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

1.1 Product identifiers

<table>
<thead>
<tr>
<th>Product name</th>
<th>Benzo[a]pyrene solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Number</td>
<td>31306</td>
</tr>
<tr>
<td>Brand</td>
<td>Sigma-Aldrich</td>
</tr>
<tr>
<td>REACH No.</td>
<td>A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.</td>
</tr>
</tbody>
</table>

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

| Identified uses             | Laboratory chemicals, Manufacture of substances |

1.3 Details of the supplier of the safety data sheet

| Company                     | Sigma-Aldrich Chemie BV                      |
|                            | Stationsplein 4                             |
|                            | 3331 LL ZWIJNDRECHT                        |
|                            | NETHERLANDS                                |
| Telephone                  | +31 78-620-5411                            |
| Fax                        | +31 78-620-5421                            |
| E-mail address             | eurtechserv@sial.com                       |

1.4 Emergency telephone number

| Emergency Phone #          | +(31)-858880596 (CHEMTREC)                  |
|                           | 112 (Alarmnummer)                          |

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

| Flammable liquids (Category 2), H225 |
| Skin irritation (Category 2), H315 |
| Carcinogenicity (Category 1B), H350 |
| Specific target organ toxicity - single exposure (Category 3), H336 |
| Aspiration hazard (Category 1), H304 |
| Acute aquatic toxicity (Category 1), H400 |
| Chronic aquatic toxicity (Category 1), H410 |

For the full text of the H-Statements mentioned in this Section, see Section 16.

Classification according to EU Directives 67/548/EEC or 1999/45/EC

| F Highly flammable | R11 |
| T Toxic            | R45 |
| Xn Harmful         | R65 |
| Xi Irritant        | R38 |
| N Dangerous for the environment | R50/53 |

For the full text of the R-phrases mentioned in this Section, see Section 16.
2.2 Label elements

Labelling according Regulation (EC) No 1272/2008

Pictogram

Signal word
Danger

Hazard statement(s)
H225 Highly flammable liquid and vapour.
H304 May be fatal if swallowed and enters airways.
H315 Causes skin irritation.
H336 May cause drowsiness or dizziness.
H350 May cause cancer.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)
P201 Obtain special instructions before use.
P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P273 Avoid release to the environment.
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.

Supplemental Hazard Statements
none

Restricted to professional users.

Hazard symbol(s)
F Highly flammable
T Toxic
N Dangerous for the environment

R-phrase(s)
R45 May cause cancer.
R65 Also harmful: may cause lung damage if swallowed.
R11 Highly flammable.
R38 Irritating to skin.
R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R67 Vapours may cause drowsiness and dizziness.

S-phrase(s)
S53 Avoid exposure - obtain special instructions before use.
S16 Keep away from sources of ignition - No smoking.
S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S61 Avoid release to the environment. Refer to special instructions/ Safety data sheets.
S62 If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

Restricted to professional users.

2.3 Other hazards - none

SECTION 3: Composition/information on ingredients

3.2 Mixtures
Molecular Weight : 252.31 g/mol

Hazardous ingredients according to Regulation (EC) No 1272/2008
### Component Classification Concentration

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cyclohexane</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAS-No.</td>
<td>110-82-7</td>
<td>&lt;= 100 %</td>
</tr>
<tr>
<td>EC-No.</td>
<td>203-806-2</td>
<td></td>
</tr>
<tr>
<td>Index-No.</td>
<td>601-017-00-1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Flam. Liq. 2; Acute Tox. 4;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Skin Irrit. 2; STOT SE 3; Asp.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tox. 1; Aquatic Acute 1;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aquatic Chronic 1; H225,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>H304, H315, H332, H336, H410</td>
<td></td>
</tr>
<tr>
<td><strong>Benzo[a]pyrene</strong></td>
<td></td>
<td>0.01 - 0.1 %</td>
</tr>
<tr>
<td>CAS-No.</td>
<td>50-32-8</td>
<td></td>
</tr>
<tr>
<td>EC-No.</td>
<td>200-028-5</td>
<td></td>
</tr>
<tr>
<td>Index-No.</td>
<td>601-032-00-3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Skin Sens. 1; Muta. 1B; Carc. 1B; Repr. 1B;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aquatic Acute 1;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aquatic Chronic 1; H317,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>H340, H350, H360FD, H410</td>
<td></td>
</tr>
</tbody>
</table>

For the full text of the H-Statements and R-Phrases mentioned in this Section, see Section 16

### SECTION 4: First aid measures

#### 4.1 Description of first aid measures

**General advice**
Consult a physician. Show this safety data sheet to the doctor in attendance.

**If inhaled**
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

**In case of skin contact**
Wash off with soap and plenty of water. Consult a physician.

**In case of eye contact**
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

**If swallowed**
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

#### 4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

#### 4.3 Indication of any immediate medical attention and special treatment needed
no data available

### SECTION 5: Firefighting measures

#### 5.1 Extinguishing media

**Suitable extinguishing media**
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
5.2 Special hazards arising from the substance or mixture
Carbon oxides

5.3 Advice for firefighters
Wear self-contained breathing apparatus for fire fighting if necessary.

5.4 Further information
Use water spray to cool unopened containers.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Recommended storage temperature: 2 - 8 °C

7.3 Specific end use(s)
A part from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Components with workplace control parameters

8.2 Exposure controls

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.
The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

**Body Protection**
Complete suit protecting against chemicals, Flame retardant antistatic protective clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Respiratory protection**
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Control of environmental exposure**
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

### 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>
</table>
| **Appearance** | Form: liquid  
Colour: colourless |
| **Odour** | no data available |
| **Odour Threshold** | no data available |
| **pH** | no data available |
| **Melting point/freezing point** | Melting point/range: 6,5 °C |
| **Initial boiling point and boiling range** | 79 - 81 °C at 1.013 hPa |
| **Flash point** | -18 °C |
| **Evaporation rate** | no data available |
| **Flammability (solid, gas)** | no data available |
| **Upper/lower flammability or explosive limits** | Upper explosion limit: 8,3 %(V)  
Lower explosion limit: 1,2 %(V) |
| **Vapour pressure** | no data available |
| **Vapour density** | no data available |
| **Relative density** | 0,780 g/cm³ |
| **Water solubility** | no data available |
| **Partition coefficient: n-octanol/water** | no data available |
| **Auto-ignition temperature** | 260 °C |
| **Decomposition temperature** | no data available |
| **Viscosity** | no data available |
| **Explosive properties** | no data available |
| **Oxidizing properties** | no data available |

#### 9.2 Other safety information

no data available
SECTION 10: Stability and reactivity

10.1 Reactivity
no data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
no data available

10.4 Conditions to avoid
Heat, flames and sparks. Extremes of temperature and direct sunlight.

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
no data available

Skin corrosion/irritation
no data available

Serious eye damage/eye irritation
no data available

Respiratory or skin sensitisation
no data available

Germ cell mutagenicity
no data available

Carcinogenicity
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity
no data available

Specific target organ toxicity - single exposure
no data available

Specific target organ toxicity - repeated exposure
no data available

Aspiration hazard
no data available

Additional Information
RTECS: Not available
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

12.1 Toxicity
no data available

12.2 Persistence and degradability
no data available
12.3 Bioaccumulative potential
no data available

12.4 Mobility in soil
no data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects
Very toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.

SECTION 14: Transport information

14.1 UN number
ADR/RID: 1145  IMDG: 1145  IATA: 1145

14.2 UN proper shipping name
ADR/RID: CYCLOHEXANE  IMDG: CYCLOHEXANE  IATA: Cyclohexane

14.3 Transport hazard class(es)
ADR/RID: 3  IMDG: 3  IATA: 3

14.4 Packaging group
ADR/RID: II  IMDG: II  IATA: II

14.5 Environmental hazards
ADR/RID: yes  IMDG Marine pollutant: yes  IATA: no

14.6 Special precautions for user
no data available

SECTION 15: Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
no data available

15.2 Chemical Safety Assessment
For this product a chemical safety assessment was not carried out

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3.

Acute Tox.  Acute toxicity
Aquatic Acute  Acute aquatic toxicity
Aquatic Chronic  Chronic aquatic toxicity
Asp. Tox.  Aspiration hazard
Carc.  Carcinogenicity
Flam. Liq.  Flammable liquids
H225 Highly flammable liquid and vapour.
H304 May be fatal if swallowed and enters airways.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H332 Harmful if inhaled.
H336 May cause drowsiness or dizziness.
H340 May cause genetic defects.
H350 May cause cancer.
H360FD May damage fertility. May damage the unborn child.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.
Muta. Germ cell mutagenicity
Repr. Reproductive toxicity
Skin Irrit. Skin irritation
Skin Sens. Skin sensitisation
STOT SE Specific target organ toxicity - single exposure

Full text of R-phrases referred to under sections 2 and 3

F Highly flammable
N Dangerous for the environment
T Toxic
R11 Highly flammable.
R20 Harmful by inhalation.
R38 Irritating to skin.
R43 May cause sensitisation by skin contact.
R45 May cause cancer.
R46 May cause heritable genetic damage.
R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R60 May impair fertility.
R61 May cause harm to the unborn child.
R65 Harmful: may cause lung damage if swallowed.
R67 Vapours may cause drowsiness and dizziness.
Repr.Cat.2 Toxic to Reproduction Category 2
Xn Harmful

Further information
Copyright 2013 Sigma-Aldrich Co. LLC. License granted to make unlimited paper copies for internal use only.
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.