<table>
<thead>
<tr>
<th>Product code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC004850</td>
<td>QSight MSMS Maintenance Solutions Kit</td>
</tr>
</tbody>
</table>

Components:

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE-1001-15ML</td>
<td>Reserpine 100pg/ul Solution</td>
</tr>
<tr>
<td>PE-1005</td>
<td>Reserpine Stock Solution 1ng/ul</td>
</tr>
<tr>
<td>PE-1007</td>
<td>Taurocholic Acid Calibration 0.2 ng/ul Test Solution</td>
</tr>
<tr>
<td>PE-1009-15ML</td>
<td>PPG Calibration 2e-7M Stock Solution</td>
</tr>
<tr>
<td>PE-1010</td>
<td>PPG Positive Dilution Buffer</td>
</tr>
<tr>
<td>PE-1012</td>
<td>Reserpine Dilution Buffer</td>
</tr>
<tr>
<td>PE-1014</td>
<td>Wash Solvent</td>
</tr>
<tr>
<td>PE-1015</td>
<td>Positive PPG 2e-5M Solution</td>
</tr>
<tr>
<td>PE-1018</td>
<td>Ammonium Acetate 1M Solution</td>
</tr>
<tr>
<td>PE-1019</td>
<td>Formic Acid Neat</td>
</tr>
<tr>
<td>PE-1020-30ML</td>
<td>PPG Neg Calibration 1e-5M Solution</td>
</tr>
</tbody>
</table>
1 Identification

· Product identifier
  · Trade name: Reserpine 100pg/uL Solution
  · Part number: PE-1001-15ML
  · Application of the substance / the mixture Laboratory chemicals

· Details of the supplier of the safety data sheet
  · Manufacturer/Supplier:
    ULTRA Scientific, Inc.
    250 Smith Street
    North Kingstown, RI 02852
    USA

· Information department:
  Telephone: (401) 294-9400
  Fax: (401) 295-2300
  E-mail: regulatory@ultrasci.com

· Emergency telephone number:
  US: +1-800-424-9300
  Outside US: +1-703-527-3887

2 Hazard(s) identification

· Classification of the substance or mixture

  GHS02 Flame
  Flam. Liq. 2 H225 Highly flammable liquid and vapor.

  GHS07
  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 statements
  Highly flammable liquid and vapor.
  Causes serious eye irritation.

· Precautionary statements
  Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
  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.

(Contd. on page 2)
Trade name: Reserpine 100pg/uL Solution

Wear protective gloves/protective clothing/eye protection/face protection.
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
    - Fire = 3
    - 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 43.96%

4 First-aid measures

- Description of first aid measures
  - After inhalation: Supply fresh air; consult doctor in case of complaints.
  - After skin contact: Generally the product does not irritate the skin.
  - After eye contact: Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
  - After swallowing: If symptoms persist consult 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.
Trade name: Reserpine 100pg/uL Solution

- 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).
  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:
  - 75-05-8 acetonitrile 13 ppm
  - 64-19-7 acetic acid 5 ppm
- PAC-2:
  - 75-05-8 acetonitrile 50 ppm
  - 64-19-7 acetic acid 35 ppm
- PAC-3:
  - 75-05-8 acetonitrile 150 ppm
  - 64-19-7 acetic acid 250 ppm

### 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>Component</th>
<th>PEL Long-term value</th>
<th>REL Long-term value</th>
<th>TLV Long-term value</th>
</tr>
</thead>
<tbody>
<tr>
<td>75-05-8 acetonitrile</td>
<td>70 mg/m³, 40 ppm</td>
<td>34 mg/m³, 20 ppm</td>
<td>34 mg/m³, 20 ppm</td>
</tr>
</tbody>
</table>

Additional information: The lists that were valid during the creation were used as basis.

Exposure controls

Personal protective equipment:

General protective and hygienic measures:
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes.
Avoid contact with the eyes and skin.

Breathing equipment: Not required.

Protection of hands: Not required.

Material of gloves
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

Penetration time of glove material
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Eye protection:

Tightly sealed goggles

9 Physical and chemical properties

Information on basic physical and chemical properties

General Information

Appearance:

<table>
<thead>
<tr>
<th>Form</th>
<th>Liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>According to product specification</td>
</tr>
</tbody>
</table>

Odor:
Characteristic

Odor threshold:
Not determined.

pH-value:
Not determined.

Change in condition

Melting point/Melting range:
Undetermined.

Boiling point/Boiling range:
81 °C (177.8 °F)

Flash point:
2 °C (35.6 °F)

Flammability (solid, gaseous):
Not applicable.
## Safety Data Sheet

**Trade name:** Reserpine 100pg/uL Solution

### 4.6.0.5
- **Ignition temperature:** 525 °C (977 °F)
- **Decomposition temperature:** Not determined.
- **Auto igniting:** Product is not selfigniting.
- **Danger of explosion:** Product is not explosive. However, formation of explosive air/vapor mixtures are possible.

### 4.6.0.6
- **Explosion limits:**
  - Lower: 4.4 Vol %
  - Upper: 16 Vol %
- **Vapor pressure at 20 °C (68 °F):** 23 hPa (17.3 mm Hg)
- **Density:** Not determined.
- **Relative density** Not determined.
- **Vapor density** Not determined.
- **Evaporation rate** Not determined.
- **Solubility in / Miscibility with Water:** Not miscible or difficult to mix.
- **Partition coefficient (n-octanol/water):** Not determined.
- **Viscosity:**
  - Dynamic: Not determined.
  - Kinematic: Not determined.
- **Solvent content:**
  - Organic solvents: 0.1 %
  - Water: 55.9 %
  - VOC content: 0.11 %
  - 1.1 g/l / 0.01 lb/gl
- **Solids content:** 0.0 %
- **Other information** No further relevant information available.

### 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)**
      - Oral
        - LD50: 3,003 mg/kg (rat)
**Trade name: Reserpine 100pg/uL Solution**

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

- **Primary irritant effect:**
  - **on the skin:** No irritant effect.
  - **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: Irritant

- **Carcinogenic categories**
  - **IARC (International Agency for Research on Cancer)**
    50-55-5 reserpine 3
  - **NTP (National Toxicology Program)**
    50-55-5 reserpine 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.
### 14 Transport Information

<table>
<thead>
<tr>
<th><strong>UN-Number</strong></th>
<th>UN1993</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UN proper shipping name</strong></td>
<td>Flammable liquids, n.o.s. (Acetonitrile)</td>
</tr>
<tr>
<td><strong>DOT</strong></td>
<td>Flammable liquids, n.o.s. (Acetonitrile)</td>
</tr>
<tr>
<td><strong>IMDG, IATA</strong></td>
<td>FLAMMABLE LIQUID, N.O.S. (ACETONITRILE)</td>
</tr>
<tr>
<td><strong>Class</strong></td>
<td>3 Flammable liquids</td>
</tr>
<tr>
<td><strong>Label</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>Packing group</strong></td>
<td>II</td>
</tr>
<tr>
<td><strong>Environmental hazards:</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Special precautions for user</strong></td>
<td>Warning: Flammable liquids</td>
</tr>
<tr>
<td><strong>Danger code (Kemler):</strong></td>
<td>33</td>
</tr>
<tr>
<td><strong>EMS Number:</strong></td>
<td>F-E,S-E</td>
</tr>
<tr>
<td><strong>Stowage Category</strong></td>
<td>B</td>
</tr>
</tbody>
</table>

- **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
  - **IMDG**
    - **Limited quantities (LQ)** 1L
    - **Code:** E2
    - **Maximum net quantity per inner packaging:** 30 ml
    - **Maximum net quantity per outer packaging:** 500 ml

(Contd. on page 8)
# 15 Regulatory information

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

<table>
<thead>
<tr>
<th>Section 355 (extremely hazardous substances)</th>
<th>None of the ingredients is listed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 313 (Specific toxic chemical listings)</td>
<td>75-05-8 acetonitrile</td>
</tr>
<tr>
<td>TSCA (Toxic Substances Control Act)</td>
<td>All ingredients are listed.</td>
</tr>
<tr>
<td>Proposition 65</td>
<td></td>
</tr>
<tr>
<td>Chemicals known to cause cancer:</td>
<td>50-55-5 reserpine</td>
</tr>
<tr>
<td>Chemicals known to cause reproductive toxicity for females:</td>
<td>None of the ingredients is listed.</td>
</tr>
<tr>
<td>Chemicals known to cause reproductive toxicity for males:</td>
<td>None of the ingredients is listed.</td>
</tr>
<tr>
<td>Chemicals known to cause developmental toxicity:</td>
<td>None of the ingredients is listed.</td>
</tr>
</tbody>
</table>

- **Carcinogenic categories**

<table>
<thead>
<tr>
<th>EPA (Environmental Protection Agency)</th>
<th>75-05-8 acetonitrile CBD, D</th>
</tr>
</thead>
<tbody>
<tr>
<td>TLV (Threshold Limit Value established by ACGIH)</td>
<td>75-05-8 acetonitrile A4</td>
</tr>
<tr>
<td>NIOSH-Ca (National Institute for Occupational Safety and Health)</td>
<td>None of the ingredients is listed.</td>
</tr>
</tbody>
</table>

- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**

![GHS02](image) ![GHS07](image)

- **Signal word** Danger
- **Hazard statements**
  - Highly flammable liquid and vapor.
  - Causes serious eye irritation.
- **Precautionary statements**
  - Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
  - Keep container tightly closed.
  - Ground/bond container and receiving equipment.
Trade name: Reserpine 100pg/uL Solution

(Contd. of page 8)

Use explosion-proof electrical/ventilating/lighting/equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Wash thoroughly after handling.
Wear protective gloves/protective clothing/eye protection/face protection.
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.

Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· Date of preparation / last revision 03/22/2018 / 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
  IATA: International Air Transport Association
  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
  Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A

* Data compared to the previous version altered.
1 Identification

- **Product identifier**
  - **Trade name:** Reserpine Stock Solution 1ng/ul
  - **Part number:** PE-1005
  - **Application of the substance / the mixture:** Laboratory chemicals

- **Details of the supplier of the safety data sheet**
  - **Manufacturer/Supplier:**
    ULTRA Scientific, Inc.
    250 Smith Street
    North Kingstown, RI 02852
    USA

- **Information department:**
  - **Telephone:** (401) 294-9400
  - **Fax:** (401) 295-2300
  - **E-mail:** regulatory@ultrasci.com

- **Emergency telephone number:**
  - **US:** +1-800-424-9300
  - **Outside US:** +1-703-527-3887

2 Hazard(s) identification

- **Classification of the substance or mixture**
  - **GHS02 Flame**
    - Flam. Liq. 2 H225 Highly flammable liquid and vapor.
  - **GHS07**
    - 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 statements**
  - Highly flammable liquid and vapor.
  - Causes serious eye irritation.

- **Precautionary statements**
  - Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
  - 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.

(Contd. on page 2)
Trade name: Reserpine Stock Solution 1ng/ul

(Contd. of page 1)

Wear protective gloves/protective clothing/eye protection/face protection. 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)
    
    ![NFPA Ratings Diagram]
    
    Health = 2
    Fire = 3
    Reactivity = 0

- HMIS-ratings (scale 0 - 4)

  ![HMIS Ratings Diagram]
  
  Health = 2
  Fire = 3
  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:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>75-05-8 acetonitrile</td>
<td>43.96%</td>
</tr>
</tbody>
</table>

(Contd. on page 3)
Trade name: Reserpine Stock Solution 1ng/ul

- 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).
  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:
  75-05-8 acetonitrile 13 ppm
  64-19-7 acetic acid 5 ppm

- PAC-2:
  75-05-8 acetonitrile 50 ppm
  64-19-7 acetic acid 35 ppm

- PAC-3:
  75-05-8 acetonitrile 150 ppm
  64-19-7 acetic acid 250 ppm

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.
Trade name: Reserpine Stock Solution 1ng/ul

- Control parameters
  - Components with limit values that require monitoring at the workplace:
    75-05-8 acetonitrile
    - PEL Long-term value: 70 mg/m³, 40 ppm
    - REL Long-term value: 34 mg/m³, 20 ppm
    - TLV Long-term value: 34 mg/m³, 20 ppm

- Additional information: The lists that were valid during the creation were used as basis.
- Exposure controls
- Personal protective equipment:
- General protective and hygienic measures:
  Keep away from foodstuffs, beverages and feed.
  Immediately remove all soiled and contaminated clothing.
  Wash hands before breaks and at the end of work.
  Avoid contact with the eyes.
  Avoid contact with the eyes and skin.

- Breathing equipment: Not required.
- Protection of hands: Not required.
- Material of gloves
  The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
- Penetration time of glove material
  The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
- Eye protection:
  Tightly sealed goggles

* 9 Physical and chemical properties

- Information on basic physical and chemical properties
- General Information
  - Appearance:
    - Form: Liquid
    - Color: According to product specification
  - Odor: Characteristic
  - Odor threshold: Not determined.
  - pH-value: Not determined.
- Change in condition
  - Melting point/Melting range: Undetermined.
  - Boiling point/Boiling range: 81 °C (177.8 °F)
- Flash point: 2 °C (35.6 °F)
- Flammability (solid, gaseous): Not applicable.
Trade name: Reserpine Stock Solution 1ng/ul

- **Ignition temperature:** 525 °C (977 °F)
- **Decomposition temperature:** Not determined.
- **Auto igniting:** Product is not selfigniting.
- **Danger of explosion:** Product is not explosive. However, formation of explosive air/vapor mixtures are possible.
  - **Explosion limits:**
    - Lower: 4.4 Vol %
    - Upper: 16 Vol %
  - **Vapor pressure at 20 °C (68 °F):** 23 hPa (17.3 mm Hg)
  - **Density:** Not determined.
  - **Relative density** Not determined.
  - **Vapor density** Not determined.
  - **Evaporation rate** Not determined.
  - **Solubility in / Miscibility with Water:** Not miscible or difficult to mix.
  - **Partition coefficient (n-octanol/water):** Not determined.
  - **Viscosity:**
    - Dynamic: Not determined.
    - Kinematic: Not determined.
  - **Solvent content:**
    - Organic solvents: 0.1 %
    - Water: 55.9 %
    - VOC content: 0.11 %
      - 1.1 g/l / 0.01 lb/gl
  - **Other information** No further relevant information available.

### 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)**
      - Oral LD50: 3,003 mg/kg (rat)
      - Dermal LD50: >4,550 mg/kg (rabbit)
      - Inhalative LC50/4 h: 8,160 mg/L (mouse)
Trade name: Reserpine Stock Solution 1ng/ul

### 75-05-8 acetonitrile

<table>
<thead>
<tr>
<th>Route</th>
<th>LD50</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>LD50</td>
<td>1,320 mg/kg (rat)</td>
</tr>
<tr>
<td>Dermal</td>
<td>LD50</td>
<td>&gt;2,000 mg/kg (rabbit)</td>
</tr>
<tr>
<td>Inhalative</td>
<td>LC50/4 h</td>
<td>3,587 mg/L (mouse)</td>
</tr>
</tbody>
</table>

- **Primary irritant effect:**
  - **on the skin:** No irritant effect.
  - **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: Irritant

### Carcinogenic categories

- **IARC (International Agency for Research on Cancer)**
  - 50-55-5 reserpine
  - 3

- **NTP (National Toxicology Program)**
  - 50-55-5 reserpine
  - 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
  - UN1993

- **UN proper shipping name**
  - DOT
  - IMDG, IATA
  - Flammable liquids, n.o.s. (Acetonitrile)
  - FLAMMABLE LIQUID, N.O.S. (ACETONITRILE)

- **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-E
  - 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
  - IMDG
    - Limited quantities (LQ)
      - 1L
      - Code: E2
      - Maximum net quantity per inner packaging: 30 ml
      - Maximum net quantity per outer packaging: 500 ml
  - UN "Model Regulation":
    - UN 1993 FLAMMABLE LIQUIDS, N.O.S. (ACETONITRILE), 3, II

(Contd. on page 8)
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
  - **TSCA (Toxic Substances Control Act):**
    All ingredients are listed.
  - **Proposition 65**
    - **Chemicals known to cause cancer:**
      50-55-5 reserpine
    - **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.
  - **Carcinogenic categories**
    - **EPA (Environmental Protection Agency)**
      75-05-8 acetonitrile CBD, D
    - **TLV (Threshold Limit Value established by ACGIH)**
      75-05-8 acetonitrile A4
    - **NIOSH-Ca (National Institute for Occupational Safety and Health)**
      None of the ingredients is listed.
  - **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
  - **Hazard pictograms**
    - GHS02
    - GHS07

**Signal word** Danger

**Hazard statements**
Highly flammable liquid and vapor.
Causes serious eye irritation.

**Precautionary statements**
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
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.
Wear protective gloves/protective clothing/eye protection/face protection.

(Contd. on page 9)
Trade name: Reserpine Stock Solution 1ng/ul

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.
· Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information
This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· Date of preparation / last revision 03/22/2018 / 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
  IATA: International Air Transport Association
  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
  Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
· * Data compared to the previous version altered.
1 Identification

· Product identifier
  · Trade name: Taurocholic Acid Calibration 0.2 ng/ul Test Solution
  · Part number: PE-1007
  · Application of the substance / the mixture: Laboratory chemicals

· Details of the supplier of the safety data sheet
  · Manufacturer/Supplier:
    ULTRA Scientific, Inc.
    250 Smith Street
    North Kingstown, RI 02852
    USA

· Information department:
  Telephone: (401) 294-9400
  Fax: (401) 295-2300
  E-mail: regulatory@ultrasci.com

· Emergency telephone number:
  US: +1-800-424-9300
  Outside US: +1-703-527-3887

2 Hazard(s) identification

· Classification of the substance or mixture
  · GHS02 Flame
    Flam. Liq. 2 H225 Highly flammable liquid and vapor.

  · GHS07
    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 statements
  Highly flammable liquid and vapor.
  Causes serious eye irritation.

· Precautionary statements
  Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
  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.
Trade name: Taurocholic Acid Calibration 0.2 ng/ul Test Solution

Wear protective gloves/protective clothing/eye protection/face protection.
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
    Fire = 3
    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 44.0013%

4 First-aid measures

· Description of first aid measures
  · After inhalation: Supply fresh air; consult doctor in case of complaints.
  · After skin contact: Generally the product does not irritate the skin.
  · After eye contact:
    Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
  · After swallowing: If symptoms persist consult 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.
Safety Data Sheet
acc. to OSHA HCS

Trade name: Taurocholic Acid Calibration 0.2 ng/ul Test Solution

- 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).
  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:
  - 75-05-8 acetonitrile 13 ppm
  - 631-61-8 ammonium acetate 3.8 mg/m³
  PAC-2:
  - 75-05-8 acetonitrile 50 ppm
  - 631-61-8 ammonium acetate 42 mg/m³
  PAC-3:
  - 75-05-8 acetonitrile 150 ppm
  - 631-61-8 ammonium acetate 250 mg/m³

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.
Safety Data Sheet
acc. to OSHA HCS

Printing date 03/22/2018
Version Number 2
Reviewed on 03/22/2018

Trade name: Taurocholic Acid Calibration 0.2 ng/ul Test Solution

<table>
<thead>
<tr>
<th>Control parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Components with limit values that require monitoring at the workplace:</td>
</tr>
<tr>
<td>75-05-8 acetonitrile</td>
</tr>
<tr>
<td>PEL</td>
</tr>
<tr>
<td>REL</td>
</tr>
<tr>
<td>TLV</td>
</tr>
</tbody>
</table>

| Skin |

| Additional information: The lists that were valid during the creation were used as basis. |

<table>
<thead>
<tr>
<th>Exposure controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal protective equipment:</td>
</tr>
</tbody>
</table>

| General protective and hygienic measures: |
| Keep away from foodstuffs, beverages and feed. |
| Immediately remove all soiled and contaminated clothing. |
| Wash hands before breaks and at the end of work. |
| Avoid contact with the eyes. |
| Avoid contact with the eyes and skin. |

| Breathing equipment: Not required. |
| Protection of hands: Not required. |

| Material of gloves |
| The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application. |

Penetration time of glove material
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

| Eye protection: |
| Tightly sealed goggles |

9 Physical and chemical properties

| Information on basic physical and chemical properties |
| General Information |

| Appearance: |
| Form: Liquid |
| Color: According to product specification |
| Odor: Characteristic |
| Odor threshold: Not determined. |

| pH-value: Not determined. |

| Change in condition |
| Melting point/Melting range: Undetermined. |
| Boiling point/Boiling range: 81 °C (177.8 °F) |

| Flash point: 2 °C (35.6 °F) |

| Flammability (solid, gaseous): Not applicable. |
Trade name: Taurocholic Acid Calibration 0.2 ng/ul Test Solution

- **Ignition temperature:** 525 °C (977 °F)
- **Decomposition temperature:** Not determined.
- **Auto igniting:** Product is not selfigniting.
- **Danger of explosion:** Product is not explosive. However, formation of explosive air/vapor mixtures are possible.
  
  - **Explosion limits:**
    - **Lower:** 4.4 Vol %
    - **Upper:** 16 Vol %
  
  - **Vapor pressure at 20 °C (68 °F):** 23 hPa (17.3 mm Hg)
  
  - **Density:** Not determined.
  - **Relative density**
  - **Vapor density**
  - **Evaporation rate**
  - **Solubility in / Miscibility with Water:** Not miscible or difficult to mix.
  
  - **Partition coefficient (n-octanol/water):** Not determined.
  
  - **Viscosity:**
    - **Dynamic:** Not determined.
    - **Kinematic:** Not determined.
  
  - **Solvent content:**
    - **Water:** 56.0 %
    - **VOC content:** 0.00 %
    - 0.0 g/l / 0.00 lb/gl
  
  - **Solids content:** 0.0 %
  
  - **Other information** No further relevant information available.

### 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)**
        
        Oral | LD50 | 3,000 mg/kg (rat)

(Contd. on page 6)
Trade name: Taurocholic Acid Calibration 0.2 ng/ul Test Solution

### Dermal and Inhalative LD50 and LC50

<table>
<thead>
<tr>
<th>Route</th>
<th>LD50</th>
<th>LC50/4 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dermal</td>
<td>&gt;4,545 mg/kg (rabbit)</td>
<td>8,152 mg/L (mouse)</td>
</tr>
<tr>
<td>Inhalative</td>
<td>&gt;2,000 mg/kg (rabbit)</td>
<td>3,587 mg/L (mouse)</td>
</tr>
</tbody>
</table>

#### 75-05-8 acetonitrile

<table>
<thead>
<tr>
<th>Route</th>
<th>LD50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>1,320 mg/kg (rat)</td>
</tr>
<tr>
<td>Dermal</td>
<td>&gt;2,000 mg/kg (rabbit)</td>
</tr>
<tr>
<td>Inhalative</td>
<td>3,587 mg/L (mouse)</td>
</tr>
</tbody>
</table>

- **Primary irritant effect:**
  - **on the skin:** No irritant effect.
  - **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: Irritant

- **Carcinogenic categories**
  - **IARC (International Agency for Research on Cancer)**: None of the ingredients is listed.
  - **NTP (National Toxicology Program)**: None of the ingredients is listed.
  - **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.
<table>
<thead>
<tr>
<th><strong>14 Transport information</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>· UN-Number</td>
</tr>
<tr>
<td>· DOT, IMDG, IATA</td>
</tr>
<tr>
<td>· UN proper shipping name</td>
</tr>
<tr>
<td>· DOT</td>
</tr>
<tr>
<td>· IMDG, IATA</td>
</tr>
<tr>
<td>· Transport hazard class(es)</td>
</tr>
<tr>
<td>· DOT</td>
</tr>
<tr>
<td>· Class</td>
</tr>
<tr>
<td>· Label</td>
</tr>
<tr>
<td>· IMDG, IATA</td>
</tr>
<tr>
<td>· Class</td>
</tr>
<tr>
<td>· Label</td>
</tr>
<tr>
<td>· Packing group</td>
</tr>
<tr>
<td>· DOT, IMDG, IATA</td>
</tr>
<tr>
<td>· Environmental hazards:</td>
</tr>
<tr>
<td>· Special precautions for user</td>
</tr>
<tr>
<td>· Danger code (Kemler):</td>
</tr>
<tr>
<td>· EMS Number:</td>
</tr>
<tr>
<td>· Stowage Category</td>
</tr>
<tr>
<td>· Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</td>
</tr>
<tr>
<td>· Transport/Additional information:</td>
</tr>
<tr>
<td>· DOT</td>
</tr>
<tr>
<td>· Quantity limitations</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>· IMDG</td>
</tr>
<tr>
<td>· Limited quantities (LQ)</td>
</tr>
<tr>
<td>· Excepted quantities (EQ)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
**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
    - **TSCA (Toxic Substances Control Act):**
      - 75-05-8 acetonitrile
      - 631-61-8 ammonium acetate
      - 7732-18-5 water
  - **TSCA new (21st Century Act) (Substances not listed)**
  - **Proposition 65**
    - **Chemicals known to cause cancer:** None of the ingredients is listed.
    - **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.
- **Carcinogenic categories**
  - **EPA (Environmental Protection Agency)**
    - 75-05-8 acetonitrile CBD, D
    - 631-61-8 ammonium acetate D
  - **TLV (Threshold Limit Value established by ACGIH)**
    - 75-05-8 acetonitrile A4
  - **NIOSH-Ca (National Institute for Occupational Safety and Health)**
    - None of the ingredients is listed.
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
  - **Signal word** Danger
  - **Hazard statements**
    - Highly flammable liquid and vapor.
    - Causes serious eye irritation.
· Precautionary statements
   Keep away from heat/sparks/open flames/hot surfaces. · No smoking.
   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.
   Wear protective gloves/protective clothing/eye protection/face protection.
   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.

· Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information
   This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· Date of preparation / last revision: 03/22/2018 / 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
   IATA: International Air Transport Association
   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)
   NFFA: 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
   Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A

· Data compared to the previous version altered.
1 Identification

· Product identifier
  · Trade name: PPG Calibration 2e-7M Stock Solution
  · Part number: PE-1009-15ML
  · Application of the substance / the mixture Laboratory chemicals

· Details of the supplier of the safety data sheet
  · Manufacturer/Supplier:
    ULTRA Scientific, Inc.
    250 Smith Street
    North Kingstown, RI 02852
    USA

· Information department:
  Telephone: (401) 294-9400
  Fax: (401) 295-2300
  E-mail: regulatory@ultrasci.com
· Emergency telephone number:
  US: +1-800-424-9300
  Outside US: +1-703-527-3887

2 Hazard(s) identification

· Classification of the substance or mixture
  
  ![GHS02 Flame](image)
  Flam. Liq. 2 H225 Highly flammable liquid and vapor.

  ![GHS06 Skull and crossbones](image)
  Acute Tox. 3 H331 Toxic if inhaled.

  ![GHS08 Health hazard](image)
  STOT SE 1 H370 Causes damage to organs.

· Label elements
  · GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).
  · Hazard pictograms

  ![GHS02 Flame](image)  ![GHS06 Skull and crossbones](image)  ![GHS08 Health hazard](image)

· Signal word Danger

· Hazard-determining components of labeling:
  methanol
  formic acid

· Hazard statements
  Highly flammable liquid and vapor.
Toxic if inhaled.
Causes damage to organs.

- **Precautionary statements**
  - Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
  - Ground/bond container and receiving equipment.
  - Use explosion-proof electrical/ventilating/lighting/equipment.
  - Use only non-sparking tools.
  - Take precautionary measures against static discharge.
  - Do not breathe dust/fume/gas/mist/vapors/spray.
  - Wash thoroughly after handling.
  - Do not eat, drink or smoke when using this product.
  - Use only outdoors or in a well-ventilated area.
  - Wear protective gloves/protective clothing/eye protection/face protection.
  - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
  - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
  - Specific treatment (see on this label).
  - In case of fire: Use for extinction: CO2, powder or water spray.
  - Store in a well-ventilated place. Keep container tightly closed.
  - Store in a well-ventilated place. Keep cool.
  - Store locked up.
  - Dispose of contents/container in accordance with local/regional/national/international regulations.

- **Classification system:**
  - **NFPA ratings (scale 0 - 4)**
    - Health = 1
    - Fire = 3
    - Reactivity = 0
  - **HMIS-ratings (scale 0 - 4)**
    - HEALTH
      - Health = *1
      - Fire = 3
      - 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:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-56-1 methanol</td>
<td>44.107%</td>
</tr>
</tbody>
</table>

### 4 First-aid measures

- **Description of first aid measures**
- **General information:**
  - Immediately remove any clothing soiled by the product.
  - Remove breathing apparatus only after contaminated clothing have been completely removed.
Trade name: PPG Calibration 2e-7M Stock Solution

In case of irregular breathing or respiratory arrest provide artificial respiration.

· **After inhalation:**
  Supply fresh air or oxygen; call for doctor.
  In case of unconsciousness place patient stably in side position for transportation.

· **After skin contact:** Immediately wash with water and soap and rinse thoroughly.

· **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.

· **After swallowing:** If symptoms persist consult 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: Mouth respiratory protective device.

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 of 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**

<table>
<thead>
<tr>
<th>PAC-1:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>67-56-1 methanol</td>
<td>530 ppm</td>
<td></td>
</tr>
<tr>
<td>64-18-6 formic acid</td>
<td>3 ppm</td>
<td></td>
</tr>
<tr>
<td>631-61-8 ammonium acetate</td>
<td>3.8 mg/m³</td>
<td></td>
</tr>
<tr>
<td>25322-69-4 POLYPROPYLENE GLYCOL</td>
<td>30 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PAC-2:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>67-56-1 methanol</td>
<td>2,100 ppm</td>
<td></td>
</tr>
<tr>
<td>64-18-6 formic acid</td>
<td>25 ppm</td>
<td></td>
</tr>
<tr>
<td>631-61-8 ammonium acetate</td>
<td>42 mg/m³</td>
<td></td>
</tr>
<tr>
<td>25322-69-4 POLYPROPYLENE GLYCOL</td>
<td>330 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PAC-3:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>67-56-1 methanol</td>
<td>7200* ppm</td>
<td></td>
</tr>
</tbody>
</table>

(Contd. on page 4)
Trade name: PPG Calibration 2e-7M Stock Solution

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Ingredient</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>64-18-6</td>
<td>formic acid</td>
<td>250 ppm</td>
</tr>
<tr>
<td>631-61-8</td>
<td>ammonium acetate</td>
<td>250 mg/m³</td>
</tr>
<tr>
<td>25322-69-4</td>
<td>POLYPROPYLENE GLYCOL</td>
<td>2,000 mg/m³</td>
</tr>
</tbody>
</table>

7 Handling and storage

- Handling:
  - Precautions for safe handling:
    Ensure good ventilation/exhaustion at the workplace.
    Open and handle receptacle with care.
  - Information about protection against explosions and fires:
    Keep ignition sources away - Do not smoke.
    Protect against electrostatic charges.
    Keep respiratory protective device available.

- 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>CAS Number</th>
<th>Ingredient</th>
<th>PEL Long-term</th>
<th>REL Short-term</th>
<th>TLV Short-term</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-56-1</td>
<td>methanol</td>
<td>260 mg/m³, 200 ppm</td>
<td>325 mg/m³, 250 ppm</td>
<td>328 mg/m³, 250 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Long-term: 260 mg/m³, 200 ppm</td>
<td>Long-term: 262 mg/m³, 200 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Skin</td>
<td>Skin; BEI</td>
</tr>
</tbody>
</table>

- Ingredients with biological limit values:

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Ingredient</th>
<th>BEI</th>
<th>Medium</th>
<th>Time</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-56-1</td>
<td>methanol</td>
<td>15 mg/L</td>
<td>urine</td>
<td>end of shift</td>
<td>Methanol (background, nonspecific)</td>
</tr>
</tbody>
</table>

- Additional information: The lists that were valid during the creation were used as basis.

- Exposure controls
- Personal protective equipment:

  - General protective and hygienic measures:
    Keep away from foodstuffs, beverages and feed.
Trade name: PPG Calibration 2e-7M Stock Solution

Immediately remove all soiled and contaminated clothing. Wash hands before breaks and at the end of work. Store protective clothing separately.

- **Breathing equipment:**
  In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

- **Protection of hands:** Not required.
- **Material of gloves**
  The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material cannot be calculated in advance and has therefore to be checked prior to the application.

- **Penetration time of glove material**
  The exact breakthrough time has to be found out by the manufacturer of the protective gloves and has to be observed.

- **Eye protection:**

  ![Eye protection](attachment:image)

  Tightly sealed goggles

### 9 Physical and chemical properties

- **Information on basic physical and chemical properties**
- **General Information**
  - **Appearance:** Liquid
  - **Color:** According to product specification
  - **Odor:** Characteristic
  - **Odor threshold:** Not determined.
  - **pH-value:** Not determined.

- **Change in condition**
  - **Melting point/Melting range:** Undetermined.
  - **Boiling point/Boiling range:** 64 °C (147.2 °F)

- **Flash point:** 9 °C (48.2 °F)

- **Flammability (solid, gaseous):** Not applicable.

- **Ignition temperature:** 455 °C (851 °F)

- **Decomposition temperature:** Not determined.

- **Auto igniting:** Product is not selfigniting.

- **Danger of explosion:** Product is not explosive. However, formation of explosive air/vapor mixtures are possible.

- **Explosion limits:**
  - **Lower:** 5.5 Vol %
  - **Upper:** 44 Vol %

- **Vapor pressure at 20 °C (68 °F):** 100 hPa (75 mm Hg)

- **Density at 20 °C (68 °F):** 0.91204 g/cm³ (7.61097 lbs/gal)
- **Relative density** Not determined.
Trade name: PPG Calibration 2e-7M Stock Solution

- **Vapor density**: Not determined.
- **Evaporation rate**: Not determined.
- **Solubility in / Miscibility with Water**: Not miscible or difficult to mix.
- **Partition coefficient (n-octanol/water)**: Not determined.
- **Viscosity**:
  - Dynamic: Not determined.
  - Kinematic: Not determined.
- **Solvent content**:
  - Organic solvents: 44.1 %
  - Water: 55.8 %
  - VOC content: 44.11 %
  - 402.3 g/l / 3.36 lb/gl
- **Other information**: No further relevant information available.

### 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**:
  - **ATE (Acute Toxicity Estimate)**
    - Inhalative LC50/4 h 6.79 mg/L
  - **67-56-1 methanol**
    - Oral LD50 5,628 mg/kg (rat)
    - Dermal LD50 15,800 mg/kg (rabbit)

  - **Primary irritant effect**:
    - **on the skin**: No irritant effect.
    - **on the eye**: No irritating effect.
    - **Sensitization**: No sensitizing effects known.
  - **Additional toxicological information**:
    - The product shows the following dangers according to internally approved calculation methods for preparations:
      - **Toxic**
  - **Carcinogenic categories**
    - **IARC (International Agency for Research on Cancer)**
      - None of the ingredients is listed.
Trade name: PPG Calibration 2e-7M Stock Solution

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 1 (Self-assessment): slightly hazardous for water
    Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
- 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: UN1993
- UN proper shipping name
  - DOT: Flammable liquids, n.o.s. (Methanol)
  - IMDG, IATA: FLAMMABLE LIQUID, N.O.S. (METHANOL)
- Transport hazard class(es)
  - DOT
  - Class: 3 Flammable liquids
Trade name: PPG Calibration 2e-7M Stock Solution

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

- Packing group
  - DOT, IMDG, IATA
    - Packing group II

- Environmental hazards:
  - Not applicable.

- Special precautions for user
  - Warning: Flammable liquids
  - Danger code (Kemler): 33
  - EMS Number: F-E,S-E
  - Stowage Category B
  - Stowage Code SW2 Clear of living quarters.

- 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
  - IMDG
    - Limited quantities (LQ) 1L
    - Excepted quantities (EQ) Code: E2
      - Maximum net quantity per inner packaging: 30 ml
      - Maximum net quantity per outer packaging: 500 ml

- UN "Model Regulation":
  - UN 1993 FLAMMABLE LIQUIDS, N.O.S. (METHANOL), 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):
      - 67-56-1 methanol
      - 64-18-6 formic acid
    - TSCA (Toxic Substances Control Act):
      All ingredients are listed.
    - Proposition 65
      - Chemicals known to cause cancer:
        None of the ingredients is listed.
Trade name: PPG Calibration 2e-7M Stock Solution

<table>
<thead>
<tr>
<th>· Chemicals known to cause reproductive toxicity for females:</th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the ingredients is listed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>· Chemicals known to cause reproductive toxicity for males:</th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the ingredients is listed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>· Chemicals known to cause developmental toxicity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-56-1 methanol</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>· Carcinogenic categories</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>· EPA (Environmental Protection Agency)</th>
</tr>
</thead>
<tbody>
<tr>
<td>631-61-8 ammonium acetate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>· TLV (Threshold Limit Value established by ACGIH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the ingredients is listed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>· NIOSH-Ca (National Institute for Occupational Safety and Health)</th>
</tr>
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<tbody>
<tr>
<td>None of the ingredients is listed.</td>
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</table>

<table>
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<tr>
<th>· GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).</th>
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<table>
<thead>
<tr>
<th>· Hazard pictograms</th>
</tr>
</thead>
<tbody>
<tr>
<td>GHS02 GHS06 GHS08</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>· Signal word Danger</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>· Hazard-determining components of labeling:</th>
</tr>
</thead>
<tbody>
<tr>
<td>methanol</td>
</tr>
<tr>
<td>formic acid</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>· Hazard statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly flammable liquid and vapor.</td>
</tr>
<tr>
<td>Toxic if inhaled.</td>
</tr>
<tr>
<td>Causes damage to organs.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>· Precautionary statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keep away from heat/sparks/open flames/hot surfaces. - No smoking.</td>
</tr>
<tr>
<td>Ground/bond container and receiving equipment.</td>
</tr>
<tr>
<td>Use explosion-proof electrical/ventilating/lighting/equipment.</td>
</tr>
<tr>
<td>Use only non-sparking tools.</td>
</tr>
<tr>
<td>Take precautionary measures against static discharge.</td>
</tr>
<tr>
<td>Do not breathe dust/fume/gas/mist/vapors/spray.</td>
</tr>
<tr>
<td>Wash thoroughly after handling.</td>
</tr>
<tr>
<td>Do not eat, drink or smoke when using this product.</td>
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<td>Use only outdoors or in a well-ventilated area.</td>
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<td>Wear protective gloves/protective clothing/eye protection/face protection.</td>
</tr>
<tr>
<td>If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.</td>
</tr>
<tr>
<td>IF INHALED: Remove person to fresh air and keep comfortable for breathing.</td>
</tr>
<tr>
<td>Specific treatment (see on this label).</td>
</tr>
<tr>
<td>In case of fire: Use for extinction: CO2, powder or water spray.</td>
</tr>
<tr>
<td>Store in a well-ventilated place. Keep container tightly closed.</td>
</tr>
<tr>
<td>Store in a well-ventilated place. Keep cool.</td>
</tr>
<tr>
<td>Store locked up.</td>
</tr>
<tr>
<td>Dispose of contents/container in accordance with local/regional/national/international regulations.</td>
</tr>
</tbody>
</table>

(Contd. on page 8)
Trade name: PPG Calibration 2e-7M Stock Solution

- Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- Date of preparation / last revision 03/22/2018 / 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
  IATA: International Air Transport Association
  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)
  LD50: Lethal dose, 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
  BEI: Biological Exposure Limit
  Flam. Liq. 2: Flammable liquids – Category 2
  Acute Tox. 3: Acute toxicity – Category 3
  STOT SE 1: Specific target organ toxicity (single exposure) – Category 1

* Data compared to the previous version altered.
1 Identification

· Product identifier
· Trade name: PPG Positive Dilution Buffer
· Part number: PE-1010
· Application of the substance / the mixture Laboratory chemicals

· Details of the supplier of the safety data sheet
· Manufacturer/Supplier:
  ULTRA Scientific, Inc.
  250 Smith Street
  North Kingstown, RI 02852
  USA

· Information department:
  Telephone: (401) 294-9400
  Fax: (401) 295-2300
  E-mail: regulatory@ultrasci.com
· Emergency telephone number:
  US: +1-800-424-9300
  Outside US: +1-703-527-3887

2 Hazard(s) identification

· Classification of the substance or mixture
  · GHS02 Flame
  Flam. Liq. 2 H225 Highly flammable liquid and vapor.
  · GHS06 Skull and crossbones
  Acute Tox. 3 H331 Toxic if inhaled.
  · GHS08 Health hazard
  STOT SE 1 H370 Causes damage to organs.

· Label elements
· GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).
· Hazard pictograms
  · GHS02
  · GHS06
  · GHS08

· Signal word Danger
· Hazard-determining components of labeling:
  methanol
  formic acid
· Hazard statements
  Highly flammable liquid and vapor.
Trade name: PPG Positive Dilution Buffer

Toxic if inhaled.
Causes damage to organs.

· Precautionary statements
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting/equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Do not breathe dust/fume/gas/mist/vapors/spray.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Specific treatment (see on this label).
In case of fire: Use for extinction: CO2, powder or water spray.
Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.

· Classification system:
  · NFPA ratings (scale 0 - 4)
    Health = 1
    Fire = 3
    Reactivity = 0
  · HMIS-ratings (scale 0 - 4)
    Health = *1
    Fire = 3
    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:
  67-56-1 methanol 44.098%

4 First-aid measures

· Description of first aid measures
· General information:
  Immediately remove any clothing soiled by the product.
  Remove breathing apparatus only after contaminated clothing have been completely removed.

(Contd. on page 3)
In case of irregular breathing or respiratory arrest provide artificial respiration.

- **After inhalation:**
  
  Supply fresh air or oxygen; call for doctor.

- **After skin contact:**
  
  Immediately wash with water and soap and rinse thoroughly.

- **After eye contact:**
  
  Rinse opened eye for several minutes under running water. Then consult a doctor.

- **After swallowing:**
  
  If symptoms persist consult 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: Mouth respiratory protective device.

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:**
    
    | CAS     | Substance        | ppm     |
    |---------|------------------|---------|
    | 67-56-1 | methanol         | 530     |
    | 64-18-6 | formic acid      | 3       |
    | 631-61-8| ammonium acetate | 3.8     |

  - **PAC-2:**
    
    | CAS     | Substance        | ppm     |
    |---------|------------------|---------|
    | 67-56-1 | methanol         | 2,100   |
    | 64-18-6 | formic acid      | 25      |
    | 631-61-8| ammonium acetate | 42      |

  - **PAC-3:**
    
    | CAS     | Substance        | ppm     |
    |---------|------------------|---------|
    | 67-56-1 | methanol         | 7200    |
    | 64-18-6 | formic acid      | 250     |
7 Handling and storage

- Handling:
  - Precautions for safe handling
    Ensure good ventilation/exhaustion at the workplace.
    Open and handle receptacle with care.
  - Information about protection against explosions and fires:
    Keep ignition sources away - Do not smoke.
    Protect against electrostatic charges.
    Keep respiratory protective device available.
  - 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:
    67-56-1 methanol
    | PEL   | Long-term value: 260 mg/m³, 200 ppm |
    | REL   | Short-term value: 325 mg/m³, 250 ppm |
    |       | Long-term value: 260 mg/m³, 200 ppm |
    | Skin  |                                      |
    | TLV   | Short-term value: 328 mg/m³, 250 ppm |
    |       | Long-term value: 262 mg/m³, 200 ppm |
    | Skin; BEI |                                |
  - Ingredients with biological limit values:
    67-56-1 methanol
    | BEI   | 15 mg/L |
    |       | Medium: urine |
    |       | Time: end of shift |
    |       | Parameter: Methanol (background, nonspecific) |
- Additional information: The lists that were valid during the creation were used as basis.
Breathing equipment:
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

Protection of hands:
Not required.

Material of gloves
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

Penetration time of glove material
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Eye protection:

Tightly sealed goggles

### 9 Physical and chemical properties

- **Information on basic physical and chemical properties**
- **General Information**
  - Appearance:
    - Form: Liquid
    - Color: According to product specification
  - Odor: Characteristic
  - Odor threshold: Not determined.

- pH-value: Not determined.

- Change in condition
  - Melting point/Melting range: Undetermined.
  - Boiling point/Boiling range: 64.7 °C (148.5 °F)

- Flash point: 9 °C (48.2 °F)

- Flammability (solid, gaseous): Not applicable.

- Ignition temperature: 455 °C (851 °F)

- Decomposition temperature: Not determined.

- Auto igniting: Product is not selfigniting.

- Danger of explosion: Product is not explosive. However, formation of explosive air/vapor mixtures are possible.

- Explosion limits:
  - Lower: 5.5 Vol %
  - Upper: 44 Vol %

- Vapor pressure at 20 °C (68 °F): 100 hPa (75 mm Hg)

- Density at 20 °C (68 °F): 0.91211 g/cm³ (7.61156 lbs/gal)
  - Relative density: Not determined.
  - Vapor density: Not determined.
  - Evaporation rate: Not determined.
Trade name: PPG Positive Dilution Buffer

- Solubility in / Miscibility with
  Water: Not miscible or difficult to mix.

- Partition coefficient (n-octanol/water): Not determined.

- Viscosity:
  Dynamic: Not determined.
  Kinematic: Not determined.

- Solvent content:
  Organic solvents: 44.1 %
  Water: 55.7 %
  VOC content: 44.10 %
  402.2 g/l / 3.36 lb/gl

- Solids content: 0.0 %

- Other information
  No further relevant information available.

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)
      Inhalative LC50/4 h 6.79 mg/L
      67-56-1 methanol
      Oral LD50 5,628 mg/kg (rat)
      Dermal LD50 15,800 mg/kg (rabbit)

- Primary irritant effect:
  - on the skin: No irritant effect.
  - on the eye: No irritating effect.

- Sensitization: No sensitizing effects known.

- Additional toxicological information:
  The product shows the following dangers according to internally approved calculation methods for preparations:
  Toxic

- Carcinogenic categories
  - IARC (International Agency for Research on Cancer)
    None of the ingredients is listed.
Trade name: PPG Positive Dilution Buffer

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 1 (Self-assessment): slightly hazardous for water. Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
  - **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**
  - UN1993

- **UN proper shipping name**
  - DOT: Flammable liquids, n.o.s. (Methanol)
  - IMDG, IATA: FLAMMABLE LIQUID, N.O.S. (METHANOL)

- **Transport hazard class(es)**
  - **DOT**
    - Class 3 Flammable liquids
Trade name: PPG Positive Dilution Buffer

- **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-E

- **Stowage Category** B

- **Stowage Code** SW2 Clear of living quarters.

- **Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** Not applicable.

- **Transport/Additional information:**

  - **DOT**
  - **Quantity limitations**
    - On passenger aircraft/rail: 5 L
    - On cargo aircraft only: 60 L

  - **IMDG**
    - **Limited quantities (LQ)** 1L
    - **Excepted quantities (EQ)**
      - Code: E2
      - Maximum net quantity per inner packaging: 30 ml
      - Maximum net quantity per outer packaging: 500 ml

- **UN "Model Regulation":** UN 1993 FLAMMABLE LIQUIDS, N.O.S. (METHANOL), 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):**
    - 67-56-1 methanol
    - 64-18-6 formic acid

  - **TSCA (Toxic Substances Control Act):**
    - All ingredients are listed.

  - **Proposition 65**

  - **Chemicals known to cause cancer:**
    - None of the ingredients is listed.
Trade name: PPG Positive Dilution Buffer

- **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:**
  67-56-1 methanol

- **Carcinogenic categories**
  - EPA (Environmental Protection Agency)
    631-61-8 ammonium acetate
    D
  - TLV (Threshold Limit Value established by ACGIH)
    None of the ingredients is listed.
  - NIOSH-Ca (National Institute for Occupational Safety and Health)
    None of the ingredients is listed.

- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
  - **Hazard pictograms**
    GHS02 GHS06 GHS08

- **Signal word** Danger

- **Hazard-determining components of labeling:**
  methanol
  formic acid

- **Hazard statements**
  Highly flammable liquid and vapor.
  Toxic if inhaled.
  Causes damage to organs.

- **Precautionary statements**
  Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
  Ground/bond container and receiving equipment.
  Use explosion-proof electrical/ventilating/lighting/equipment.
  Use only non-sparking tools.
  Take precautionary measures against static discharge.
  Do not breathe dust/fume/gas/mist/vapors/spray.
  Wash thoroughly after handling.
  Do not eat, drink or smoke when using this product.
  Use only outdoors or in a well-ventilated area.
  Wear protective gloves/protective clothing/eye protection/face protection.
  If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
  IF INHALED: Remove person to fresh air and keep comfortable for breathing.
  Specific treatment (see on this label).
  In case of fire: Use for extinction: CO2, powder or water spray.
  Store in a well-ventilated place. Keep container tightly closed.
  Store in a well-ventilated place. Keep cool.
  Store locked up.
  Dispose of contents/container in accordance with local/regional/national/international regulations.

(Contd. on page 8)
Trade name: PPG Positive Dilution Buffer

- Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- Date of preparation / last revision: 03/22/2018 / 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
  IATA: International Air Transport Association
  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
  BEI: Biological Exposure Limit
  Flam. Liq. 2: Flammable liquids – Category 2
  Acute Tox. 3: Acute toxicity – Category 3
  STOT SE 1: Specific target organ toxicity (single exposure) – Category 1

- Data compared to the previous version altered.
1 Identification

- Product identifier
  - Trade name: Reserpine Dilution Buffer
- Part number: PE-1012
- Application of the substance / the mixture Laboratory chemicals

- Details of the supplier of the safety data sheet
  - Manufacturer/Supplier: ULTRA Scientific, Inc.
    250 Smith Street
    North Kingstown, RI 02852
    USA
  - Information department:
    Telephone: (401) 294-9400
    Fax: (401) 295-2300
    E-mail: regulatory@ultrasci.com
  - Emergency telephone number:
    US: +1-800-424-9300
    Outside US: +1-703-527-3887

2 Hazard(s) identification

- Classification of the substance or mixture
  GHS02 Flame
  Flam. Liq. 2 H225 Highly flammable liquid and vapor.

GHS07

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 statements
  - Highly flammable liquid and vapor.
  - Causes serious eye irritation.
- Precautionary statements
  - Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
  - 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.

(Contd. on page 2)
Trade name: Reserpin Dilution Buffer

Wear protective gloves/protective clothing/eye protection/face protection. 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
    - Fire = 3
    - 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.

<table>
<thead>
<tr>
<th>Dangerous components:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>75-05-8 acetonitrile</td>
<td>43.9573%</td>
</tr>
</tbody>
</table>

4 First-aid measures

- Description of first aid measures
  - After inhalation: Supply fresh air; consult doctor in case of complaints.
  - After skin contact: Generally the product does not irritate the skin.
  - After eye contact:
    - Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
  - After swallowing: If symptoms persist consult 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.
Trade name: Reserpine Dilution Buffer

- 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: 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).
  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

<table>
<thead>
<tr>
<th>PAC</th>
<th>Compound</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>75-05-8</td>
<td>13 ppm</td>
</tr>
<tr>
<td></td>
<td>64-19-7</td>
<td>5 ppm</td>
</tr>
<tr>
<td>2</td>
<td>75-05-8</td>
<td>50 ppm</td>
</tr>
<tr>
<td></td>
<td>64-19-7</td>
<td>35 ppm</td>
</tr>
<tr>
<td>3</td>
<td>75-05-8</td>
<td>150 ppm</td>
</tr>
<tr>
<td></td>
<td>64-19-7</td>
<td>250 ppm</td>
</tr>
</tbody>
</table>

### 7 Handling and storage

- 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>Component</th>
<th>PEL Long-term value</th>
<th>REL Long-term value</th>
<th>TLV Long-term value</th>
</tr>
</thead>
<tbody>
<tr>
<td>75-05-8 acetonitrile</td>
<td>70 mg/m³, 40 ppm</td>
<td>34 mg/m³, 20 ppm</td>
<td>34 mg/m³, 20 ppm</td>
</tr>
</tbody>
</table>

· Additional information: The lists that were valid during the creation were used as basis.

- Exposure controls
- Personal protective equipment:
  - General protective and hygienic measures:
    Keep away from foodstuffs, beverages and feed.
    Immediately remove all soiled and contaminated clothing.
    Wash hands before breaks and at the end of work.
    Avoid contact with the eyes.
    Avoid contact with the eyes and skin.
  - Breathing equipment: Not required.
  - Protection of hands: Not required.
  - Material of gloves
    The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
  - Penetration time of glove material
    The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
  - Eye protection:
    Tightly sealed goggles

* 9 Physical and chemical properties

- Information on basic physical and chemical properties
- General Information
  - Appearance:
    Form: Liquid
    Color: According to product specification
  - Odor:
    Characteristic
  - Odor threshold:
    Not determined.
  - pH-value:
    Not determined.
- Change in condition
  - Melting point/Melting range: Undetermined.
  - Boiling point/Boiling range: 81 °C (177.8 °F)
- Flash point:
  - 2 °C (35.6 °F)
- Flammability (solid, gaseous):
  - Not applicable.
Trade name: Reserpine Dilution Buffer

- Ignition temperature: 525 °C (977 °F)
- Decomposition temperature: Not determined.
- Auto igniting: Product is not selfigniting.
- Danger of explosion: Product is not explosive. However, formation of explosive air/vapor mixtures are possible.
- Explosion limits:
  - Lower: 4.4 Vol %
  - Upper: 16 Vol %
- Vapor pressure at 20 °C (68 °F): 23 hPa (17.3 mm Hg)
- Density at 20 °C (68 °F): 0.90605 g/cm³ (7.56099 lbs/gal)
- Relative density: Not determined.
- Vapor density: Not determined.
- Evaporation rate: Not determined.
- Solubility in / Miscibility with Water: Not miscible or difficult to mix.
- Partition coefficient (n-octanol/water): Not determined.
- Viscosity:
  - Dynamic: Not determined.
  - Kinematic: Not determined.
- Solvent content:
  - Organic solvents: 0.1 %
  - Water: 55.9 %
  - VOC content: 0.12 %
  - 1.1 g/l / 0.01 lb/gl
- Solids content: 0.0 %
- Other information: No further relevant information available.

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)
      - Oral LD50 3,003 mg/kg (rat)
Trade name: Reserpine Dilution Buffer

<table>
<thead>
<tr>
<th>75-05-8 acetonitrile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral LD50</td>
</tr>
<tr>
<td>Dermal LD50</td>
</tr>
<tr>
<td>Inhalative LC50/4 h</td>
</tr>
</tbody>
</table>

- **Primary irritant effect:**
  - on the skin: No irritant effect.
  - 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:

- Irritant

**Carcinogenic categories**

- **IARC (International Agency for Research on Cancer)**
  None of the ingredients is listed.

- **NTP (National Toxicology Program)**
  None of the ingredients is listed.

- **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.
Trade name: Reserpine Dilution Buffer

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

## 14 Transport information

<table>
<thead>
<tr>
<th>UN-Number</th>
<th>UN1993</th>
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<td>DOT, IMDG, IATA</td>
<td>UN1993</td>
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<tr>
<th>UN proper shipping name</th>
<th>Flammable liquids, n.o.s. (Acetonitrile)</th>
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<tr>
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<table>
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<th>Special precautions for user</th>
<th>Warning: Flammable liquids</th>
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<td>Danger code (Kemler):</td>
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<tr>
<td>EMS Number:</td>
<td>F-E,S-E</td>
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<td>Stowage Category</td>
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<td>Stowage Code</td>
<td>SW2 Clear of living quarters.</td>
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</table>

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

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<tr>
<th>Transport/Additional information:</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT</td>
</tr>
<tr>
<td>Quantity limitations</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IMDG</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Limited quantities (LQ)</th>
<th>1L</th>
</tr>
</thead>
</table>
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
  - TSCA (Toxic Substances Control Act):
    All ingredients are listed.
  - Proposition 65
    - Chemicals known to cause cancer:
      None of the ingredients is listed.
    - 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.
- Carcinogenic categories
  - EPA (Environmental Protection Agency)
    75-05-8 acetonitrile CBD, D
  - TLV (Threshold Limit Value established by ACGIH)
    75-05-8 acetonitrile A4
  - NIOSH-Ca (National Institute for Occupational Safety and Health)
    None of the ingredients is listed.
- GHS label elements
  The product is classified and labeled according to the Globally Harmonized System (GHS).
- Hazard pictograms

GHS02  GHS07

- Signal word
  Danger
- Hazard statements
  Highly flammable liquid and vapor.
  Causes serious eye irritation.
Safety Data Sheet
acc. to OSHA HCS

Printing date 03/22/2018
Version Number 3
Reviewed on 03/22/2018

Trade name: Reserpine Dilution Buffer

· **Precautionary statements**
  Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
  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.
  Wear protective gloves/protective clothing/eye protection/face protection.
  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.

· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Date of preparation / last revision** 03/22/2018 / 2

· **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
  IATA: International Air Transport Association
  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
  Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A

· * Data compared to the previous version altered.*
1 Identification

- **Product identifier**
- **Trade name:** Wash Solvent
- **Part number:** PE-1014
- **Application of the substance / the mixture** Laboratory chemicals
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
  ULTRA Scientific, Inc.
  250 Smith Street
  North Kingstown, RI  02852
  USA
- **Information department:**
  Telephone:  (401) 294-9400
  Fax:  (401) 295-2300
  E-mail:  regulatory@ultrasci.com
- **Emergency telephone number:**
  US: +1-800-424-9300
  Outside US:  +1-703-527-3887

2 Hazard(s) identification

- **Classification of the substance or mixture**
  - GHS02 Flame
    Flam. Liq. 2  H225  Highly flammable liquid and vapor.
  - GHS07
    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 statements**
  Highly flammable liquid and vapor.
  Causes serious eye irritation.
- **Precautionary statements**
  Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
  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.
Trade name: Wash Solvent

Wear protective gloves/protective clothing/eye protection/face protection.
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)
  
<table>
<thead>
<tr>
<th>HEALTH</th>
<th>FIRE</th>
<th>REACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>
  
- 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 | 43.96% |

4 First-aid measures

- Description of first aid measures
  - After inhalation: Supply fresh air; consult doctor in case of complaints.
  - After skin contact: Generally the product does not irritate the skin.
  - After eye contact:
    Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
  - After swallowing: If symptoms persist consult 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.
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).
  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:
    75-05-8 acetonitrile 13 ppm
    64-19-7 acetic acid 5 ppm
  - PAC-2:
    75-05-8 acetonitrile 50 ppm
    64-19-7 acetic acid 35 ppm
  - PAC-3:
    75-05-8 acetonitrile 150 ppm
    64-19-7 acetic acid 250 ppm

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.
Trade name: Wash Solvent

- Control parameters

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

<table>
<thead>
<tr>
<th>Component</th>
<th>PEL Long-term value: 70 mg/m³, 40 ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>REL Long-term value: 34 mg/m³, 20 ppm</td>
</tr>
<tr>
<td></td>
<td>TLV Long-term value: 34 mg/m³, 20 ppm</td>
</tr>
</tbody>
</table>

- Additional information: The lists that were valid during the creation were used as basis.

- Exposure controls
- Personal protective equipment:
  - General protective and hygienic measures: Keep away from foodstuffs, beverages and feed. Immediately remove all soiled and contaminated clothing. Wash hands before breaks and at the end of work. Avoid contact with the eyes. Avoid contact with the eyes and skin.
  - Breathing equipment: Not required.
  - Protection of hands: Not required.
  - Material of gloves: The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
  - Penetration time of glove material: The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
  - Eye protection: Tightly sealed goggles

9 Physical and chemical properties

- Information on basic physical and chemical properties
- General Information
  - Appearance: Liquid
  - Color: According to product specification
  - Odor: Characteristic
  - Odor threshold: Not determined.
  - pH-value: Not determined.
- Change in condition
  - Melting point/Melting range: Undetermined.
  - Boiling point/Boiling range: 81 °C (177.8 °F)
- Flash point: 2 °C (35.6 °F)
- Flammability (solid, gaseous): Not applicable.
### 4.5 Stability and reactivity

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

### 10 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity**

<table>
<thead>
<tr>
<th>LD/LC50 values that are relevant for classification:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ATE (Acute Toxicity Estimate)</strong></td>
</tr>
<tr>
<td>Oral LD50</td>
</tr>
</tbody>
</table>
Trade name: Wash Solvent

<table>
<thead>
<tr>
<th>75-05-8 acetonitrile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral LD50</td>
</tr>
<tr>
<td>Dermal LD50</td>
</tr>
<tr>
<td>Inhalative LC50/4 h</td>
</tr>
</tbody>
</table>

- Primary irritant effect:
  - on the skin: No irritant effect.
  - 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: Irritant

- Carcinogenic categories:
  - IARC (International Agency for Research on Cancer)
    None of the ingredients is listed.
  - NTP (National Toxicology Program)
    None of the ingredients is listed.
  - 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.
Trade name: Wash Solvent

14 Transport information

- **UN-Number**
  - DOT, IMDG, IATA UN1993

- **UN proper shipping name**
  - DOT
  - IMDG, IATA Flammable liquids, n.o.s. (Acetonitrile)

- **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-E

- **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

  - **IMDG**
    - Limited quantities (LQ) 1L
    - Code: E2
    - Maximum net quantity per inner packaging: 30 ml
    - Maximum net quantity per outer packaging: 500 ml
Trade name: Wash Solvent

**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
- **TSCA (Toxic Substances Control Act):**
  - All ingredients are listed.
- **Proposition 65**
  - **Chemicals known to cause cancer:**
    - None of the ingredients is listed.
  - **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.
- **Carcinogenic categories**
  - **EPA (Environmental Protection Agency)**
    - 75-05-8 acetonitrile CBD, D
  - **TLV (Threshold Limit Value established by ACGIH)**
    - 75-05-8 acetonitrile A4
  - **NIOSH-Ca (National Institute for Occupational Safety and Health)**
    - None of the ingredients is listed.
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**
  - GHS02
  - GHS07

**Signal word** Danger

**Hazard statements**
Highly flammable liquid and vapor.
Causes serious eye irritation.

**Precautionary statements**
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
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.
Wear protective gloves/protective clothing/eye protection/face protection.
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.

- **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

### 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Date of preparation / last revision:** 03/22/2018 / 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
  - IATA: International Air Transport Association
  - 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
  - Flm. Liq. 2: Flammable liquids – Category 2
  - Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A

- **Data compared to the previous version altered.**
1 Identification

- **Product identifier**
- **Trade name**: Positive PPG 2e-5M Solution
- **Part number**: PE-1015
- **Application of the substance / the mixture**: Laboratory chemicals
- **Details of the supplier of the safety data sheet**
  - **Manufacturer/Supplier:**
    ULTRA Scientific, Inc.
    250 Smith Street
    North Kingstown, RI  02852
    USA
  - **Information department:**
    Telephone: (401) 294-9400
    Fax: (401) 295-2300
    E-mail: regulatory@ultrasci.com
  - **Emergency telephone number:**
    US: +1-800-424-9300
    Outside US: +1-703-527-3887

2 Hazard(s) identification

- **Classification of the substance or mixture**
  - GHS02 Flame
  
  Flam. Liq. 2  H225  Highly flammable liquid and vapor.

  - GHS06 Skull and crossbones
  
  Acute Tox. 3  H331  Toxic if inhaled.

  - GHS08 Health hazard
  
  STOT SE 1  H370  Causes damage to organs.

- **Label elements**
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**
  - GHS02
  - GHS06
  - GHS08

- **Signal word** Danger

- **Hazard-determining components of labeling:**
  - methanol
  - formic acid

- **Hazard statements**
  - Highly flammable liquid and vapor.
Trade name: Positive PPG 2e-5M Solution

Toxic if inhaled.
Causes damage to organs.

Precautionary statements
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting/equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Do not breathe dust/fume/gas/mist/vapors/spray.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
If INHALED: Remove person to fresh air and keep comfortable for breathing.
Specific treatment (see on this label).
In case of fire: Use for extinction: CO2, powder or water spray.
Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.

Classification system:

NFPA ratings (scale 0 - 4)

Health = 1
Fire = 3
Reactivity = 0

HMIS-ratings (scale 0 - 4)

Health = *1
Fire = 3
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:

<table>
<thead>
<tr>
<th>hs</th>
<th>Name</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-56-1</td>
<td>methanol</td>
<td>44.109%</td>
</tr>
</tbody>
</table>

4 First-aid measures

- Description of first aid measures
- General information:
Immediately remove any clothing soiled by the product.
Remove breathing apparatus only after contaminated clothing have been completely removed.
In case of irregular breathing or respiratory arrest provide artificial respiration.

- **After inhalation:**
  Supply fresh air or oxygen; call for doctor.
  In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.
- **After swallowing:** If symptoms persist consult 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:** Mouth respiratory protective device.

### 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**

<table>
<thead>
<tr>
<th>PAC-1:</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-56-1</td>
<td>methanol</td>
</tr>
<tr>
<td>64-18-6</td>
<td>formic acid</td>
</tr>
<tr>
<td>25322-69-4</td>
<td>POLYPROPYLENE GLYCOL</td>
</tr>
<tr>
<td>631-61-8</td>
<td>ammonium acetate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PAC-2:</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-56-1</td>
<td>methanol</td>
</tr>
<tr>
<td>64-18-6</td>
<td>formic acid</td>
</tr>
<tr>
<td>25322-69-4</td>
<td>POLYPROPYLENE GLYCOL</td>
</tr>
<tr>
<td>631-61-8</td>
<td>ammonium acetate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PAC-3:</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-56-1</td>
<td>methanol</td>
</tr>
</tbody>
</table>

*Contd. on page 4*
Trade name: Positive PPG 2e-5M Solution

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Chemical</th>
<th>Limit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>64-18-6</td>
<td>formic acid</td>
<td>250 ppm</td>
</tr>
<tr>
<td>25322-69-4</td>
<td>POLYPROPYLENE GLYCOL</td>
<td>2,000 mg/m³</td>
</tr>
<tr>
<td>631-61-8</td>
<td>ammonium acetate</td>
<td>250 mg/m³</td>
</tr>
</tbody>
</table>

7 Handling and storage

- Handling:
  - Precautions for safe handling
    - Ensure good ventilation/exhaustion at the workplace.
    - Open and handle receptacle with care.
  - Information about protection against explosions and fires:
    - Keep ignition sources away - Do not smoke.
    - Protect against electrostatic charges.
    - Keep respiratory protective device available.

- 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

<table>
<thead>
<tr>
<th>Components with limit values that require monitoring at the workplace:</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-56-1 methanol</td>
</tr>
<tr>
<td>PEL Long-term value: 260 mg/m³, 200 ppm</td>
</tr>
<tr>
<td>REL Short-term value: 325 mg/m³, 250 ppm</td>
</tr>
<tr>
<td>Skin Long-term value: 260 mg/m³, 200 ppm</td>
</tr>
<tr>
<td>TLV Short-term value: 328 mg/m³, 250 ppm</td>
</tr>
<tr>
<td>Skin; BEI Long-term value: 262 mg/m³, 200 ppm</td>
</tr>
</tbody>
</table>

- Ingredients with biological limit values:

<table>
<thead>
<tr>
<th>Components with biological limit values:</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-56-1 methanol</td>
</tr>
<tr>
<td>BEI 15 mg/L</td>
</tr>
<tr>
<td>Medium: urine</td>
</tr>
<tr>
<td>Time: end of shift</td>
</tr>
<tr>
<td>Parameter: Methanol (background, nonspecific)</td>
</tr>
</tbody>
</table>

- Additional information: The lists that were valid during the creation were used as basis.

- Exposure controls
- Personal protective equipment:

  - General protective and hygienic measures:
    - Keep away from foodstuffs, beverages and feed.
Trade name: Positive PPG 2e-5M Solution

Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Store protective clothing separately.

- **Breathing equipment:**
  In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

- **Protection of hands:** Not required.

- **Material of gloves**
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

- **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

- **Eye protection:**
  Tightly sealed goggles

---

**9 Physical and chemical properties**

<table>
<thead>
<tr>
<th>Information on basic physical and chemical properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Information</td>
</tr>
<tr>
<td>Appearance:</td>
</tr>
<tr>
<td>Form: Liquid</td>
</tr>
<tr>
<td>Color: According to product specification</td>
</tr>
<tr>
<td>Odor: Characteristic</td>
</tr>
</tbody>
</table>

| Odor threshold: Not determined.                        |

| pH-value: Not determined.                              |

<table>
<thead>
<tr>
<th>Change in condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melting point/Melting range: Undetermined.</td>
</tr>
<tr>
<td>Boiling point/Boiling range: 64 °C (147.2 °F)</td>
</tr>
</tbody>
</table>

| Flash point: 9 °C (48.2 °F)                            |

| Flammability (solid, gaseous): Not applicable.          |

| Ignition temperature: 455 °C (851 °F)                   |

| Decomposition temperature: Not determined.              |

| Auto igniting: Product is not selfigniting.             |

| Danger of explosion: Product is not explosive. However, formation of explosive air/vapor mixtures are possible. |

<table>
<thead>
<tr>
<th>Explosion limits:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower: 5.5 Vol %</td>
</tr>
<tr>
<td>Upper: 44 Vol %</td>
</tr>
</tbody>
</table>

| Vapor pressure at 20 °C (68 °F): 100 hPa (75 mm Hg)     |

| Density at 20 °C (68 °F): 0.91201 g/cm³ (7.61072 lbs/gal) |

| Relative density: Not determined.                        |
### 4.0.5
- **Vapor density**: Not determined.
- **Evaporation rate**: Not determined.
- **Solubility in / Miscibility with Water**: Not miscible or difficult to mix.
- **Partition coefficient (n-octanol/water)**: Not determined.
- **Viscosity**:
  - **Dynamic**: Not determined.
  - **Kinematic**: Not determined.
- **Solvent content**:
  - **Organic solvents**: 44.1 %
  - **Water**: 55.8 %
  - **VOC content**: 44.11 %
  - 402.3 g/l / 3.36 lb/gl
- **Other information**: No further relevant information available.

### 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**:
  - **ATE (Acute Toxicity Estimate)**
    - **Inhalative**: LC50/4 h 6.79 mg/L
  - **67-56-1 methanol**
    - **Oral**
      - **LD50**: 5,628 mg/kg (rat)
    - **Dermal**
      - **LD50**: 15,800 mg/kg (rabbit)
- **Primary irritant effect**:
  - **on the skin**: No irritant effect.
  - **on the eye**: No irritating effect.
  - **Sensitization**: No sensitizing effects known.
- **Additional toxicological information**:
  The product shows the following dangers according to internally approved calculation methods for preparations:
  - **Toxic**
- **Carcinogenic categories**
  - **IARC (International Agency for Research on Cancer)**
    - None of the ingredients is listed.
Trade name: Positive PPG 2e-5M Solution (Contd. of page 6)

· NTP (National Toxicology Program)
  None of the ingredients is listed.

· 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 1 (Self-assessment): slightly hazardous for water
      Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
    · 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 UN1993

· UN proper shipping name
  · DOT Flammable liquids, n.o.s. (Methanol)
  · IMDG, IATA FLAMMABLE LIQUID, N.O.S. (METHANOL)

· Transport hazard class(es)
  · DOT
  · Class 3 Flammable liquids

(Contd. on page 8)
Trade name: Positive PPG 2e-5M Solution

- **Label 3**
- **IMDG, IATA**
- **Class**: 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-E
  - **Stowage Category**: B
  - **Stowage Code**: SW2 Clear of living quarters.
- **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
  - **IMDG**
  - **Limited quantities (LQ)**: 1L
  - **Excepted quantities (EQ)**
    - Code: E2
    - Maximum net quantity per inner packaging: 30 ml
    - Maximum net quantity per outer packaging: 500 ml
- **UN "Model Regulation"**: UN 1993 FLAMMABLE LIQUIDS, N.O.S. (METHANOL), 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)**
    - 67-56-1 methanol
    - 64-18-6 formic acid
  - **TSCA (Toxic Substances Control Act)**
    - All ingredients are listed.
  - **Proposition 65**
  - **Chemicals known to cause cancer**
    - None of the ingredients is listed.
Trade name: Positive PPG 2e-5M Solution

- **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:**
  67-56-1 methanol

- **Carcinogenic categories**
  - EPA (Environmental Protection Agency)
    631-61-8 ammonium acetate
  - TLV (Threshold Limit Value established by ACGIH)
    None of the ingredients is listed.
  - NIOSH-Ca (National Institute for Occupational Safety and Health)
    None of the ingredients is listed.

- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**
  - GHS02
  - GHS06
  - GHS08

- **Signal word** Danger

- **Hazard-determining components of labeling:**
  - methanol
  - formic acid

- **Hazard statements**
  - Highly flammable liquid and vapor.
  - Toxic if inhaled.
  - Causes damage to organs.

- **Precautionary statements**
  - Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
  - Ground/bond container and receiving equipment.
  - Use explosion-proof electrical/ventilating/lighting/equipment.
  - Use only non-sparking tools.
  - Take precautionary measures against static discharge.
  - Do not breathe dust/fume/gas/mist/vapors/spray.
  - Wash thoroughly after handling.
  - Do not eat, drink or smoke when using this product.
  - Use only outdoors or in a well-ventilated area.
  - Wear protective gloves/protective clothing/eye protection/face protection.
  - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
  - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
  - Specific treatment (see on this label).
  - In case of fire: Use for extinction: CO2, powder or water spray.
  - Store in a well-ventilated place. Keep container tightly closed.
  - Store in a well-ventilated place. Keep cool.
  - Store locked up.
  - Dispose of contents/container in accordance with local/regional/national/international regulations.

(Contd. on page 10)
Trade name: Positive PPG 2e-5M Solution

- **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Date of preparation / last revision:** 03/22/2018 / 2
- **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
  - IATA: International Air Transport Association
  - 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
  - BEI: Biological Exposure Limit
  - Flam. Liq. 2: Flammable liquids – Category 2
  - Acute Tox. 3: Acute toxicity – Category 3
  - STOT SE 1: Specific target organ toxicity (single exposure) – Category 1

- * Data compared to the previous version altered.*
1 Identification

- Product identifier
- Trade name: Ammonium Acetate 1M Solution
- Part number: PE-1018
- Application of the substance / the mixture: Laboratory chemicals
- Details of the supplier of the safety data sheet
- Manufacturer/Supplier: ULTRA Scientific, Inc.
  250 Smith Street
  North Kingstown, RI 02852
  USA
- Information department:
  Telephone: (401) 294-9400
  Fax: (401) 295-2300
  E-mail: regulatory@ultrasci.com
- Emergency telephone number:
  US: +1-800-424-9300
  Outside US: +1-703-527-3887

2 Hazard(s) identification

- Classification of the substance or mixture
  The product is not classified according to the Globally Harmonized System (GHS).
- Label elements
  - GHS label elements: Void
  - Hazard pictograms: Void
  - Signal word: Void
  - Hazard statements: Void
  - Classification system:
    - NFPA ratings (scale 0 - 4)
      Health = 0
      Fire = 0
      Reactivity = 0
    - HMIS-ratings (scale 0 - 4)
      HEALTH: Health = 0
      FIRE: Fire = 0
      REACTIVITY: 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.
Trade name: Ammonium Acetate 1M Solution

4 First-aid measures

- Description of first aid measures
- General information: No special measures required.
- After inhalation: Supply fresh air; consult doctor in case of complaints.
- After skin contact: Generally the product does not irritate the skin.
- After eye contact: Rinse opened eye for several minutes under running water.
- After swallowing: If symptoms persist consult 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: Use fire fighting measures that suit the environment.
- 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: Not required.
- 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).
- 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: | 631-61-8 ammonium acetate | 3.8 mg/m³ |
| PAC-2: | 631-61-8 ammonium acetate | 42 mg/m³ |
| PAC-3: | 631-61-8 ammonium acetate | 250 mg/m³ |

7 Handling and storage

- Handling: No special measures required.
- Precautions for safe handling: No special measures required.
- Information about protection against explosions and fires: No special measures required.
Trade name: Ammonium Acetate 1M Solution

- **Conditions for safe storage, including any incompatibilities**
  - **Storage:**
  - Requirements to be met by storerooms and receptacles: No special requirements.
  - Information about storage in one common storage facility: Not required.
  - Further information about storage conditions: None.
  - Specific end use(s) No further relevant information available.

### Exposure controls/personal protection

**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:
    The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
  - Additional information: The lists that were valid during the creation were used as basis.

- **Exposure controls**
  - Personal protective equipment:
    - General protective and hygienic measures:
      The usual precautionary measures for handling chemicals should be followed.
    - Breathing equipment: Not required.
    - Protection of hands: Not required.
    - Material of gloves
      The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material cannot be calculated in advance and has therefore to be checked prior to the application.

- **Penetration time of glove material**
  The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

- **Eye protection:** Goggles recommended during refilling.

### Physical and chemical properties

**9 Physical and chemical properties**

- **Information on basic physical and chemical properties**
  - **General Information**
    - Appearance:
      - Form: Liquid
      - Color: According to product specification
      - Odor: Characteristic
      - Odor threshold: Not determined.
    - pH-value: Not determined.

  - **Change in condition**
    - Melting point/Melting range: Undetermined.
    - Boiling point/Boiling range: 100 °C (212 °F)

  - **Flash point:** Not applicable.
  - **Flammability (solid, gaseous):** Not applicable.
  - **Decomposition temperature:** Not determined.
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:
  - Primary irritant effect:
  - on the skin: No irritant effect.
  - on the eye: No irritating effect.
  - Sensitization: No sensitizing effects known.
- Additional toxicological information:
  The product is not subject to classification according to internally approved calculation methods for preparations: When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

(Contd. on page 5)
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 1 (Self-assessment): slightly hazardous for water
    Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
- 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: Smaller quantities can be disposed of with household waste.
- Uncleaned packagings:
  - Recommendation: Disposal must be made according to official regulations.

14 Transport information

- UN-Number
  - DOT, ADN, IMDG, IATA: not regulated
- UN proper shipping name
  - DOT, ADN, IMDG, IATA: not regulated
- Transport hazard class(es)
  - DOT, ADN, IMDG, IATA: not regulated
  - Class: not regulated
- Packing group
  - DOT, IMDG, IATA: not regulated
- Environmental hazards:
  - Not applicable.
Safety Data Sheet
acc. to OSHA HCS

Printing date 03/22/2018
Version Number 2
Reviewed on 03/22/2018

Trade name: Ammonium Acetate 1M Solution

(Contd. of page 5)

- Special precautions for user: Not applicable.
- Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable.
- UN "Model Regulation": not regulated

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):
      None of the ingredients is listed.
    - TSCA (Toxic Substances Control Act):
      All ingredients are listed.
  - Proposition 65
    - Chemicals known to cause cancer:
      None of the ingredients is listed.
    - 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.
  - Carcinogenic categories
    - EPA (Environmental Protection Agency)
      631-61-8 ammonium acetate
      D
    - TLV (Threshold Limit Value established by ACGIH)
      None of the ingredients is listed.
    - NIOSH-Ca (National Institute for Occupational Safety and Health)
      None of the ingredients is listed.
    - GHS label elements
      Void
    - Hazard pictograms
      Void
    - Signal word
      Void
    - Hazard statements
      Void
    - Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- Date of preparation / last revision 03/22/2018 / 1

(Contd. on page 7)
**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
- **IATA**: International Air Transport Association
- **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)
- **HMIS**: Hazardous Materials Identification System (USA)
- **VOC**: Volatile Organic Compounds (USA, EU)
- **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

* Data compared to the previous version altered.
1 Identification

- Product identifier
- Trade name: Formic Acid Neat
- Part number: PE-1019
- CAS Number: 64-18-6
- EC number: 200-579-1
- Index number: 607-001-00-0
- Application of the substance / the mixture: Laboratory chemicals

- Details of the supplier of the safety data sheet
- Manufacturer/Supplier:
  ULTRA Scientific, Inc.
  250 Smith Street
  North Kingstown, RI 02852
  USA

- Information department:
  Telephone: (401) 294-9400
  Fax: (401) 295-2300
  E-mail: regulatory@ultrasci.com

- Emergency telephone number:
  US: +1-800-424-9300
  Outside US: +1-703-527-3887

2 Hazard(s) identification

- Classification of the substance or mixture
  GHS02 Flame
  Flam. Liq. 3  H226 Flammable liquid and vapor.

  GHS06 Skull and crossbones
  Acute Tox. 3  H331 Toxic if inhaled.

  GHS05 Corrosion
  Skin Corr. 1A  H314 Causes severe skin burns and eye damage.
  Eye Dam. 1  H318 Causes serious eye damage.

  GHS07
  Acute Tox. 4  H302 Harmful if swallowed.

- Label elements
- GHS label elements
  The substance is classified and labeled according to the Globally Harmonized System (GHS).
Safety Data Sheet
acc. to OSHA HCS

Printing date 03/22/2018
Version Number 2
Reviewed on 03/22/2018

Trade name: Formic Acid Neat

· Hazard pictograms

GHS02  GHS05  GHS06

· Signal word Danger

· Hazard-determining components of labeling:
formic acid

· Hazard statements
Flammable liquid and vapor.
Harmful if swallowed.
Toxic if inhaled.
Causes severe skin burns and eye damage.

· Precautionary statements
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting/equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Do not breathe dusts or mists.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.
If swallowed: Call a poison center/doctor if you feel unwell.
If swallowed: Rinse mouth. Do NOT induce vomiting.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
Immediately call a poison center/doctor.
Specific treatment (see on this label).
Wash contaminated clothing before reuse.
In case of fire: Use for extinction: CO2, powder or water spray.
Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.

· Classification system:

· NFPA ratings (scale 0 - 4)

Health = 3
Fire = 2
Reactivity = 0

· HMIS-ratings (scale 0 - 4)

HEALTH  HEALTH  =  *3
FIRE      FIRE     =  2
REACTIVITY REACTIVITY =  0

(Contd. on page 3)
Trade name: Formic Acid Neat

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

3 Composition/information on ingredients

· Chemical characterization: Substances
· CAS No. Description
  64-18-6 formic acid
· Identification number(s)
  · EC number: 200-579-1
  · Index number: 607-001-00-0

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.
  Remove breathing apparatus only after contaminated clothing have been completely removed.
  In case of irregular breathing or respiratory arrest provide artificial respiration.
· After inhalation:
  Supply fresh air or oxygen; call for doctor.
  In case of unconsciousness place patient stably in side position for transportation.
· After skin contact:
  Rinse opened eye for several minutes under running water. Then consult a doctor.
· After eye contact:
  Rinse opened eye for several minutes under running water. Then consult a doctor.
· After swallowing:
  Immediately call a doctor.
  Drink copious amounts of water and provide fresh air. 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.
· Special hazards arising from the substance or mixture
  During heating or in case of fire poisonous gases are produced.
· Advice for firefighters
· Protective equipment: Mouth respiratory protective device.

6 Accidental release measures

· Personal precautions, protective equipment and emergency procedures
  Mount respiratory protective device.
Trade name: Formic Acid Neat

- Environmental precautions:
  Dilute with plenty of water.
  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).
  Use neutralizing agent.
  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

<table>
<thead>
<tr>
<th>PAC</th>
<th>Limit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAC-1</td>
<td>3 ppm</td>
</tr>
<tr>
<td>PAC-2</td>
<td>25 ppm</td>
</tr>
<tr>
<td>PAC-3</td>
<td>250 ppm</td>
</tr>
</tbody>
</table>

7 Handling and storage

- Handling:
  - Precautions for safe handling
    Ensure good ventilation/exhaustion at the workplace.
    Open and handle receptacle with care.
    Prevent formation of aerosols.
  - Information about protection against explosions and fires:
    Keep ignition sources away - Do not smoke.
    Protect against electrostatic charges.
    Keep respiratory protective device available.

- Conditions for safe storage, including any incompatibilities
  - Storage:
    - Requirements to be met by storerooms and receptacles: No special requirements.
    - Information about storage in one common storage facility: Not required.
    - Further information about storage conditions: Keep receptacle tightly sealed.
  - 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>Component</th>
<th>Limit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>64-18-6 formic acid</td>
<td>Long-term value: 9 mg/m³, 5 ppm</td>
</tr>
<tr>
<td></td>
<td>REL: Long-term value: 9 mg/m³, 5 ppm</td>
</tr>
</tbody>
</table>
Trade name: Formic Acid Neat

<table>
<thead>
<tr>
<th>TLV</th>
<th>Short-term value: 19 mg/m³, 10 ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Long-term value: 9.4 mg/m³, 5 ppm</td>
</tr>
</tbody>
</table>

· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**

· **Personal protective equipment:**

· **General protective and hygienic measures:**
  Keep away from foodstuffs, beverages and feed.
  Immediately remove all soiled and contaminated clothing.
  Wash hands before breaks and at the end of work.
  Store protective clothing separately.
  Avoid contact with the eyes.
  Avoid contact with the eyes and skin.

· **Breathing equipment:**
  In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

· **Protection of hands:**

· **Material of gloves**
  The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

· **Penetration time of glove material**
  The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye protection:**

· **Physical and chemical properties**

<table>
<thead>
<tr>
<th>Information on basic physical and chemical properties</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Information</strong></td>
</tr>
<tr>
<td><strong>Appearance:</strong></td>
</tr>
<tr>
<td>Form: Liquid</td>
</tr>
<tr>
<td>Color: Colorless</td>
</tr>
<tr>
<td>Odor: Pungent</td>
</tr>
<tr>
<td>Odor threshold: Not determined.</td>
</tr>
<tr>
<td><strong>pH-value:</strong> Not determined.</td>
</tr>
<tr>
<td><strong>Change in condition</strong></td>
</tr>
<tr>
<td>Melting point/Melting range: -9 °C (15.8 °F)</td>
</tr>
<tr>
<td>Boiling point/Boiling range: 107 °C (224.6 °F)</td>
</tr>
<tr>
<td>Flash point: 59 °C (138.2 °F)</td>
</tr>
<tr>
<td>Flammability (solid, gaseous): Not applicable.</td>
</tr>
</tbody>
</table>

*(Contd. on page 6)*
### 46.0.5

- **Ignition temperature:** 520 °C (968 °F)
- **Decomposition temperature:** Not determined.
- **Auto igniting:** Not determined.
- **Danger of explosion:** Product is not explosive. However, formation of explosive air/vapor mixtures are possible.
  - **Explosion limits:**
    - Lower: 14 Vol %
    - Upper: 33 Vol %
  - **Vapor pressure at 20 °C (68 °F):** 30 hPa (22.5 mm Hg)
  - **Density at 20 °C (68 °F):** 1.2 g/cm³ (10.014 lbs/gal)
  - **Relative density** Not determined.
  - **Vapor density** Not determined.
  - **Evaporation rate** Not determined.
- **Solubility in / Miscibility with Water:** Fully miscible.
- **Partition coefficient (n-octanol/water):** Not determined.
- **Viscosity:**
  - Dynamic: Not determined.
  - Kinematic: Not determined.
- **VOC content:**
  - 0.00 %
  - 0.0 g/l / 0.00 lb/gl
- **Other information** No further relevant information available.

### 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)**
      - Oral LD50 730 mg/kg (rat)
      - Inhalative LC50/4 h 7.4 mg/L (rat)
    - **64-18-6 formic acid**
      - Oral LD50 730 mg/kg (rat)
      - Inhalative LC50/4 h 7.4 mg/L (rat)
Trade name: Formic Acid Neat

- **Primary irritant effect:**
- on the skin: Strong caustic effect on skin and mucous membranes.
- on the eye: Strong caustic effect. Strong irritant with the danger of severe eye injury.
- Sensitization: No sensitizing effects known.
- **Additional toxicological information:**
  Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

- **Carcinogenic categories**
  - IARC (International Agency for Research on Cancer)
    Substance is not listed.
  - NTP (National Toxicology Program)
    Substance is not listed.
  - OSHA-Ca (Occupational Safety & Health Administration)
    Substance is not 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 1 (Assessment by list): slightly hazardous for water
  Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
  Must not reach bodies of water or drainage ditch undiluted or unneutralized.
- 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.
- **Recommended cleansing agent:**
  Water, if necessary with cleansing agents.
### 14 Transport information

| - UN-Number | UN1779 |
| - DOT, IMDG, IATA | Formic acid |
| - UN proper shipping name | FORMIC ACID |
| - DOT | 8 Corrosive substances |
| - IMDG | 8, 3 |
| - IATA | 8 Corrosive substances |
| - Packing group | 8 (3) |
| - DOT, IMDG, IATA | II |
| - Environmental hazards: | Not applicable. |
| - Special precautions for user | Warning: Corrosive substances |
| - Danger code (Kemler): | 80 |
| - EMS Number: | 8-05 |
| - Segregation groups | Acids |
| - Stowage Category | A |
| - Stowage Code | SW2 Clear of living quarters. |
| - Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code | Not applicable. |
| - Transport/Additional information: | |
| - DOT | On passenger aircraft/rail: 1 L |
| - Quantity limitations | On cargo aircraft only: 30 L |
| - Hazardous substance: | 5000 lbs, 2270 kg |

(Contd. on page 9)
Trade name: Formic Acid Neat

- IMDG
  - Limited quantities (LQ) 1L
  - Excepted quantities (EQ) Code: E2
    Maximum net quantity per inner packaging: 30 ml
    Maximum net quantity per outer packaging: 500 ml
- UN "Model Regulation": UN 1779 FORMIC ACID, 8 (3), II

15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
  - Sara
    - Section 355 (extremely hazardous substances):
      Substance is not listed.
    - Section 313 (Specific toxic chemical listings):
      Substance is listed.
    - TSCA (Toxic Substances Control Act):
      Substance is listed.
  - Proposition 65
    - Chemicals known to cause cancer:
      Substance is not listed.
    - Chemicals known to cause reproductive toxicity for females:
      Substance is not listed.
    - Chemicals known to cause reproductive toxicity for males:
      Substance is not listed.
  - Chemicals known to cause developmental toxicity:
    Substance is not listed.

- Carcinogenic categories
  - EPA (Environmental Protection Agency)
    Substance is not listed.
  - TLV (Threshold Limit Value established by ACGIH)
    Substance is not listed.
  - NIOSH-Ca (National Institute for Occupational Safety and Health)
    Substance is not listed.

- GHS label elements
  The substance is classified and labeled according to the Globally Harmonized System (GHS).
- Hazard pictograms
  ![GHS02](image) ![GHS05](image) ![GHS06](image)

- Signal word Danger
- **Hazard-determining components of labeling:**
  formic acid

- **Hazard statements**
  Flammable liquid and vapor.
  Harmful if swallowed.
  Toxic if inhaled.
  Causes severe skin burns and eye damage.

- **Precautionary statements**
  Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
  Ground/bond container and receiving equipment.
  Use explosion-proof electrical/ventilating/lighting/equipment.
  Use only non-sparking tools.
  Take precautionary measures against static discharge.
  Do not breathe dusts or mists.
  Wash thoroughly after handling.
  Do not eat, drink or smoke when using this product.
  Use only outdoors or in a well-ventilated area.
  Wear protective gloves/protective clothing/eye protection/face protection.
  If swallowed: Call a poison center/doctor if you feel unwell.
  If swallowed: Rinse mouth. Do NOT induce vomiting.
  If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
  IF INHALED: Remove person to fresh air and keep comfortable for breathing.
  If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
  Continue rinsing.
  Immediately call a poison center/doctor.
  Specific treatment (see on this label).
  Wash contaminated clothing before reuse.
  In case of fire: Use for extinction: CO2, powder or water spray.
  Store in a well-ventilated place. Keep container tightly closed.
  Store in a well-ventilated place. Keep cool.
  Store locked up.
  Dispose of contents/container in accordance with local/regional/national/international regulations.

- **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

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**16 Other information**

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Date of preparation / last revision** 03/22/2018 / 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
  IATA: International Air Transport Association
  ACGIH: American Conference of Governmental Industrial Hygienists
  EINECS: European Inventory of Existing Commercial 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
Trade name: Formic Acid Neat

OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Flam. Liq. 3: Flammable liquids – Category 3
Acute Tox. 4: Acute toxicity – Category 4
Acute Tox. 3: Acute toxicity – Category 3
Skin Corr. 1A: Skin corrosion/irritation – Category 1A
Eye Dam. 1: Serious eye damage/eye irritation – Category 1

* Data compared to the previous version altered.
1 Identification

- Product identifier
- Trade name: PPG Neg Calibration 1e-5M Solution
- Part number: PE-1020-30ML
- Application of the substance / the mixture Laboratory chemicals

- Details of the supplier of the safety data sheet
- Manufacturer/Supplier:
  ULTRA Scientific, Inc.
  250 Smith Street
  North Kingstown, RI  02852
  USA

- Information department:
  Telephone: (401) 294-9400
  Fax: (401) 295-2300
  E-mail: regulatory@ultrasci.com
- Emergency telephone number:
  US: +1-800-424-9300
  Outside US: +1-703-527-3887

2 Hazard(s) identification

- Classification of the substance or mixture
  - GHS02 Flame
    Flam. Liq. 2 H225 Highly flammable liquid and vapor.
  - GHS06 Skull and crossbones
    Acute Tox. 3 H331 Toxic if inhaled.
  - GHS08 Health hazard
    STOT SE 1 H370 Causes damage to organs.

- Label elements
- GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).
- Hazard pictograms
  - GHS02
  - GHS06
  - GHS08

- Signal word Danger
- Hazard-determining components of labeling:
  methanol
  formic acid
- Hazard statements
  Highly flammable liquid and vapor.
Toxic if inhaled.
Causes damage to organs.

**Precautionary statements**
- Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
- Ground/bond container and receiving equipment.
- Use explosion-proof electrical/ventilating/lighting/equipment.
- Use only non-sparking tools.
- Take precautionary measures against static discharge.
- Do not breathe dust/fume/gas/mist/vapors/spray.
- Wash thoroughly after handling.
- Do not eat, drink or smoke when using this product.
- Use only outdoors or in a well-ventilated area.
- Wear protective gloves/protective clothing/eye protection/face protection.
- If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
- IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- Specific treatment (see on this label).
- In case of fire: Use for extinction: CO2, powder or water spray.
- Store in a well-ventilated place. Keep container tightly closed.
- Store in a well-ventilated place. Keep cool.
- Store locked up.
- Dispose of contents/container in accordance with local/regional/national/international regulations.

**Classification system:**
- NFPA ratings (scale 0 - 4)
  - Health = 1
  - Fire = 3
  - Reactivity = 0
- HMIS-ratings (scale 0 - 4)
  - Health = *1
  - Fire = 3
  - 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:**

<table>
<thead>
<tr>
<th>Substance</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-56-1 methanol</td>
<td>44.094%</td>
</tr>
</tbody>
</table>

### 4 First-aid measures
- Description of first aid measures
- General information:
  - Immediately remove any clothing soiled by the product.
  - Remove breathing apparatus only after contaminated clothing have been completely removed.
46.0.5 In case of irregular breathing or respiratory arrest provide artificial respiration.

- **After inhalation:**
  Supply fresh air or oxygen; call for doctor.
  In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.
- **After swallowing:** If symptoms persist consult 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: Mouth respiratory protective device.

### 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**

<table>
<thead>
<tr>
<th>PAC-1:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>67-56-1 methanol</td>
<td>530 ppm</td>
<td></td>
</tr>
<tr>
<td>64-18-6 formic acid</td>
<td>3 ppm</td>
<td></td>
</tr>
<tr>
<td>631-61-8 ammonium acetate</td>
<td>3.8 mg/m³</td>
<td></td>
</tr>
<tr>
<td>25322-69-4 POLYPROPYLENE GLYCOL</td>
<td>30 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PAC-2:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>67-56-1 methanol</td>
<td>2,100 ppm</td>
<td></td>
</tr>
<tr>
<td>64-18-6 formic acid</td>
<td>25 ppm</td>
<td></td>
</tr>
<tr>
<td>631-61-8 ammonium acetate</td>
<td>42 mg/m³</td>
<td></td>
</tr>
<tr>
<td>25322-69-4 POLYPROPYLENE GLYCOL</td>
<td>330 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PAC-3:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>67-56-1 methanol</td>
<td>7200* ppm</td>
<td></td>
</tr>
</tbody>
</table>
Trade name: PPG Neg Calibration 1e-5M Solution

7 Handling and storage

· Handling:
  · Precautions for safe handling
    Ensure good ventilation/exhaustion at the workplace.
    Open and handle receptacle with care.
  · Information about protection against explosions and fires:
    Keep ignition sources away - Do not smoke.
    Protect against electrostatic charges.
    Keep respiratory protective device available.

· 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>Component</th>
<th>Limit Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-56-1 methanol</td>
<td>PEL: Long-term: 260 mg/m³, 200 ppm</td>
</tr>
<tr>
<td></td>
<td>REL: Short-term: 325 mg/m³, 250 ppm</td>
</tr>
<tr>
<td></td>
<td>Long-term: 260 mg/m³, 200 ppm</td>
</tr>
<tr>
<td></td>
<td>Skin</td>
</tr>
<tr>
<td></td>
<td>TLV: Short-term: 328 mg/m³, 250 ppm</td>
</tr>
<tr>
<td></td>
<td>Long-term: 262 mg/m³, 200 ppm</td>
</tr>
<tr>
<td></td>
<td>Skin; BEI</td>
</tr>
</tbody>
</table>

· Ingredients with biological limit values:

<table>
<thead>
<tr>
<th>Component</th>
<th>Limit Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-56-1 methanol</td>
<td>BEI 15 mg/L</td>
</tr>
<tr>
<td></td>
<td>Medium: urine</td>
</tr>
<tr>
<td></td>
<td>Time: end of shift</td>
</tr>
<tr>
<td></td>
<td>Parameter: Methanol (background, nonspecific)</td>
</tr>
</tbody>
</table>

· Additional information: The lists that were valid during the creation were used as basis.

· Exposure controls

· Personal protective equipment:

· General protective and hygienic measures:
  Keep away from foodstuffs, beverages and feed.
Trade name: PPG Neg Calibration 1e-5M Solution

Immediately remove all soiled and contaminated clothing. Wash hands before breaks and at the end of work. Store protective clothing separately.

- **Breathing equipment:**
  In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

- **Protection of hands:** Not required.

- **Material of gloves**
  The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material cannot be calculated in advance and has therefore to be checked prior to the application.

- **Penetration time of glove material**
  The exact breakthrough time has to be found out by the manufacturer of the protective gloves and has to be observed.

- **Eye protection:**
  Tightly sealed goggles

---

### 9 Physical and chemical properties

- **Information on basic physical and chemical properties**

  - **General Information**
  - **Appearance:**
    - **Form:** Liquid
    - **Color:** According to product specification
  - **Odor:** Characteristic
  - **Odor threshold:** Not determined.
  - **pH-value:** Not determined.

- **Change in condition**
  - **Melting point/Melting range:** Undetermined.
  - **Boiling point/Boiling range:** 64 °C (147.2 °F)

- **Flash point:** 9 °C (48.2 °F)

- **Flammability (solid, gaseous):** Not applicable.

- **Ignition temperature:** 455 °C (851 °F)

- **Decomposition temperature:** Not determined.

- **Auto igniting:** Product is not self-igniting.

- **Danger of explosion:**
  - Product is not explosive. However, formation of explosive air/vapor mixtures are possible.

- **Explosion limits:**
  - **Lower:** 5.5 Vol %
  - **Upper:** 44 Vol %

- **Vapor pressure at 20 °C (68 °F):** 100 hPa (75 mm Hg)

- **Density at 20 °C (68 °F):** 0.91211 g/cm³ (7.61156 lbs/gal)

- **Relative density:** Not determined.
Trade name: PPG Neg Calibration 1e-5M Solution

- Vapor density: Not determined.
- Evaporation rate: Not determined.

- Solubility in / Miscibility with Water: Not miscible or difficult to mix.
- Partition coefficient (n-octanol/water): Not determined.

- Viscosity:
  Dynamic: Not determined.
  Kinematic: Not determined.

- Solvent content:
  Organic solvents: 44.1 %
  Water: 55.7 %
  VOC content: 44.09 %
  402.2 g/l / 3.36 lb/gl

- Other information: No further relevant information available.

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)
    Inhalative LC50/4 h 6.8 mg/L

67-56-1 methanol

  Oral LD50 5,628 mg/kg (rat)
  Dermal LD50 15,800 mg/kg (rabbit)

- Primary irritant effect:
  - on the skin: No irritant effect.
  - on the eye: No irritating effect.
- Sensitization: No sensitizing effects known.
- Additional toxicological information:
  The product shows the following dangers according to internally approved calculation methods for preparations:
  Toxic

- Carcinogenic categories
  - IARC (International Agency for Research on Cancer)
    None of the ingredients is listed.
Trade name: PPG Neg Calibration 1e-5M Solution

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 1 (Self-assessment): slightly hazardous for water
  Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
· 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: UN1993
· UN proper shipping name
· DOT
· IMDG, IATA: Flammable liquids, n.o.s. (Methanol)
· Transport hazard class(es)
· DOT
· Class: 3 Flammable liquids
Trade name: PPG Neg Calibration 1e-5M Solution

<table>
<thead>
<tr>
<th>· Label</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>· IMDG, IATA</td>
<td></td>
</tr>
<tr>
<td>· Class</td>
<td>3 Flammable liquids</td>
</tr>
<tr>
<td>· Label</td>
<td>3</td>
</tr>
<tr>
<td>· Packing group</td>
<td></td>
</tr>
<tr>
<td>· DOT, IMDG, IATA</td>
<td>II</td>
</tr>
<tr>
<td>· Environmental hazards:</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>· Special precautions for user</td>
<td>Warning: Flammable liquids</td>
</tr>
<tr>
<td>· Danger code (Kemler):</td>
<td>33</td>
</tr>
<tr>
<td>· EMS Number:</td>
<td>F-E,S-E</td>
</tr>
<tr>
<td>· Stowage Category</td>
<td>B</td>
</tr>
<tr>
<td>· Stowage Code</td>
<td>SW2 Clear of living quarters.</td>
</tr>
<tr>
<td>· Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>· Transport/Additional information:</td>
<td></td>
</tr>
<tr>
<td>· DOT</td>
<td></td>
</tr>
<tr>
<td>· Quantity limitations</td>
<td>On passenger aircraft/rail: 5 L On cargo aircraft only: 60 L</td>
</tr>
<tr>
<td>· IMDG</td>
<td></td>
</tr>
<tr>
<td>· Limited quantities (LQ)</td>
<td>1L</td>
</tr>
<tr>
<td>· Excepted quantities (EQ)</td>
<td>Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml</td>
</tr>
<tr>
<td>· UN &quot;Model Regulation&quot;:</td>
<td>UN 1993 FLAMMABLE LIQUIDS, N.O.S. (METHANOL), 3, II</td>
</tr>
</tbody>
</table>

*15 Regulatory information*

<table>
<thead>
<tr>
<th>· Safety, health and environmental regulations/legislation specific for the substance or mixture</th>
<th>Sara</th>
</tr>
</thead>
<tbody>
<tr>
<td>· Section 355 (extremely hazardous substances):</td>
<td>None of the ingredients is listed.</td>
</tr>
<tr>
<td>· Section 313 (Specific toxic chemical listings):</td>
<td>None of the ingredients is listed.</td>
</tr>
<tr>
<td>· TSCA (Toxic Substances Control Act):</td>
<td>All ingredients are listed.</td>
</tr>
<tr>
<td>· Proposition 65</td>
<td></td>
</tr>
<tr>
<td>· Chemicals known to cause cancer:</td>
<td>None of the ingredients is listed.</td>
</tr>
</tbody>
</table>
### 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:
- **67-56-1 methanol**

### Carcinogenic categories

- **EPA (Environmental Protection Agency)**
  - 631-61-8 ammonium acetate [D]

- **TLV (Threshold Limit Value established by ACGIH)**
  None of the ingredients is listed.

- **NIOSH-Ca (National Institute for Occupational Safety and Health)**
  None of the ingredients is listed.

### GHS label elements
The product is classified and labeled according to the Globally Harmonized System (GHS).

### Hazard pictograms
- GHS02
- GHS06
- GHS08

### Signal word
Danger

### Hazard-determining components of labeling:
- methanol
- formic acid

### Hazard statements
- Highly flammable liquid and vapor.
- Toxic if inhaled.
- Causes damage to organs.

### Precautionary statements
- Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
- Ground/bond container and receiving equipment.
- Use explosion-proof electrical/ventilating/lighting/equipment.
- Use only non-sparking tools.
- Take precautionary measures against static discharge.
- Do not breathe dust/fume/gas/mist/vapors/spray.
- Wash thoroughly after handling.
- Do not eat, drink or smoke when using this product.
- Use only outdoors or in a well-ventilated area.
- Wear protective gloves/protective clothing/eye protection/face protection.
- If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
- If INHALED: Remove person to fresh air and keep comfortable for breathing.
- Specific treatment (see on this label).
- In case of fire: Use for extinction: CO2, powder or water spray.
- Store in a well-ventilated place. Keep container tightly closed.
- Store in a well-ventilated place. Keep cool.
- Store locked up.
- Dispose of contents/container in accordance with local/regional/national/international regulations.
· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

**16 Other information**

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Date of preparation / last revision** 03/22/2018 / 2
- **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
  - IATA: International Air Transport Association
  - 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
  - BEI: Biological Exposure Limit
  - Flam. Liq. 2: Flammable liquids – Category 2
  - Acute Tox. 3: Acute toxicity – Category 3
  - STOT SE 1: Specific target organ toxicity (single exposure) – Category 1
  - * Data compared to the previous version altered.