

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

#### 1.1. Product identifier

Chemical type	: Substance
Substance name	: Coke (petroleum)
Trade name	: Green Petroleum Coke
EC no	: 265-080-3
CAS No.	: 64741-79-3
REACH registration No.	: Not applicable
Product code	: 98X SDS # PbR0017
Synonyms	: Petroleum Coke

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

##### 1.2.1. Relevant identified uses

Use of the substance/preparation : Fuels

##### 1.2.2. Uses advised against

No additional information available

#### 1.3. Details of the supplier of the safety data sheet

Only representative:

Petrobras Europe Ltd.  
4th Floor, 20 North Audley Street  
London W1K 6WL, United Kingdom  
Fax number: +44(0) 20 7355 8750  
E-mail: reach@petrobras.com.br

Manufacturer:

Petróleo Brasileiro S. A.  
Avenida Chile, 65.  
20035-900 Rio de Janeiro - Brazil  
E-mail: sac@petrobras.com.br

#### 1.4. Emergency telephone number

Emergency number : For Chemical Emergency, Spill, Leak, Fire, Exposure or Accident Call CHEMTREC Day or Night  
Within USA and Canada: 1-800-424-9300  
Outside USA and Canada (collect calls accepted): 1-703-527-3887

### SECTION 2: Hazards identification

#### 2.1. Classification of the substance or mixture

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

STOT RE 1 H372

Full text of H-phrases: see section 16.

##### Classification according to Directive 67/548/EEC or 1999/45/EC

T; R48/23

Full text of R-phrases: see section 16.

##### Adverse physicochemical, human health and environmental effects

Chronic exposure to high concentration of dust causes damage to lungs. Dust from this product may cause respiratory irritation. Prolonged or repeated contacts with the skin may cause dermatitis.

#### 2.2. Label elements

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

Hazard pictograms (CLP) :



GHS08

Signal word (CLP) :

Danger

Hazard statements (CLP) :

H372 - Causes damage to organs (lung/respiratory system) through prolonged or repeated exposure (inhalation)

Precautionary statements (CLP) :

P260 - Do not breathe dust.  
P264 - Wash skin thoroughly after handling.  
P270 - Do not eat, drink or smoke when using this product  
P314 - Get medical advice/attention if you feel unwell

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P501 - Dispose of contents/container to Comply with applicable local, national and international regulation.

EUH phrases : EUH210 - Safety data sheet available on request

### 2.3. Other hazards

This substance/mixture does not meet the PBT/VPvB criteria of REACH, annex XIII.

other hazards which do not result in classification : Explosive, if the powder is exposed to heat or flame.

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

Name	Product identifier	%	Classification according to Directive 67/548/EEC
Coke (petroleum)	(CAS No.) 64741-79-3 (EC no) 265-080-3	100	T; R48/23
Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Coke (petroleum)	(CAS No.) 64741-79-3 (EC no) 265-080-3	100	STOT RE 1, H372

Full text of R-, H- and EUH-phrases: see section 16.

### 3.2. Mixtures

Not applicable

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. In case of breathing difficulties administer oxygen. Give artificial respiration if necessary. Seek medical advice. If medical advice is needed, have product container or label at hand.

First-aid measures after skin contact : Take off immediately all contaminated clothing, including underwear and shoes . Rinse thoroughly with plenty of water for at least 20 minutes and take medical advice. If medical advice is needed, have product container or label at hand.

First-aid measures after eye contact : Rinse immediately and plentifully with water, also under the eyelids, for at least 20 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If medical advice is needed, have product container or label at hand.

First-aid measures after ingestion : Rinse mouth immediately and drink large quantities of water. Do not induce vomiting. If swallowed, seek medical advice immediately and show this container or label.

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

Symptoms/injuries after inhalation : May cause respiratory irritation. Repeated exposure to aerosols may result in lung damage.

Symptoms/injuries after skin contact : May cause skin irritation. Prolonged or repeated contacts with the skin may cause dermatitis.

Symptoms/injuries after eye contact : May cause irritation to the eyes.

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

Keep victim warm and rested. Avoid any direct contact with the product. Never give anything by mouth to an unconscious person.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

Suitable extinguishing media: : Water. Water spray. Alcohol resistant foam. Dry powder.

Unsuitable extinguishing media : None known.

### 5.2. Special hazards arising from the substance or mixture

Fire hazard : Flammable solid. Vapours may cause fire/explosion if source of ignition is present. May release flammable gases. Hydrogen sulfide. Combustion generates : carbon oxides (CO and CO<sub>2</sub>). Nitrogen oxides (NO<sub>x</sub>). hydrocarbons.

Explosion hazard : Risk of explosion if heated in a confined system. Gas/vapour explosive with air within explosion limits.

### 5.3. Advice for firefighters

Firefighting instructions : Cool tanks/drums with water spray/remove them into safety.

Protective equipment for firefighters : Extra personal protection: complete protective clothing including self-contained breathing apparatus. Refer to section 8.

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

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### SECTION 6: Accidental release measures

#### 6.1. Personal precautions, protective equipment and emergency procedures

##### 6.1.1. For non-emergency personnel

Protective equipment : Refer to section 8.  
Emergency procedures : Keep away from heat, flames or sparks. No smoking. Avoid generation of dust.

##### 6.1.2. For emergency responders

Protective equipment : Refer to section 8. In case of fire: Wear self-contained breathing apparatus.  
Emergency procedures : Eliminate all ignition sources if safe to do so. No flames, No sparks. Eliminate all sources of ignition. do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Evacuate unnecessary personnel. Avoid generation of dust. Ventilate affected area.

#### 6.2. Environmental precautions

Do not discharge into drains or the environment. Do not discharge into surface water.

#### 6.3. Methods and material for containment and cleaning up

For containment : Ventilate affected area. Avoid generation of dust.  
Methods for cleaning up : Sweep or shovel spills into appropriate container for disposal. Dispose of this material and its container to hazardous or special waste collection point. Avoid raising powdered materials into airborne dust. Do not empty into drains or the aquatic environment.  
Other information : Do not allow run-off from fire fighting to enter drains or water courses.

#### 6.4. Reference to other sections

Refer to sections 8 and 13.

### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

Precautions for safe handling : Handle in accordance with good industrial hygiene and safety procedures. Carry operations in the open/under local exhaust/ventilation or with respiratory protection. Wash hands and other exposed areas with mild soap and water before eat, drink or smoke and when leaving work. Refer to section 8. Do not eat, drink and do not smoke in areas where product is used. Take off contaminated clothing and wash before reuse.

#### 7.2. Conditions for safe storage, including any incompatibilities

Technical measures: : Provide adequate ventilation.  
Storage condition(s) : Protect from sunlight. Store in a well-ventilated place. Keep away from open flames, hot surfaces and sources of ignition. Keep container tightly closed. Store at room temperature. keep coke piles wet to avoid environmental pollution due to fineparticles of the product.  
Incompatible materials : Oxidizing agents, strong. Peroxides. Chlorates. chromic acid.  
Storage area : Store at room temperature. Store according to local legislation.

#### 7.3. Specific end use(s)

No additional information available

### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

Green Petroleum Coke (64741-79-3)		
France	VLE (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup>
Germany	TRGS 900 Occupational exposure limit value (mg/m <sup>3</sup> )	6 mg/m <sup>3</sup>
Germany	TRGS 900 Limitation of exposure peaks (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup> 1 hour 2 times
Italy - Portugal - USA ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup> respirable
Italy - Portugal - USA ACGIH	ACGIH Ceiling (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup> inhalable
The Netherlands	MAC TGG 8H (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup> inhalable
The Netherlands	MAC C (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup> respirable
United Kingdom	WEL TWA (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup> respirable
Denmark	Grænseværdie (kortvarig) (mg/m <sup>3</sup> )	2 mg/m <sup>3</sup>
Sweden	nivågränsvärde (NVG) (mg/m <sup>3</sup> )	3 mg/m <sup>3</sup>

#### 8.2. Exposure controls

Appropriate engineering controls : Provide adequate ventilation. Provide local exhaust or general room ventilation to minimize vapour concentrations. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Contact lenses should not be worn.

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Personal protective equipment

: Gloves. Protective goggles. Protective clothing. respiratory protection.



Materials for protective clothing

: Wear suitable protective clothing.

Hand protection

: Protective gloves made of PVC.

Eye protection

: Chemical goggles or safety glasses. Contact lenses should not be worn.

Skin and body protection

: Wear suitable protective clothing.

Respiratory protection

: Avoid breathing dust/fume/gas/mist/vapours/spray.

Environmental exposure controls

: Do not allow into drains or water courses or dispose of where ground or surface waters may be affected. Do not allow run-off from fire fighting to enter drains or water courses.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state	: Solid
Colour	: dark grey.
Odour	: hydrocarbon-like.
Odour threshold	: No data available
pH	: Not applicable
Melting point	: Not applicable.
Solidification point	: No data available
Boiling point	: No data available
Flash point	: No data available
Relative evaporation rate (butylacetate=1)	: No data available
Flammability (solid, gas)	: > 200 °C
Explosive limits	: No data available
Vapour pressure	: No data available
Relative vapour density at 20 °C	: No data available
Relative density	: 0.83 g/cm <sup>3</sup>
Solubility	: Soluble in organic solvents. Water: insoluble
Log Pow	: No data available
Self ignition temperature	: No data available
Decomposition temperature	: > 300 °C
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidising properties	: No data available

### 9.2. Other information

No additional information available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

No additional information available

### 10.2. Chemical stability

The product is stable at normal handling- and storage conditions. No polymerization .

### 10.3. Possibility of hazardous reactions

When mixed with air and exposed to an ignition source, dust may burn in the open air or explode if confined.

### 10.4. Conditions to avoid

heat sources. Keep out of direct sunlight.

### 10.5. Incompatible materials

Strong oxidizing agents. Peroxides. Chlorates. chromic acid.

### 10.6. Hazardous decomposition products

On burning: release of (highly) toxic gases/vapours.

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### SECTION 11: Toxicological information

#### 11.1. Information on toxicological effects

Acute toxicity	: Not classified (Lack of data)
Skin corrosion/irritation	: Not classified pH: Not applicable
Serious eye damage/irritation	: Not classified pH: Not applicable
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)	: Causes damage to organs (lung/respiratory system) through prolonged or repeated exposure (inhalation).

#### Green Petroleum Coke (64741-79-3)

LOAEL (inhalation, rat, gas, 730 days)	0.01 ppmV/6h/day
NOAEL (inhalation, rat, vapour, 730 days)	0.0307 mg/l/6h/day

Aspiration hazard	: Not classified
Potential Adverse human health effects and symptoms	: Prolonged or repeated contacts with the skin may cause dermatitis. Chronic exposure to high concentration of dust causes damage to lungs. Dust from this product may cause irritation to the respiratory tract. Dust from this product may cause skin irritation. Dust from this product may cause eye irritation.
Remark	: Based on available studies on effect of chronic exposure of petroleum coke on rats and monkeys and available evidences on its effect on human health.

### SECTION 12: Ecological information

#### 12.1. Toxicity

No additional information available

#### 12.2. Persistence and degradability

##### Green Petroleum Coke (64741-79-3)

Persistence and degradability	This product is expected to have a low potential to degrade and thus is expected to persist in the environment.
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#### 12.3. Bioaccumulative potential

##### Green Petroleum Coke (64741-79-3)

Bioaccumulative potential	not bioaccumulative.
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#### 12.4. Mobility in soil

No additional information available

#### 12.5. Results of PBT and vPvB assessment

##### Green Petroleum Coke (64741-79-3)

This substance/mixture does not meet the PBT/vPvB criteria of REACH, annex XIII.
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#### 12.6. Other adverse effects

No additional information available

### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods

Regional legislation (waste)	: Disposal must be done according to official regulations.
Waste treatment methods	: Consult the local waste disposal expert about waste disposal. Disposal through controlled incineration or authorised waste dump.
Waste disposal recommendations	: Do not re-use empty containers. Dispose of this material and its container to hazardous or special waste collection point.

### SECTION 14: Transport information

Not a dangerous good in sense of transport regulations.

### SECTION 15: Regulatory information

#### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

##### 15.1.1. EU-Regulations

Contains no REACH candidate substance

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Other regulations, restrictions and prohibition regulations : Compliance with following regulations: Regulation (EC) 1907/2006 as amended. Regulation (EC) 1272/2008 as amended. Directive 1999/45/EC as amended. Directive 67/548/EEC as amended.

### 15.1.2. National regulations

No additional information available

### 15.2. Chemical safety assessment

CSA has not been carried out

## SECTION 16: Other information

Sources of Key data : PETROBRAS. MSDS. American Petroleum Institute, chronic inhalation toxicity study of petroleum coke (delayed process) in rates and monkeys. Study conducted by International Research and Development Corporation. Report no. 32-30234, API, Washington DC, 1984. Klonne et al., Two-year inhalation toxicity study of petroleum coke in rates and monkeys, Amer. J. Indust. Med., vol. 11, pp. 375-389, 1987. . Monarca, S. et al., Application of the Salmonella mutagenicity assay and determination of polycyclic aromatic hydrocarbons in workplaces exposed to petroleum pitch and petroleum coke, Int. Arch. Occup. Environ. Health, vol. 49, pp. 223-239, 1982. Lipscomb and Lee, Health Hazard Evaluation – Great Lakes Carbon Corp., port Arthur, Texas, Report HETA 81-421-1251, 1981.

Abbreviations and acronyms : GHS - Globally Harmonised System. EEC - European Economic Community. EC - European Community. CSR - Chemical Safety Report. CLP - Classification, Labelling and Packaging. ASTM - American Society for Testing and Materials . REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals. SDS - Safety Data Sheet.

Full text of R-, H- and EUH-phrases:

STOT RE 1	Specific target organ toxicity (repeated exposure) Category 1
H372	Causes damage to organs through prolonged or repeated exposure
R48/23	Toxic: danger of serious damage to health by prolonged exposure through inhalation.

SDS PETROBRAS USES

*The information presented in this Safety Data Sheet is based on current knowledge and is believed to be complete and accurate. It describes the product for the purposes of health, safety and environment requirements only and shall, therefore, be used only as a guide. The data refers to a specific product and may not be valid for combined uses with other products. It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. Petrobras shall not be responsible for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices.*