1 Identification

- **Product identifier**
- **Trade name:** Octafluoronaphthalene Solution 5
- **Part number:** LECO-039-5
- **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.
  - GHS08 Health hazard
    Asp. Tox. 1  H304 May be fatal if swallowed and enters airways.
  - GHS07
    Skin Irrit. 2  H315 Causes skin irritation.
    STOT SE 3  H336 May cause drowsiness or dizziness.

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

- **Hazard pictograms**
  - GHS02
  - GHS07
  - GHS08

- **Signal word** Danger

- **Hazard-determining components of labeling:**
  2,2,4-trimethylpentane

- **Hazard statements**
  Highly flammable liquid and vapor.

(Contd. on page 2)
Causes skin irritation.
May cause drowsiness or dizziness.
May be fatal if swallowed and enters airways.

**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.
Avoid breathing dust/fume/gas/mist/vapors/spray
Wash thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.
If swallowed: Immediately call a poison center/doctor.
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.
Call a poison center/doctor if you feel unwell.
Specific treatment (see on this label).
Do NOT induce vomiting.
If skin irritation occurs: Get medical advice/attention.
Take off contaminated clothing and wash it 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 = 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>Chemical Code</th>
<th>Description</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>540-84-1</td>
<td>2,2,4-trimethylpentane</td>
<td>100.0%</td>
</tr>
</tbody>
</table>
4 First-aid measures

- **Description of first aid measures**
  - **After inhalation:** 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.
  - **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:** No special measures required.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
  - Wear protective equipment. Keep unprotected persons away.

- **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.

- **Methods and material for containment and cleaning up:**
  - Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  - Dispose contaminated material as waste according to item 13.
  - Ensure adequate ventilation.

- **Reference to other sections**
  - See Section 7 for information on safe handling.
  - See Section 8 for information on personal protection equipment.
  - See Section 13 for disposal information.

- **Protective Action Criteria for Chemicals**

<table>
<thead>
<tr>
<th>PAC</th>
<th>Substance</th>
<th>Limit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAC-1:</td>
<td>540-84-1 2,2,4-trimethylpentane</td>
<td>230 ppm</td>
</tr>
<tr>
<td>PAC-2:</td>
<td>540-84-1 2,2,4-trimethylpentane</td>
<td>830 ppm</td>
</tr>
<tr>
<td>PAC-3:</td>
<td>540-84-1 2,2,4-trimethylpentane</td>
<td>5000* ppm</td>
</tr>
</tbody>
</table>

7 Handling and storage

- **Handling:**
  - **Precautions for safe handling** No special precautions are necessary if used correctly.
  - **Information about protection against explosions and fires:**
    - Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.

- **Conditions for safe storage, including any incompatibilities**
  - **Storage:**
  - **Requirements to be met by storerooms and receptacles:** Store in a cool location.
  - **Information about storage in one common storage facility:** Not required.
  - **Further information about storage conditions:**
    - Keep receptacle tightly sealed.
    - Store in cool, dry conditions in well sealed receptacles.
  - **Specific end use(s)**: No further relevant information available.

### 8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**
  - **Components with limit values that require monitoring at the workplace:**
    - **540-84-1 2,2,4-trimethylpentane**
      - PEL: Long-term value: 2350 mg/m³, 500 ppm
        - n-Octane only
      - TLV: Long-term value: 1401 mg/m³, 300 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 skin.
    - Avoid contact with the eyes and skin.
  - **Breathing equipment:** Not required.
  - **Protection of hands:**
    - **Protective 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**
      - (Contd. on page 5)
## 9 Physical and chemical properties

- **Information on basic physical and chemical properties**
  - **General Information**
    - **Appearance:** Fluid
    - **Form:** Fluid
    - **Color:** Colorless
    - **Odor:** Nearly odorless
    - **Odor threshold:** Not determined.
    - **pH-value:** Not determined.

- **Change in condition**
  - **Melting point/Melting range:** -107 °C (-160.6 °F)
  - **Boiling point/Boiling range:** 99 °C (210.2 °F)

- **Flash point:** -12 °C (10.4 °F)

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

- **Ignition temperature:** 410 °C (770 °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:** 1.1 Vol %
  - **Upper:** 6 Vol %

- **Vapor pressure at 20 °C (68 °F):** 41.25 hPa (30.9 mm Hg)

- **Density at 20 °C (68 °F):**
  - **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 at 20 °C (68 °F):** 0.51 mPas
  - **Kinematic:** Not determined.

- **Solvent content:**
  - **Organic solvents:** 100.0 %
  - **VOC content:**
    - **1,000.0 g/l / 8.35 lb/gl**

- **Solids content:** 0.0 %

- **Other information**
  - **No further relevant information available.**

## 10 Stability and reactivity

- **Reactivity** No further relevant information available.
11 Toxicological information

- Information on toxicological effects
  - Acute toxicity:
    - LD/LC50 values that are relevant for classification:
      - ATE (Acute Toxicity Estimate)
        - Dermal LD50 >2,000 mg/kg (rabbit)
        - Inhalative LC50/4 h >33.5 mg/L (rat)
  - 540-84-1 2,2,4-trimethylpentane
    - Oral LD50 >5,000 mg/kg (rat)
    - Dermal LD50 >2,000 mg/kg (rabbit)
    - Inhalative LC50/4 h >33.52 mg/L (rat)
  - Primary irritant effect:
    - on the skin: Irritant to skin and mucous membranes.
    - 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:
      - 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.
Trade name: Octafluoronaphthalene Solution 5

- 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: UN1262
- UN proper shipping name
  - DOT: Octanes solution
  - IMDG: OCTANES solution, MARINE POLLUTANT
  - IATA: OCTANES solution
- Transport hazard class(es)
  - DOT
    - Class: 3 Flammable liquids
    - Label: 3
  - IMDG
    - Class: 3 Flammable liquids
    - Label: 3
  - IATA
    - Class: 3 Flammable liquids
    - Label: 3

(Contd. of page 6)

(Contd. on page 8)
### Trade name: Octafluoronaphthalene Solution 5

| · Packing group | DOT, IMDG, IATA | II |
| · Environmental hazards: | Product contains environmentally hazardous substances: 2,2,4-trimethylpentane |
| · Marine pollutant: | Symbol (fish and tree) |
| · 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 |
| · Quantity limitations | On passenger aircraft/rail: 5 L |
| | On cargo aircraft only: 60 L |
| · IMDG | Limited quantities (LQ)  |
| · 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 1262 OCTANES SOLUTION, 3, II, ENVIRONMENTALLY HAZARDOUS |

### 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): | 540-84-1 2,2,4-trimethylpentane |
| · 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. |
Safety Data Sheet  
acc. to OSHA HCS

Printing date 04/30/2018  
Version Number 1  
Reviewed on 04/30/2018

Trade name: Octafluoronaphthalene Solution 5 (Contd. of page 8)

- **Carcinogenic categories**

  - **EPA (Environmental Protection Agency)**
    
    540-84-1 2,2,4-trimethylpentane  
    H
  
  - **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](image)
  ![GHS07](image)
  ![GHS08](image)

- **Signal word** Danger

- **Hazard-determining components of labeling:**
  2,2,4-trimethylpentane

- **Hazard statements**
  Highly flammable liquid and vapor.  
  Causes skin irritation.  
  May cause drowsiness or dizziness.  
  May be fatal if swallowed and enters airways.

- **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.  
  Avoid breathing dust/fume/gas/mist/vapors/spray  
  Wash thoroughly after handling.  
  Use only outdoors or in a well-ventilated area.  
  Wear protective gloves/protective clothing/eye protection/face protection.  
  If swallowed: Immediately call a poison center/doctor.  
  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.  
  Call a poison center/doctor if you feel unwell.  
  Specific treatment (see on this label).  
  Do NOT induce vomiting.  
  If skin irritation occurs: Get medical advice/attention.  
  Take off contaminated clothing and wash it 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.

(Contd. on page 10)
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: 04/30/2018 / -
- 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
  - Skin Irrit. 2: Skin corrosion/irritation – Category 2
  - STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
  - Asp. Tox. 1: Aspiration hazard – Category 1