tightly closed.
  - P240 - Ground/bond container and receiving equipment.
  - P241 - Use explosion-proof electrical/ventilating/lighting equipment.
  - P242 - Use only non-sparking tools.
  - P243 - Take precautionary measures against static discharge.
  - P273 - Avoid release to the environment.
  - P280 - Wear protective gloves/protective clothing/eye protection/face protection.
- Incident response
  - : P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
  - P308+P313 - IF exposed or concerned: Get medical advice/attention.
  - P370+P378 - In case of fire: Use media other than water to extinguish.
  - P391 - Collect spillage.
- Safe storage
  - : P403+P235 - Store in a well-ventilated place. Keep cool.
  - P405 - Store locked up.
- Disposal
  - : P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

### Physical and chemical hazards

Extremely flammable liquid and vapour

### Health hazards

- Suspected of causing genetic defects
- Suspected of causing cancer

### Environmental hazards

Toxic to aquatic life with long lasting effects

### Other hazards

- May cause eye, skin and respiratory system irritation
- Prolonged or repeated contact with skin or mucous membrane result in irritation symptoms such as redness, blistering, dermatitis, etc.
- CNS depression.
- In high concentrations may cause asphyxiation.
- Vapours can travel considerable distances to a source of ignition where they can ignite, flash back, or explode.
- This material or its emissions may induce blood disorders and/or aggravate pre-existing blood disorders.

## SECTION 3 Composition/information on ingredients

**Product form** : Substance.

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Ingredient(s)	Concentration or concentration ranges (w/w %)	CAS No.
isoprene (stabilised); 2-methyl-1,3-butadiene	≥99,5	78-79-5

### SECTION 4 First-aid measures

#### Description of necessary first-aid measures

- First-aid measures general : IF exposed or concerned: Get medical advice/attention.
- First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing.  
Remove victim to fresh air.  
Do not apply mouth-to-mouth resuscitation.  
In case of irregular breathing or respiratory arrest provide artificial respiration.  
Immediately get medical attention.
- First-aid measures after skin contact : Rinse immediately with plenty of water for 15 minutes.  
Do not rub the skin and eyes after direct contact with the product.  
Remove contaminated clothing and shoes.  
Discard contaminated clothing.  
Immediately get medical attention.  
Rinse skin with water/shower.  
Take off immediately all contaminated clothing.
- First-aid measures after eye contact : Rinse immediately and thoroughly, pulling the eyelids well away from the eye (15 minutes minimum).  
Remove contact lenses, if present and easy to do. Continue rinsing.  
Do not rub the skin and eyes after direct contact with the product.  
Seek immediate medical advice.  
Rinse eyes with water as a precaution.
- First-aid measures after ingestion : Do not induce vomiting.  
If the person is fully conscious, make him/her drink water. Never give an unconscious person anything to drink.  
Seek medical attention immediately.  
Call a poison center or a doctor if you feel unwell.

#### Most important symptoms/effects

- Symptoms/effects after eye contact : May cause moderate irritation.
- Symptoms/effects after ingestion : Ingestion may cause nausea and vomiting.
- Symptoms/effects after inhalation : Inhalation may cause irritation, cough, shortness of breath.  
Asphyxiant in high concentrations.  
May have a narcotic effect at high concentrations.
- Symptoms/effects after skin contact : May cause moderate irritation.  
Effects of skin contact may include : redness.
- Chronic symptoms : This material or its emissions may induce blood disorders and/or aggravate pre-existing blood disorders.



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## SECTION 6 Accidental release measures

### Personal precautions, protective equipment and emergency procedures

- General measures : Eliminate all ignition sources if safe to do so.  
When using do not smoke.  
Use personal protective equipment as required.  
Stop leak if safe to do so.
- Personal Precautions, Protective Equipment and Emergency Procedures : No additional information available

### For non-emergency personnel

- Protective equipment : Wear suitable protective clothing, gloves and eye/face protection.  
Refer to chapter 8.
- Emergency procedures : Ventilate spillage area  
Avoid all eye and skin contact and do not breathe vapour and mist  
Evacuate unnecessary personnel  
Eliminate all ignition sources if safe to do so.  
Do not smoke  
No open flames, no sparks, and no smoking

### For emergency responders

- Protective equipment : Do not attempt to take action without suitable protective equipment  
Wear suitable protective clothing, gloves and eye/face protection.  
In case of fire: Wear self-contained breathing apparatus.  
Refer to chapter 8.  
For further information refer to section 8: "Exposure controls/personal protection"
- Emergency procedures : Avoid all eye and skin contact and do not breathe vapour and mist  
Evacuate and limit access  
Eliminate every possible source of ignition  
Stop leak if safe to do so.

### Environmental precautions

- Avoid release to the environment  
Prevent spread over a wide area (e.g. by containment or oil barriers).  
Absorb remaining liquid with sand or inert absorbent and remove to safe place  
Collect in closed containers for disposal.  
Do not empty into drains.

### Methods and material for containment and cleaning up

- Methods for cleaning : Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams
- For containment : Prevent spread over a wide area (e.g. by containment or oil barriers).  
Collect spillage.

### Prevention measures for secondary accidents

- Prevention Measures for Secondary Accidents : No additional information available
- Other information : Dispose of materials or solid residues at an authorized site

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### SECTION 7 Handling and storage

#### Handling

- Precautions for safe handling : Ensure good ventilation of the work station  
Avoid producing mist or vapours by heating of opened receptacle/container.  
Ground/bond container and receiving equipment.  
Keep container closed when not in use  
Do not pressurize, cut, weld, braze, solder, drill, grind, or expose containers to flames, sparks, heat, or other potential ignition sources.  
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
Ground/bond container and receiving equipment.  
Use only non-sparking tools.  
Take precautionary measures against static discharge.  
Flammable vapours may accumulate in the container  
Use explosion-proof equipment  
Wear personal protective equipment  
Obtain special instructions before use.  
Do not handle until all safety precautions have been read and understood.
- Hygiene measures : Do not eat, drink or smoke when using this product  
Wash hands thoroughly after handling.
- Local and general ventilation : No additional information available

#### Storage

- Storage conditions : Store in a well-ventilated place. Keep cool.  
Store in tightly closed, properly ventilated containers away from heat, sparks, open flame.  
Protect containers against damage.  
Keep stored the least quantity possible.  
Store in a well-ventilated place.  
Keep cool.  
Keep container tightly closed.  
Store locked up.
- Technical measures : Use explosion-proof ventilating equipment.  
Use explosion-proof electrical equipment.  
Use grounded electrical/mechanical equipment.  
Use only non-sparking tools.  
Ground/bond container and receiving equipment.
- Incompatible materials : Strong oxidizing agents. Halogens.
- Material used in packaging/containers : PVC (Polyvinyl chloride).  
stainless steel.  
Carbon steel.  
This material may attack some forms of plastics, rubbers and coatings.

### SECTION 8 Exposure controls / Personal protection equipment

#### Occupational exposure limits

No additional information available

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### Biological limit values

No additional information available

### Monitoring methods

No additional information available

### Appropriate engineering controls

Use explosion-proof ventilating equipment.

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure

Ensure good ventilation of the work station

### Personal protective equipment

- Personal protective equipment : An approved organic vapour respirator/supplied air or self-contained breathing apparatus must be used when vapour concentration exceeds applicable exposure limits.  
Gloves.  
Protective goggles.  
Protective clothing.
- Environmental exposure controls : Avoid release to the environment.
- Materials for protective clothing : PVC (Polyvinyl chloride).  
PE (polyethylene).
- Hand protection : Protective gloves made of PVC  
Materials to avoid:  
Butyl caoutchouc (butyl rubber).  
NR (Natural rubber (caoutchouc), Natural latex).
- Eye protection : if necessary: tightly fitting safety goggles.  
Safety glasses.
- Skin and body protection : Use chemically protective clothing.
- Respiratory protection : An approved organic vapour respirator/supplied air or self-contained breathing apparatus must be used when vapour concentration exceeds applicable exposure limits.  
[In case of inadequate ventilation] wear respiratory protection.

## SECTION 9 Physical and chemical properties

- Physical state** : Liquid
- Appearance** : No data available
- Colour** : Colourless
- Odour** : aromatic hydrocarbons
- pH** : Not applicable
- Relative evaporation rate (butylacetate=1)** : Not applicable
- Melting point** : - 145.9 °C
- Freezing point** : No data available
- Boiling point** : 34 °C @ 760 mmHg
- Flash point** : - 54 °C Closed cup
- Auto-ignition temperature** : No data available
- Decomposition temperature** : No data available

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<b>Flammability</b>	: Extremely flammable liquid and vapour.
<b>Vapour pressure</b>	: 63.397 kPa (21.1°C)
<b>Critical pressure</b>	: 37896 hPa
<b>Relative vapour density at 20°C</b>	: 2.3
<b>Relative density</b>	: 0.679 g/cm <sup>3</sup>
<b>Density</b>	: 0.681 @ 20°C (Water = 1)
<b>Solubility</b>	: Soluble in: , Benzene. , Diethyl ether, acetone, Ether.
<b>Solubility in water</b>	: 642 mg/l (25°C)
<b>Partition coefficient n-octanol/water (Log Pow)</b>	: 2.58 @ 20 °C pH 7
<b>Partition coefficient n-octanol/water (Log Kow)</b>	: 2.58
<b>Viscosity, kinematic</b>	: 0.308 mm <sup>2</sup> /s
<b>Viscosity, dynamic</b>	: 0.21 mPa·s @ 20-25°C
<b>Explosive limits (vol %)</b>	: 2 - 9 vol. %
<b>Lower explosion limit</b>	: No data available
<b>Upper explosion limit</b>	: No data available
<b>Radioactive</b>	: No

## SECTION 10 Stability and reactivity

<b>Chemical stability</b>	: May form explosive peroxides.
<b>Reactivity</b>	: React violently in contact with oxidation agents. Reacts violently with (some) halogens. Can polymerise exothermically if heated, exposed to air, sunlight or by addition or free radical initiators. Extremely flammable liquid and vapour.
<b>Possibility of hazardous reactions</b>	: Hazardous polymerization. Can polymerise exothermically if heated, exposed to air, sunlight or by addition or free radical initiators.
<b>Conditions to avoid</b>	: Direct sunlight. Pure oxygen. Open flame. Rust. Avoid contact with hot surfaces. Heat. No flames, no sparks. Eliminate all sources of ignition.
<b>Incompatible materials</b>	: Strong oxidizing agents. Halogens. Strong acids. alcohols.
<b>Hazardous decomposition products</b>	: Toxic fumes. Irritating gases.
<b>Other properties</b>	: No additional information available

## SECTION 11 Toxicological information

### Acute toxicity

Acute toxicity (oral)	: Not classified (Based on available data, the classification criteria are not met)
Acute toxicity (dermal)	: Not classified (Based on available data, the classification criteria are not met)
Acute toxicity (inhalation)	: Not classified (Based on available data, the classification criteria are not met)

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Isoprene (78-79-5)	
LD50 dermal rat	> 2000 mg/kg OECD Guideline 402 (Acute Dermal Toxicity)
LC50 Inhalation - Rat	180000 mg/m <sup>3</sup> 4 Hours

### Skin corrosion/irritation

Skin corrosion/irritation : Not classified (Based on available data, the classification criteria are not met)

### Serious eye damage/eye irritation

Serious eye damage/irritation : Not classified (Based on available data, the classification criteria are not met)

### Respiratory or skin sensitisation

Respiratory or skin sensitisation : Not classified (Based on available data, the classification criteria are not met)

### Germ cell mutagenicity

Germ cell mutagenicity : Suspected of causing genetic defects.

### Carcinogenicity

Carcinogenicity : Suspected of causing cancer.

isoprene (stabilised); 2-methyl-1,3-butadiene (78-79-5)	
IARC group	2B - Possibly carcinogenic to humans
National Toxicity Program (NTP) Status	Reasonably anticipated to be Human Carcinogen

### Reproductive toxicity

Reproductive toxicity : Not classified (Based on available data, the classification criteria are not met)

### STOT - single exposure

STOT-single exposure : Not classified (Based on available data, the classification criteria are not met)

### STOT - repeated exposure

STOT-repeated exposure : Not classified (Based on available data, the classification criteria are not met)

### Aspiration hazard

Aspiration hazard : Not classified (Based on available data, the classification criteria are not met)

## SECTION 12 Ecological information

### Ecotoxicity

Ecology - general : Toxic to aquatic life. Toxic to aquatic life with long lasting effects.

Ecology - air : Contributes to the formation of photochemical smog.

Hazardous to the aquatic environment, short-term (acute) : Toxic to aquatic life.

Hazardous to the aquatic environment, long-term (chronic) : Toxic to aquatic life with long lasting effects.

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Isoprene (78-79-5)	
LC50 - Fish [1]	7.43 mg/l OECD Guideline 203 (Fish, Acute Toxicity Test)
EC50 - Crustacea [1]	5.77 mg/l Daphnia magna OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Partition coefficient n-octanol/water (Log Kow)	2.58
Partition coefficient n-octanol/water (Log Pow)	2.42

### Persistence and degradability

Isoprene (78-79-5)	
Not rapidly degradable	Yes
Persistence and degradability	Inherently biodegradable
BOD (% of ThOD)	61 % ThOD (28 d - activated sludge, non-adapted)

### Bioaccumulative potential

Isoprene (78-79-5)	
Bioaccumulative potential	Low bioaccumulation potential
Partition coefficient n-octanol/water (Log Kow)	See section 12.1 on ecotoxicology 2.58
Partition coefficient n-octanol/water (Log Pow)	2.42

### Mobility in soil

Isoprene (78-79-5)	
Bioaccumulative potential	Low bioaccumulation potential
Partition coefficient n-octanol/water (Log Kow)	See section 12.1 on ecotoxicology 2.58
Partition coefficient n-octanol/water (Log Pow)	2.42
Ecology - soil	Very mobile.

### Other adverse effects

- Classification procedure (Ozone) : Not classified  
Other adverse effects : No additional information available

## SECTION 13 Disposal considerations

- Waste treatment methods** : Dispose of contents/container in accordance with licensed collector's sorting instructions.
- Contaminated container and packaging** : No additional information available
- Additional information** : Flammable vapours may accumulate in the container.
- Product/Packaging disposal recommendations** : Disposal through controlled incineration or authorised waste dump.

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### SECTION 14 Transport information

In accordance with JT/T 617 / IMDG / IATA

Overland transport (JT/T 617)	Transport by sea	Air transport
<b>UN number</b>		
1218	1218	1218
<b>Proper shipping name</b>		
ISOPRENE, STABILIZED	ISOPRENE, STABILIZED	Isoprene, stabilized
<b>Transport hazard class(es)</b>		
3	3	3
<b>Packing group</b>		
I.	I.	I.
<b>Environmental hazards</b>		
Dangerous for the environment: Yes	Dangerous for the environment: Yes Marine pollutant: Yes	Dangerous for the environment: Yes
Consult the associated transport regulations for available and applicable exceptions or exemptions.		
The suitable shipping classification must be evaluated at the time of shipment due to the possibility for variations in regard to the transportation of this material considering the requirements, modes of transport, packaging, packaging configuration, quantity etc. Please consult the appropriate regulation for specific shipping information and requirements.		
This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation information can be obtained through the authorized transporting corporation. It is the responsibility of the transporting corporation to follow all applicable laws, regulations and rules relating to the transportation of this product.		

#### Special transport precautions

##### Overland transport (JT/T 617)

Classification code (JT/T 617)	: F1.
Limited quantities (JT/T 617)	: 0.
Excepted quantities (JT/T 617)	: E3.
Packing instructions (JT/T 617)	: P001.
Mixed packing provisions (JT/T 617)	: MP7, MP17.
Portable tank and bulk container instructions (JT/T 617)	: T11.
Portable tank and bulk container special provisions (JT/T 617)	: TP2.

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Tank codes (JT/T 617)	: L4BN.
Vehicle for tank carriage (JT/T 617)	: FL.
Transport category (JT/T 617)	: 1.
Tunnel restriction code (JT/T 617)	: D/E.
Special provisions for carriage - Operation (JT/T 617)	: S2, S20.
Hazard identification number (JT/T 617)	: 339.
Orange-coloured plate (JT/T 617)	:



### Transport by sea

Special provisions (IMDG)	: 386.
Limited quantities (IMDG)	: 0.
Excepted quantities (IMDG)	: E3.
Packing instructions (IMDG)	: P001.
Tank instructions (IMDG)	: T11.
Tank special provisions (IMDG)	: TP2.
EmS-No. (Fire)	: F-E.
EmS-No. (Spillage)	: S-D.
Stowage category (IMDG)	: D.
Stowage and handling (IMDG)	: SW1.
Flash point (IMDG)	: -48°C c.c.
Properties and observations (IMDG)	: Colourless, volatile liquid. Flashpoint: -48°C c.c. Explosive limits: 1.5% to 9.7% Boiling point: 34°C. Immiscible with water.

### Air transport

PCA Excepted quantities (IATA)	: E3.
PCA Limited quantities (IATA)	: Forbidden.
PCA limited quantity max net quantity (IATA)	: Forbidden.
PCA packing instructions (IATA)	: 351.
PCA max net quantity (IATA)	: 1L.
CAO packing instructions (IATA)	: 361.
CAO max net quantity (IATA)	: 30L.
Special provisions (IATA)	: A209.
ERG code (IATA)	: 3H.

## SECTION 15 Regulatory information

**Regulation on the Safety Management of Hazardous Chemicals** : Catalogue of Hazardous Chemicals (2015)  
1031, 2-Methyl-1,3-butadiene

**New Chemical Substance Environmental Management Registration Measures (MEE Order 12 of 2020)**

**Inventory of Existing Chemical Substances in China (IECSC)** : Contains listed substance(s)  
1,3-Butadiene, 2-methyl- (CAS-No. 78-79-5)

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## Regulations on the Safe Management of Hazardous Chemicals (Decree 591 of the State Council)

**Catalogue of Hazardous Chemicals (2015)** : Contains Hazardous Chemical(s)  
2-Methyl-1,3-butadiene(inhibited) (CAS-No. 78-79-5)  
Considered as Hazardous Chemical(s)

## Other domestic regulatory lists

**Dangerous Goods List (GB 12268-2012)** : Contains listed substance(s)  
ISOPRENE, STABILIZED (CAS-No. 78-79-5)

## SECTION 16 Other information

Safety Data Sheet (SDS), China

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.