

## SAFETY DATA SHEET

**Product:** TOLUENE

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**SECTION 1: IDENTIFICATION**

Identification of the product	TOLUENE.
Recommended use of the chemical and restrictions on use	Industrial use.
Company	COMPANHIA BRASILEIRA DE ESTIRENO.
Address	Rua Hidrogênio, 1879 - Polo Petroquímico – Camaçari – BA - CEP: 42810-140, Brazil.
Phone number(s)	55 (71) 3415-6990.
Company	COMPANHIA BRASILEIRA DE ESTIRENO.
Address	Av. Nove de Abril, 1296 – Vila Elisabeth - Cubatão – SP, CEP: 11510-001, Brazil.
Phone number(s)	55 (13) 3023-5890 / 55 (13) 3023-5891.
Emergency phone number	0800 110 8270 Pró-Química.

**SECTION 2: HAZARD IDENTIFICATION**

Classification of the substance or mixture	Flammable liquids – Category 2 Skin corrosion/irritation – Category 2 Eye damage/irritation – Category 2B Reproductive toxicity – Category 2 Specific target organ toxicity – single exposure – Category 3 Specific target organ toxicity – repeated exposure – Category 2 Hazardous to the aquatic environment – Acute – Category 2
Classification system adopted	Globally Harmonized System of Classification and Labelling of Chemicals (GHS), United Nations.
Other hazards which do not result in classification	The product does not have other hazards.
Adequate labeling elements	

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Pictograms



Signal word

DANGER

Hazard statement(s):

H225 Highly flammable liquid and vapour.

H315 Causes skin irritation.

H320 Causes eye irritation.

H336 May cause drowsiness or dizziness.

H361 Suspected of damaging fertility or the unborn child.

H373 May cause damage to central nervous system through prolonged or repeated exposure.

H401 Toxic to aquatic life.

**PREVENTION:**

Precautionary statement(s):

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, sparks, open flames and other ignition sources. No smoking.

P233 Keep container tightly closed.

P240 Ground and bond container and receiving equipment.

P241 Use explosion-proof electrical, ventilating and lighting equipment.

P242 Use non-sparking tools.

P243 Take action to prevent static discharges.

P260 Do not breathe mist and vapours.

P261 Avoid breathing mist and vapours.

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P264 Wash hands thoroughly after handling.

P271 Use only outdoors or in a well-ventilated area.

P273 Avoid release to the environment.

P280 Wear protective gloves, protective clothing, eye protection and face protection.

**RESPONSE:**

P302 + P352 IF ON SKIN: Wash with plenty of water.

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].

P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P308 + P313 IF exposed or concerned: Get medical attention.

P312 Call a POISON CENTER or a doctor, if you feel unwell.

P314 Get medical advice/attention if you feel unwell.

P321 Specific treatment.

P332 + P313 If skin irritation occurs: Get medical advice/attention.

P337 + P313 If eye irritation persists: Get medical advice/attention.

P362 + P364 Take off contaminated clothing and wash it before reuse.

P370 + P378 In case of fire: Use foam, water mist, chemical powder and carbon dioxide (CO<sub>2</sub>) to extinguish.

**STORAGE:**

P403 + P233 Store in a well-ventilated place. Keep container

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tightly closed.

P403 + P235 Store in a well-ventilated place. Keep cool.

P405 Store locked up.

**DISPOSAL:**

P501 Dispose of contents and container in accordance with local regulations.

**SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS**

## SUBSTANCE

Common chemical name Toluene.

Common name(s), synonym(s) of the substance Methylbenzene, Phenylmethane, Toluol.

CAS number 108-88-3.

Ingredients or impurities contributing to the hazard The product does not have other hazards.

Concentration  $\geq 91\%$ .**SECTION 4: FIRST- AID MEASURES****Routes of exposure**

Ingestion

Do not induce vomiting. Never give anything by mouth to an unconscious person. Rinse the victim's mouth with water in abundance. If the victim feels unwell, contact a TOXICOLOGICAL INFORMATION CENTER or a doctor. Bring this MSDS.

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Skin	Wash exposed skin with sufficient amount of water to remove the material. Take off and isolate contaminated clothing and shoes. In case of skin irritation: contact a doctor. Bring this MSDS.
Eye	Wash carefully with water for several minutes. In case of use of contact lenses, remove them, if possible. Keep washing. If eyes irritation continues: Contact a doctor. Bring this MSDS.
Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If the victim feels unwell, contact a TOXICOLOGICAL INFORMATION CENTER or a doctor. Bring this MSDS.
Most important symptoms/effects, acute and delayed	Causes skin irritation with redness and dryness, and eyes with tearing and redness. May cause drowsiness or vertigo. Repeated exposure can cause fatigue, muscle weakness, confusion, incoordination, dilated pupils and accommodation disorders.
Indication of immediate medical attention and special treatment needed, if necessary	Avoid contact with the product when assisting the victim. If necessary, symptomatic treatment should include, above all, support measures such as correction of hydroelectrolytic, metabolic disorders, as well as respiratory assistance. In case of contact with the skin, do not rub the affected area.

**SECTION 5: FIRE-FIGHTING MEASURES**

Suitable extinguishing media	Suitable: Compatible with foam, water mist, chemical powder and carbon dioxide (CO <sub>2</sub> ). Not recommended: Water jets directly.
Specific hazards arising from the	Very dangerous when exposed to excessive heat or other

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chemical

sources of ignition such as sparks, open flames or flames of matches and cigarettes, welding operations, pilot lights and electric motors. Can accumulate static charge by flow or agitation. Vapors from heated liquid can be ignited by static discharge. Vapors are heavier than air and tend to accumulate in low or confined areas, such as sewers and basements. Can travel great distances causing retrogression of the flame or new fires both in open environments in as confined ones. Containers may explode if heated. The combustion of the chemical products or containers may form toxic and irritant gases such as carbon monoxide and carbon dioxide.

Special protective actions for fire-fighters

Self-contained breathing apparatus (SCBA) with positive pressure and full protective clothing. Containers and tanks involved in the fire can be cooled by water fog.

**SECTION 6: ACCIDENTAL RELEASE MEASURES**

Personal precautions, protective equipment, and emergency procedures

For non-emergency personnel

Isolate spills from ignition sources. Evacuate the area within a radius of at least 100 meters. Keep unauthorized persons away from the area. Stop the leak if it can be done without risk. Prevent sparks or flames. Do not smoke. Do not touch damaged containers or spilled material without the use of appropriate clothing. Avoid exposure to the product. Stay in a safe place, with wind from behind. Use personal protective equipment as described in Section 8.

For emergency responders

Wear full PPE with safety goggles and face shield, safety gloves, suitable protective clothing and closed shoes.

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	Respiratory protection mask against organic vapors.
Environmental precautions	Avoid that the spilled material reaches waterways or sewage system.
Methods and materials for containment and cleaning up	Do not allow water to enter the containers. Collect the product with a clean shovel or other instrument that does not disperse the product. Put material in suitable containers and remove them to a safe place. For disposal, proceed according to Section 13 of this SDS

**SECTION 7: HANDLING AND STORAGE**

## Precautions for safe handling

Safe handling of the substance or mixture	Handle in a well ventilated area or with general system of ventilation/local exhaust. Avoid vapors and mists formation. Avoid exposure to the chemical, since the effects may not be felt immediately. Use personal protective equipment as described in Section 8.
General hygiene:	Wash hands and face thoroughly after handling and before eating, drinking, smoking or going to the bathroom. Contaminated clothing should be changed and washed before reuse. Remove clothing and protective equipment contaminated before entering eating areas.
Conditions for safe storage, including any incompatibilities	
Technical measures for prevention of fire and explosion	Keep away from heat, sparks, open flames and hot surfaces. - Do not smoke. Keep container tightly closed. Ground the container vessel and the receiver of the product during transfers. Only use anti-sparking tools. Avoid the accumulation of electrostatic charges. Use electrical equipment, ventilation and

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	lighting explosion proof.
Adequate conditions	Store in a well ventilated place away from sunlight. Keep container closed. Keep stored at room temperature. It is not necessary the addition of stabilizers and antioxidants to ensure the durability of the product. This product may react dangerously with some incompatible materials as highlighted in Section 10.
Packaging compatibilities	Similar to the original packaging.

**SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

Control parameters

Occupational exposure limit	Common chemical name or technical name	TWA-TLV (ACGIH, 2020)
	Toluene	20 ppm

**BEI (ACGIH, 2020):**

Toluene in the blood: 0.02 mg/L (before the last day of the week).

Toluene in the urine: 0.03 mg/L (end of the day).

o-Cresol in the urine: 0.3 mg/g of creatinine (end of the day).

Biological limit:

The determinant can be present in biological samples collected from people who were not occupationally exposed in a concentration that could affect the interpretation of the result. These basal concentrations are incorporated into the value of the EIB.

Other limits and values

**IDLH (NIOSH, 2017):** 500 ppm

Appropriate engineering controls

Promote direct mechanical ventilation and exhaust system to the



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outside environment. These measures help reduce exposure to product. Maintain atmospheric concentrations of the constituents of the product below occupational exposure limits indicated.

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection Safety glasses and face shield.

Skin protection Safety gloves, suitable protective clothing and boots.

Respiratory protection It is recommended to use respiratory protective equipment with filter for organic vapors. Based on the inhalation hazard of the product, a risk assessment must be carried out to adequately define respiratory protection in view of the conditions of use of the product.

Thermal hazards It is not necessary to use specific EPIs, since the product does not present thermal hazards.

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

Physical state Liquid.

Colour Not available.

Odour Not available.

Melting point/freezing point Not available.

Boiling point or initial boiling point and boiling range 111°C

Flammability Not available.

Lower and upper explosion limit /flammability limit Not available.

Flash point 4.4°C

Auto-ignition temperature Not available.

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Decomposition temperature	Not available.
pH	Not available.
Kinematic viscosity	Not available.
Solubility	Imiscible in water. (0.05% at 25°C)
Partition coefficient n-octanol/water (log value)	Not available.
Vapour pressure	22 mmHg at 20°C
Density and/or relative density	0.87
Relative vapour density	Not available.
Particle characteristics	Not available.
Other information	Not applicable.

**SECTION 10: STABILITY AND REACTIVITY**

Reactivity and chemical stability	Product has no reactivity. The product is stable under normal conditions of storage and use.
Possibility of hazardous reactions	There are not known hazardous reactions with the product.
Conditions to avoid	High temperatures, ignition source and contact with incompatible materials.
Incompatible material	Oxidizing materials.
Hazardous decomposition products	There are not known hazardous decomposition products.

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**SECTION 11: TOXICOLOGICAL INFORMATION**

Acute toxicity	Product not classified as acute toxic. ATEmix (Acute Toxicity Estimate) ATEmix (oral): > 5000 mg/kg ATEmix (dermal): > 5000 mg/kg ATEmix (inhalation, 4h): > 20 mg/L  Informatio related to: - <u>Toluene</u> LD <sub>50</sub> (oral, rats): 5580 mg/kg LD <sub>50</sub> (dermal, rabbits): > 5000 mg/kg LC <sub>50</sub> (Inhalation, rats, 4h): 25.7 mg/L
Skin corrosion/irritation	Causes skin irritation with redness and dryness.
Serious eye damage/irritation	Causes eye irritation with tearing and redness.
Respiratory or skin sensitization	Based on available information, the classification criteria have not been met.
Germ cell mutagenicity	Based on available information, the classification criteria have not been met.
Carcinogenicity	Based on available information, the classification criteria have not been met.
Reproductive toxicity	Suspected of damaging fertility or the unborn child. Studies in animals showed reduction in sperm count in males, weight reduction and neurotoxicity in neonates.
STOT - Single exposure	May cause drowsiness or dizziness.
STOT - Repeated exposure	May cause damage to central nervous system through prolonged or repeated exposure. Repeated exposure can cause fatigue, muscle weakness,

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	confusion, incoordination, dilated pupils and accommodation disorders.
Aspiration hazard	Based on available information, the classification criteria have not been met.

**SECTION 12: ECOLOGICAL INFORMATION**

Ecotoxicity	Toxic to aquatic life. LC <sub>50</sub> ( <i>Oncorhynchus kisutch</i> , 96h): 5.5 mg/L EC <sub>50</sub> ( <i>Ceriodaphnia dubia</i> , 48h): 3.78 mg/L
Persistence and degradability	Due to lack of data, the product is expected to persist and not be rapidly degraded.
Bioaccumulative potential	It has low bioaccumulative potential in aquatic organisms. log kow: 2.73 BCF: 90
Mobility in soil	No data available.
Other adverse effects	There are not known adverse environmental effects of the product.

**SECTION 13: DISPOSAL CONSIDERATIONS**

Disposal methods	
Product	It must be disposed of as hazardous waste according to local regulations. The treatment and disposal should be evaluated for each specific product. Keep the product remains in its original and properly closed. Disposal should be performed as established for the product. Do not reuse empty containers. These may contain product residues and should be kept closed

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and sent for proper disposal as established for the product.

**SECTION 14: Transport information**

Road	UN - "United Nations". Recommendations on the TRANSPORT OF DANGEROUS GOODS. Model Regulations.
UN Number	1294
UN Proper Shipping Name	TOLUENE
Transport hazard class(es):	3
Packing group:	II
Rail	Convention concerning International Carriage by Rail (COTIF) Appendix C - Regulations concerning the International Carriage of Dangerous Goods by Rail - RID
UN Number	1294
UN Proper Shipping Name	TOLUENE
Transport hazard class(es)	3
Packing group	II
Sea:	IMO – International Maritime Organization International Maritime Dangerous Goods Code (IMDG Code)
UN Number	1294
UN Proper Shipping Name	TOLUENE
Transport hazard class(es)	3
Packing group	II
EmS	F-E, S-D
Marine pollutant	The product is not considered a marine pollutant.
Air	IATA - International Air Transport Association Dangerous Goods Regulation (DGR)

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UN Number	1294
UN Proper Shipping Name	TOLUENE
Transport hazard class(es)	3
Packing group	II
Hazardous to the environment	The product is not considered environmentally hazardous
Special precautions for user	There is no need of special precautions.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Consult regulations: <ul style="list-style-type: none"><li>- International Maritime Organization. MARPOL: Articles, protocols, annexes, unified interpretations of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto, consolidated edition. IMO, London, 2006.</li><li>- International Maritime Organization. IBC code: International code for the construction and equipment of shipping carrying dangerous chemicals in bulk: With Standards and guidelines relevant to the code. IMO, London, 2007.</li></ul>

**SECTION 15: REGULATORY INFORMATION**

Regulations for chemical products	Convention concerning Safety in the use of Chemicals at Work (Convention 170) - International Labour Organization, 1990.
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**SECTION 16: OTHER INFORMATION**

This SDS was prepared based on current knowledge about the proper product handling and under normal conditions of use, in accordance with the application specified on the packaging. Any other use of the product involving their combination with other materials, and use various forms of those indicated, are the responsibility of the user. Warns that the handling of any chemical substance requires the prior knowledge of its hazards for the user. In the workplace it is for the user company's

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product promotes training of its collaborators about the possible risks arising from exposure to the chemical.

Revised and adequate in march 2021.

Subtitles and abbreviations:

ACGIH – American Conference of Governmental Industrial Hygienists

BEI – Biological Exposure Index

CAS – Chemical Abstracts Service

EC<sub>50</sub> – Effective concentration 50%

LC<sub>50</sub> – Lethal concentration 50%

LD<sub>50</sub> – Lethal dose 50%

IARC – International Agency for Research on Cancer

IDLH – Immediately Dangerous to Life or Health

kow – Octanol/Water Partition Coefficient

NOEC – No Observed Effect Concentration

STEL – Short Term Exposure Limit

TLV – Threshold Limit Value

TWA – Time Weighted Average

References:

ACGIH. AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIALS HYGIENISTS. TLVs® and BEIs®: Based on the Documentation of the Threshold Limit Values (TLVs®) for Chemical Substances and Physical Agents & Biological Exposure Indices (BEIs®). Cincinnati-USA, 2020.

GHS. Globally Harmonized System of Classification and Labelling of Chemicals. 8. rev. ed. New York: United Nations, 2015.

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