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

- **Product identifier**
  - **Trade name:** OFN Solution 7 (1000 ng/mL)
  - **Part number:** LECO-004-7
  - **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: (800) 424-9300
    Outside US: (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.

- **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.
44.1.9

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. Use explosion-proof electrical/ventilating/lighting/equipment. Avoid breathing dust/fume/gas/mist/vapors/spray Wear protective gloves/protective clothing/eye protection/face protection. Ground/bond container and receiving equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area.

IF SWALLOWED: Immediately call a POISON CENTER/doctor. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Specific treatment (see on this label).

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell. If skin irritation occurs: Get medical advice/attention. Do NOT induce vomiting.

In case of fire: Use for extinction: CO2, powder or water spray. Take off contaminated clothing and wash it before reuse. Store locked up. Store in a well-ventilated place. Keep container tightly closed. 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)

\[
\begin{array}{ccc}
\text{Health} & \text{Fire} & \text{Reactivity} \\
1 & 3 & 0 \\
\end{array}
\]

· HMIS-ratings (scale 0 - 4)

\[
\begin{array}{ccc}
\text{HEALTH} & \text{FIRE} & \text{REACTIVITY} \\
1 & 3 & 0 \\
\end{array}
\]

· 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:

| 540-84-1 2,2,4-trimethylpentane | 100.0% |
4 First-aid measures

- **Description of first aid measures**
  - **General information:** Immediately remove any clothing soiled by the product.
  - **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</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**
    - Ensure good ventilation/exhaustion at the workplace.
Trade name: OFN Solution 7 (1000 ng/mL)

Prevent formation of aerosols.

- **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</th>
<th>TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>540-84-1 2,2,4-trimethylpentane</td>
<td>Long-term value: 2350 mg/m³, 500 ppm</td>
<td>Long-term value: 1401 mg/m³, 300 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 skin.
  - 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:**

  The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
  - Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
  - Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

  **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.
9 Physical and chemical properties

- Information on basic physical and chemical properties
  - General Information
    - Appearance:
      - Form: Fluid
      - Color: Colorless
    - Odor: Nearly odorless
    - Odor threshold: Not determined.
    - pH-value: Not determined.
- Change in condition
  - Melting point/Melting range: -107 °C (-161 °F)
  - Boiling point/Boiling range: 99 °C (210 °F)
- Flash point: -12 °C (10 °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 (31 mm Hg)
- Density at 20 °C (68 °F): 0.692 g/cm³ (5.775 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: 100.0 %
  - VOC content: 100.0 %
  - 1000.0 g/l / 8.35 lb/gl
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**:  
      | Compound | Oral LD50 | Dermal LD50 | Inhalative LC50/4 h |
      |----------|-----------|-------------|--------------------|
      | 540-84-1 2,2,4-trimethylpentane | >5000 mg/kg (rat) | >2000 mg/kg (rabbit) | >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.

· 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 mixture
  · IMDG OCTANES mixture, MARINE POLLUTANT
  · IATA OCTANES mixture

· Transport hazard class(es)
  · DOT
    · Class 3 Flammable liquids
    · Label 3
  · IMDG
    · Class 3 Flammable liquids
    · Label 3
Trade name: OFN Solution 7 (1000 ng/mL)

<table>
<thead>
<tr>
<th>IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
</tr>
<tr>
<td>Label</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Packing group</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT, IMDG, IATA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental hazards:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product contains environmentally hazardous substances: 2,2,4-trimethylpentane</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Marine pollutant:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symbol (fish and tree)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Special precautions for user</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warning: Flammable liquids</td>
</tr>
<tr>
<td>Danger code (Kemler):</td>
</tr>
<tr>
<td>EMS Number:</td>
</tr>
<tr>
<td>Stowage Category</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Transport/Additional information:</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT</td>
</tr>
<tr>
<td>Quantity limitations</td>
</tr>
<tr>
<td>On passenger aircraft/rail: 5 L</td>
</tr>
<tr>
<td>On cargo aircraft only: 60 L</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>UN &quot;Model Regulation&quot;:</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN 1262 OCTANES MIXTURE, ENVIRONMENTALLY HAZARDOUS, 3, II, ENVIRONMENTALLY HAZARDOUS</td>
</tr>
</tbody>
</table>

### 15 Regulatory information

<table>
<thead>
<tr>
<th>Safety, health and environmental regulations/legislation specific for the substance or mixture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sara</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section 355 (extremely hazardous substances):</th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the ingredients is listed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section 313 (Specific toxic chemical listings):</th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the ingredients is listed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TSCA (Toxic Substances Control Act):</th>
</tr>
</thead>
<tbody>
<tr>
<td>540-84-1 2,2,4-trimethylpentane</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Proposition 65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemicals known to cause cancer:</td>
</tr>
<tr>
<td>None of the ingredients is listed.</td>
</tr>
</tbody>
</table>
44.1.9

· 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)
    540-84-1 2,2,4-trimethylpentane
  · 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  GHS07  GHS08

· 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.
  Use explosion-proof electrical/ventilating/lighting/equipment.
  Avoid breathing dust/fume/gas/mist/vapors/spray
  Wear protective gloves/protective clothing/eye protection/face protection.
  Ground/bond container and receiving equipment.
  Use only non-sparking tools.
  Take precautionary measures against static discharge.
  Wash thoroughly after handling.
  Use only outdoors or in a well-ventilated area.
  IF SWALLOWED: Immediately call a POISON CENTER/doctor.
  If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
  Specific treatment (see on this label).
  IF INHALED: Remove person to fresh air and keep comfortable for breathing.
  Call a POISON CENTER/doctor if you feel unwell.
  If skin irritation occurs: Get medical advice/attention.
  Do NOT induce vomiting.
  In case of fire: Use for extinction: CO2, powder or water spray.
  Take off contaminated clothing and wash it before reuse.
  Store locked up.
  Store in a well-ventilated place. Keep container tightly closed.
Safety Data Sheet
acc. to OSHA HCS

Printing date 02/15/2017
Reviewed on 02/15/2017
Version Number 1

Trade name: OFN Solution 7 (1000 ng/mL)

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.

· Department issuing SDS: Document Control / Regulatory
· Contact: regulatory@ultrasci.com
· Date of preparation / last revision 02/15/2017 / -
· 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