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

1.1. Product identifier

<table>
<thead>
<tr>
<th>Chemical type</th>
<th>Substance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance name</td>
<td>Coke (petroleum)</td>
</tr>
<tr>
<td>Trade name</td>
<td>Green Petroleum Coke</td>
</tr>
<tr>
<td>EC no</td>
<td>265-080-3</td>
</tr>
<tr>
<td>CAS No.</td>
<td>64741-79-3</td>
</tr>
<tr>
<td>REACH registration No.</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Product code</td>
<td>98X SDS # PbR0017</td>
</tr>
<tr>
<td>Synonyms</td>
<td>Petroleum Coke</td>
</tr>
</tbody>
</table>

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

PETROBRAS GLOBAL TRADING BV
Weena 722, 4th Floor
3014, Rotterdam
The Netherlands

All communications shall be addressed exclusively to the following address:
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

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.
- P501 - Dispose of contents/container to Comply with applicable local, national and international
Green Petroleum Coke  
Safety Data Sheet  
according to Regulation (EC) No. 453/2010  

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  

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>Classification according to Directive 67/548/EEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coke (petroleum)</td>
<td>(CAS No.) 64741-79-3 (EC no) 265-080-3</td>
<td>100</td>
<td>T; R48/23</td>
</tr>
</tbody>
</table>

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  
Unsuitable extinguishing media : None known.  

5.2. Special hazards arising from the substance or mixture  
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.  

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.  

Full text of R-, H- and EUH-phrases: see section 16.  
3.2. Mixtures  
Not applicable  

15/08/2011 EN (English) 2/6
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. Evacuate unnecessary personnel. Avoid generation of dust. Ventilate affected area.

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.
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/m³) 5 mg/m³  
| Germany | TRGS 900 Occupational exposure limit value (mg/m³) 6 mg/m³  
| Germany | TRGS 900 Limitation of exposure peaks (mg/m³) 10 mg/m³ 1 hour 2 times  
| Italy - Portugal - USA ACGIH | ACGIH TWA (mg/m³) 5 mg/m³ respirable  
| Italy - Portugal - USA ACGIH | ACGIH Ceiling (mg/m³) 10 mg/m³ inhalable  
| The Netherlands | MAC TGG 8H (mg/m³) 10 mg/m³ inhalable  
| The Netherlands | MAC C (mg/m³) 5 mg/m³ respirable  
| United Kingdom | WEL TWA (mg/m³) 5 mg/m³ respirable  
| Denmark | Grænseværdie (kortvarig) (mg/m3) 2 mg/m³  
| Sweden | nivågränsvärde (NVG) (mg/m3) 3 mg/m³  

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.


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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Solid</td>
</tr>
<tr>
<td>Colour</td>
<td>dark grey</td>
</tr>
<tr>
<td>Odour</td>
<td>hydrocarbon-like</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Melting point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Solidification point</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling point</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative evaporation rate (butylacetate=1)</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>&gt; 200 °C</td>
</tr>
<tr>
<td>Explosive limits</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative vapour density at 20 °C</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative density</td>
<td>0.83 g/cm³</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in organic solvents. Water: insoluble</td>
</tr>
<tr>
<td>Log Pow</td>
<td>No data available</td>
</tr>
<tr>
<td>Self ignition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>&gt; 300 °C</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Oxidising properties</td>
<td>No data available</td>
</tr>
</tbody>
</table>

#### 9.2. Other information

No additional information available

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### 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


#### 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

<table>
<thead>
<tr>
<th>Effect</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity</td>
<td>Not classified (Lack of data)</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Not classified</td>
</tr>
<tr>
<td>pH</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
<td>Not classified</td>
</tr>
<tr>
<td>pH</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Respiratory or skin sensitisation</td>
<td>Not classified</td>
</tr>
</tbody>
</table>
**Green Petroleum Coke**  
**Safety Data Sheet**  
according to Regulation (EC) No. 453/2010  

<table>
<thead>
<tr>
<th>Germ cell mutagenicity</th>
<th>: Not classified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carcinogenicity</td>
<td>: Not classified</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>: Not classified</td>
</tr>
<tr>
<td>Specific target organ toxicity (single exposure)</td>
<td>: Not classified</td>
</tr>
<tr>
<td>Specific target organ toxicity (repeated exposure)</td>
<td>: Causes damage to organs (lung/respiratory system) through prolonged or repeated exposure (inhalation).</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Green Petroleum Coke (64741-79-3)</th>
<th>LOAEL (inhalation, rat, gas, 730 days)</th>
<th>0.01 ppmV/6h/day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NOAEL (inhalation, rat, vapour, 730 days)</td>
<td>0.0307 mg/l/6h/day</td>
</tr>
</tbody>
</table>

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.

12.3. Bioaccumulative potential  
**Green Petroleum Coke (64741-79-3)**  
Bioaccumulative potential : not bioaccumulative.

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.

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


15.1.2. National regulations  
No additional information available

15.2. Chemical safety assessment  
CSA has not been carried out
SECTION 16: Other information


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

<table>
<thead>
<tr>
<th>STOT RE 1</th>
<th>Specific target organ toxicity (repeated exposure) Category 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>H372</td>
<td>Causes damage to organs through prolonged or repeated exposure</td>
</tr>
<tr>
<td>R48/23</td>
<td>Toxic: danger of serious damage to health by prolonged exposure through inhalation</td>
</tr>
</tbody>
</table>

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.