1 Identification

- Product identifier
- Trade name: PAH Standard
- Part number: PM-007-1
- Application of the substance / the mixture: Reagents and Standards for Analytical Chemical Laboratory Use
- Details of the supplier of the safety data sheet
  - Manufacturer/Supplier: Agilent Technologies, Inc.
    5301 Stevens Creek Blvd.
    Santa Clara, CA  95051  USA
- Information department:
  Telephone: 800-227-9770
  e-mail: pdl-msds_author@agilent.com
- Emergency telephone number: CHEMTREC®: 1-800-424-9300

2 Hazard(s) identification

- Classification of the substance or mixture
  - GHS02 Flame
    Flam. Liq. 2  H225  Highly flammable liquid and vapor.
  - GHS07
    Acute Tox. 4  H302  Harmful if swallowed.
    Eye Irrit. 2A  H319  Causes serious eye irritation.
- Label elements
  - GHS label elements: The product is classified and labeled according to the Globally Harmonized System (GHS).
  - Hazard pictograms
    GHS02  GHS07
- Signal word: Danger
- Hazard-determining components of labeling:
  - acetonitrile
- Hazard statements:
  Highly flammable liquid and vapor.
  Harmful if swallowed.
  Causes serious eye irritation.
- Precautionary statements:
  If medical advice is needed, have product container or label at hand.
  Keep out of reach of children.
  Read label before use.
  Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

(Contd. on page 2)
Trade name: PAH Standard

Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting/equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Wear protective gloves/protective clothing/eye protection/face protection.
If swallowed: Call a poison center/doctor if you feel unwell.
Rinse mouth.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
If eye irritation persists: Get medical advice/attention.
In case of fire: Use for extinction: CO2, powder or water spray.
Store in a well-ventilated place. Keep cool.
Dispose of contents/container in accordance with local/regional/national/international regulations.

- Classification system:
- NFPA ratings (scale 0 - 4)
  - Health = 2
  - Fire = 3
  - Reactivity = 0

- HMIS-ratings (scale 0 - 4)
  - HEALTH 2 Health = 2
  - FIRE 3 Fire = 3
  - REACTIVITY 0 Reactivity = 0

- Other hazards
- Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.

3 Composition/information on ingredients
- Chemical characterization: Mixtures
- Description: Mixture of the substances listed below with nonhazardous additions.

- Dangerous components:
  - 75-05-8 acetonitrile 99.992%

4 First-aid measures
- Description of first aid measures
- General information:
  - Immediately remove any clothing soiled by the product.
  - Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
- After inhalation: Supply fresh air; consult doctor in case of complaints.
• **After skin contact:** Immediately rinse with water.
• **After eye contact:** Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
• **After swallowing:** Immediately call a doctor.
• **Information for doctor:**
  - **Most important symptoms and effects, both acute and delayed** No further relevant information available.
  - **Indication of any immediate medical attention and special treatment needed** No further relevant information available.

### 5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:**
  - CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **Special hazards arising from the substance or mixture** No further relevant information available.
- **Advice for firefighters**
- **Protective equipment:** No special measures required.

### 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
  - Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:**
  - Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  - Dispose contaminated material as waste according to item 13.
  - Ensure adequate ventilation.
- **Reference to other sections**
  - See Section 7 for information on safe handling.
  - See Section 8 for information on personal protection equipment.
  - See Section 13 for disposal information.
- **Protective Action Criteria for Chemicals**

#### PAC-1:

<table>
<thead>
<tr>
<th>Chemical</th>
<th>PAC Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>75-05-8 acetonitrile</td>
<td>13 ppm</td>
</tr>
<tr>
<td>206-44-0 fluoranthene</td>
<td>8.2 mg/m³</td>
</tr>
<tr>
<td>193-39-5 indeno[1,2,3-cd]pyrene</td>
<td>1.2 mg/m³</td>
</tr>
<tr>
<td>205-99-2 benz[e]acephenanthrylene</td>
<td>0.12 mg/m³</td>
</tr>
<tr>
<td>50-32-8 benzo[a]pyrene</td>
<td>0.6 mg/m³</td>
</tr>
<tr>
<td>191-24-2 benzo[ghi]perylene</td>
<td>30 mg/m³</td>
</tr>
</tbody>
</table>

#### PAC-2:

<table>
<thead>
<tr>
<th>Chemical</th>
<th>PAC Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>75-05-8 acetonitrile</td>
<td>50 ppm</td>
</tr>
<tr>
<td>206-44-0 fluoranthene</td>
<td>90 mg/m³</td>
</tr>
<tr>
<td>193-39-5 indeno[1,2,3-cd]pyrene</td>
<td>13 mg/m³</td>
</tr>
<tr>
<td>205-99-2 benz[e]acephenanthrylene</td>
<td>1.3 mg/m³</td>
</tr>
<tr>
<td>50-32-8 benzo[a]pyrene</td>
<td>120 mg/m³</td>
</tr>
</tbody>
</table>
7 Handling and storage

- **Handling:**
- **Precautions for safe handling** No special precautions are necessary if used correctly.
- **Information about protection against explosions and fires:**
  Keep ignition sources away - Do not smoke.
  Protect against electrostatic charges.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
  - **Requirements to be met by storerooms and receptacles:** Store in a cool location.
  - **Information about storage in one common storage facility:** Not required.
  - **Further information about storage conditions:**
    Keep receptacle tightly sealed.
    Store in cool, dry conditions in well-sealed receptacles.
- **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.

- **Control parameters**
- **Components with limit values that require monitoring at the workplace:**

<table>
<thead>
<tr>
<th>Substance</th>
<th>Limit Value (mg/m³, ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>75-05-8 acetonitrile</td>
<td>PEL: 70 mg/m³, 40 ppm; REL: 34 mg/m³, 20 ppm; TLV: 34 mg/m³, 20 ppm</td>
</tr>
</tbody>
</table>

- **Additional information:** The lists that were valid during the creation were used as basis.
### 9 Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Property Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information on basic physical and chemical properties</td>
<td></td>
</tr>
<tr>
<td>General Information</td>
<td></td>
</tr>
<tr>
<td>Appearance</td>
<td></td>
</tr>
<tr>
<td>Form</td>
<td>Fluid</td>
</tr>
<tr>
<td>Color</td>
<td>Colorless</td>
</tr>
<tr>
<td>Odor</td>
<td>Aromatic</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>Not determined.</td>
</tr>
<tr>
<td>pH-value</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Change in condition</td>
<td></td>
</tr>
<tr>
<td>Melting point/Melting range</td>
<td>-46 °C (-50.8 °F)</td>
</tr>
<tr>
<td>Boiling point/Boiling range</td>
<td>81 °C (177.8 °F)</td>
</tr>
<tr>
<td>Flash point</td>
<td>2 °C (35.6 °F)</td>
</tr>
<tr>
<td>Flammability (solid, gaseous)</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Ignition temperature</td>
<td>525 °C (977 °F)</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Auto igniting</td>
<td>Product is not selfigniting.</td>
</tr>
<tr>
<td>Danger of explosion</td>
<td>Product is not explosive. However, formation of explosive air/vapor mixtures are possible.</td>
</tr>
<tr>
<td>Explosion limits</td>
<td></td>
</tr>
<tr>
<td>Lower</td>
<td>4.4 Vol %</td>
</tr>
</tbody>
</table>
Trade name: PAH Standard

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper</td>
<td>16 Vol %</td>
</tr>
<tr>
<td>· Vapor pressure at 20 °C (68 °F):</td>
<td>0 hPa (0 mm Hg)</td>
</tr>
<tr>
<td>· Density at 20 °C (68 °F):</td>
<td>0.786 g/cm³ (6.55917 lbs/gal)</td>
</tr>
<tr>
<td>· Relative density</td>
<td>Not determined.</td>
</tr>
<tr>
<td>· Vapor density</td>
<td>Not determined.</td>
</tr>
<tr>
<td>· Evaporation rate</td>
<td>Not determined.</td>
</tr>
<tr>
<td>· Solubility in / Miscibility with Water:</td>
<td>Not miscible or difficult to mix.</td>
</tr>
<tr>
<td>· Partition coefficient (n-octanol/water):</td>
<td>Not determined.</td>
</tr>
<tr>
<td>· Viscosity:</td>
<td></td>
</tr>
<tr>
<td>Dynamic at 20 °C (68 °F):</td>
<td>0.39 mPas</td>
</tr>
<tr>
<td>Kinematic</td>
<td>Not determined.</td>
</tr>
<tr>
<td>· Solvent content:</td>
<td></td>
</tr>
<tr>
<td>VOC content:</td>
<td>0.00 %</td>
</tr>
<tr>
<td>0.0 g/l / 0.00 lb/gal</td>
<td></td>
</tr>
<tr>
<td>Solids content:</td>
<td>0.0 %</td>
</tr>
<tr>
<td>· Other information</td>
<td>No further relevant information available.</td>
</tr>
</tbody>
</table>

10 Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided**: No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials**: No further relevant information available.
- **Hazardous decomposition products**: No dangerous decomposition products known.

11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity**:
- **LD/LC50 values that are relevant for classification**:

  **ATE (Acute Toxicity Estimate)**
  
<table>
<thead>
<tr>
<th>Route</th>
<th>LD50/LC50</th>
<th>Value (mg/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>LD50</td>
<td>1,320</td>
</tr>
<tr>
<td></td>
<td>LC50</td>
<td>3,587</td>
</tr>
<tr>
<td>Dermal</td>
<td>LD50</td>
<td>&gt;2,000</td>
</tr>
<tr>
<td>Inhalative</td>
<td>LC50/4 h</td>
<td>3,587</td>
</tr>
</tbody>
</table>

  **75-05-8 acetonitrile**
  
<table>
<thead>
<tr>
<th>Route</th>
<th>LD50/LC50</th>
<th>Value (mg/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>LD50</td>
<td>1,320</td>
</tr>
<tr>
<td></td>
<td>LC50</td>
<td>3,587</td>
</tr>
<tr>
<td>Dermal</td>
<td>LD50</td>
<td>&gt;2,000</td>
</tr>
<tr>
<td>Inhalative</td>
<td>LC50/4 h</td>
<td>3,587</td>
</tr>
</tbody>
</table>

- **Primary irritant effect**:
- **on the skin**: No irritant effect.
Trade name: PAH Standard

- **on the eye:** Irritating effect.
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**
  The product shows the following dangers according to internally approved calculation methods for preparations:
  - Harmful
  - Irritant

- **Carcinogenic categories**
  - IARC (International Agency for Research on Cancer)
    | Compound             | Carcinogenicity |
    |----------------------|-----------------|
    | 206-44-0 fluoranthene| 3               |
    | 193-39-5 indeno[1,2,3-cd]pyrene| 2B             |
    | 207-08-9 benzo[k]fluoranthene| 2B            |
    | 205-99-2 benz[e]acephenanthrylene| 2B          |
    | 50-32-8 benzo[a]pyrene  | 1              |
    | 191-24-2 benzo[ghi]perylene | 3             |
    | 198-55-0 perylene       | 3              |
  - NTP (National Toxicology Program)
    | Compound             | Carcinogenicity |
    |----------------------|-----------------|
    | 206-44-0 fluoranthene| R              |
    | 193-39-5 indeno[1,2,3-cd]pyrene| R           |
    | 207-08-9 benzo[k]fluoranthene| R           |
    | 205-99-2 benz[e]acephenanthrylene| R        |
    | 50-32-8 benzo[a]pyrene  | R              |
    | 198-55-0 perylene       | R              |
  - OSHA-Ca (Occupational Safety & Health Administration)
    None of the ingredients is listed.

**12 Ecological information**

- **Toxicity**
  - **Aquatic toxicity:** No further relevant information available.
  - **Persistence and degradability** No further relevant information available.
  - **Behavior in environmental systems:**
  - **Bioaccumulative potential** No further relevant information available.
  - **Mobility in soil** No further relevant information available.
  - **Additional ecological information:**
  - **General notes:**
    Water hazard class 2 (Self-assessment): hazardous for water
    Do not allow product to reach ground water, water course or sewage system.
    Danger to drinking water if even small quantities leak into the ground.

- **Results of PBT and vPvB assessment**
  - **PBT:** Not applicable.
  - **vPvB:** Not applicable.
  - **Other adverse effects** No further relevant information available.
13 Disposal considerations

- Waste treatment methods
  - Recommendation: Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

- Uncleaned packagings:
  - Recommendation: Disposal must be made according to official regulations.

14 Transport information

- UN-Number
  - DOT, IMDG, IATA UN1648

- UN proper shipping name
  - DOT Acetonitrile solution
  - IMDG, IATA ACETONITRILE solution

- Transport hazard class(es)
  - DOT
    - Class 3 Flammable liquids
    - Label 3

  - IMDG, IATA
    - Class 3 Flammable liquids
    - Label 3

- Packing group
  - DOT, IMDG, IATA II

- Environmental hazards: Not applicable.

- Special precautions for user
  - Warning: Flammable liquids
  - Danger code (Kemler): 33
  - EMS Number: F-E,S-D
  - Stowage Category B

- Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.

- Transport/Additional information:
  - DOT
    - Quantity limitations On passenger aircraft/rail: 5 L
    - On cargo aircraft only: 60 L
Trade name: PAH Standard

<table>
<thead>
<tr>
<th>IMDG</th>
<th>Limited quantities (LQ)</th>
<th>1L</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exempted quantities (EQ)</td>
<td>Code: E2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Maximum net quantity per inner packaging: 30 ml</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Maximum net quantity per outer packaging: 500 ml</td>
</tr>
</tbody>
</table>

UN "Model Regulation": UN 1648 ACETONITRILE SOLUTION, 3, II

15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
- Sara

- Section 355 (extremely hazardous substances):
  None of the ingredients is listed.

- Section 313 (Specific toxic chemical listings):
  75-05-8 acetonitrile
  206-44-0 fluoranthene
  193-39-5 indeno[1,2,3-cd]pyrene
  207-08-9 benzo[k]fluoranthene
  205-99-2 benzo[e]acephenanthrylene
  50-32-8 benzo[a]pyrene
  191-24-2 benzo[ghi]perylene

- TSCA (Toxic Substances Control Act):
  75-05-8 acetonitrile
  206-44-0 fluoranthene
  193-39-5 indeno[1,2,3-cd]pyrene
  50-32-8 benzo[a]pyrene
  198-55-0 perylene

- Proposition 65

- Chemicals known to cause cancer:
  193-39-5 indeno[1,2,3-cd]pyrene
  207-08-9 benzo[k]fluoranthene
  205-99-2 benzo[e]acephenanthrylene
  50-32-8 benzo[a]pyrene

- Chemicals known to cause reproductive toxicity for females:
  None of the ingredients is listed.

- Chemicals known to cause reproductive toxicity for males:
  None of the ingredients is listed.

- Chemicals known to cause developmental toxicity:
  None of the ingredients is listed.
Trade name: PAH Standard

### Carcinogenic categories

<table>
<thead>
<tr>
<th>Compound</th>
<th>CAS Number</th>
<th>EPA Category</th>
<th>TLV Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>acetonitrile</td>
<td>75-05-8</td>
<td>CBD, D</td>
<td>A4</td>
</tr>
<tr>
<td>fluoranthene</td>
<td>206-44-0</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>indeno[1,2,3-cd]pyrene</td>
<td>193-39-5</td>
<td>B2</td>
<td></td>
</tr>
<tr>
<td>benzo[k]fluoranthene</td>
<td>207-08-9</td>
<td>B2</td>
<td></td>
</tr>
<tr>
<td>benzo[e]acephenanthrylene</td>
<td>205-99-2</td>
<td>B2</td>
<td></td>
</tr>
<tr>
<td>benzo[a]pyrene</td>
<td>50-32-8</td>
<td>CaH</td>
<td>A2</td>
</tr>
<tr>
<td>benzo[ghi]perylene</td>
<td>191-24-2</td>
<td>D</td>
<td></td>
</tr>
</tbody>
</table>

### TLV (Threshold Limit Value established by ACGIH)

<table>
<thead>
<tr>
<th>Compound</th>
<th>CAS Number</th>
<th>TLV Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>acetonitrile</td>
<td>75-05-8</td>
<td>A4</td>
</tr>
<tr>
<td>benzo[e]acephenanthrylene</td>
<td>205-99-2</td>
<td>A2</td>
</tr>
<tr>
<td>benzo[a]pyrene</td>
<td>50-32-8</td>
<td>A2</td>
</tr>
</tbody>
</table>

### NIOSH-Ca (National Institute for Occupational Safety and Health)

<table>
<thead>
<tr>
<th>Compound</th>
<th>CAS Number</th>
<th>NIOSH-Ca Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>benzo[a]pyrene</td>
<td>50-32-8</td>
<td></td>
</tr>
</tbody>
</table>

### Chemical safety assessment

A Chemical Safety Assessment has not been carried out.

### Other information

The information contained in this document is based on Agilent's state of knowledge at the time of preparation. No warranty as to its accurateness, completeness or suitability for a particular purpose is expressed or implied.

**Department issuing SDS:** Document Control / Regulatory  
**Contact:** regulatory@ultrasci.com  
**Date of preparation / last revision:** 10/29/2018 / 1  
**Abbreviations and acronyms:**  
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)  
IMDG: International Maritime Code for Dangerous Goods  
DOT: US Department of Transportation  
IAEA: International Atomic Energy Agency  
ACGIH: American Conference of Governmental Industrial Hygienists  
EINECS: European Inventory of Existing Commercial Chemical Substances  
ELINCS: European List of Notified Chemical Substances  
CAS: Chemical Abstracts Service (division of the American Chemical Society)  
NFPA: National Fire Protection Association (USA)  
HMIS: Hazardous Materials Identification System (USA)  
VOC: Volatile Organic Compounds (USA, EU)  
LC50: Lethal concentration, 50 percent  
LD50: Lethal dose, 50 percent  
PBT: Persistent, Bioaccumulative and Toxic  
vPvB: very Persistent and very Bioaccumulative  
NIOSH: National Institute for Occupational Safety  
OSHA: Occupational Safety & Health  
TLV: Threshold Limit Value  
PEL: Permissible Exposure Limit  
REL: Recommended Exposure Limit  
Flam. Liq. 2: Flammable liquids – Category 2  
Acute Tox. 4: Acute toxicity – Category 4  
Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A