### 1 Identification

- **Product identifier**
  - **Trade name:** OFN @ 1 pg/µL
  - **Part number:** 1R76310-0115
  - **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.
  - **GHS07**
    - Skin Irrit. 2 H315 Causes skin irritation.
    - STOT SE 3 H336 May cause drowsiness or dizziness.

- **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.  
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 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 Health = 1  
  - FIRE: 3 Fire = 3  
  - REACTIVITY: 0 Reactivity = 0

**Other hazards**

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

**3 Composition/information on ingredients**

- **Chemical characterization:** Mixtures
- **Description:** Mixture of the substances listed below with nonhazardous additions.

| Dangerous components: | 540-84-1 | 2,2,4-trimethylpentane | 100.0% |

(Contd. on page 3)
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-1:</th>
<th>540-84-1 2,2,4-trimethylpentane</th>
<th>230 ppm</th>
</tr>
</thead>
<tbody>
<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.
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.**

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### 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:**
    - 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:**
    - **Protective gloves**
      - 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 (°F)
  - Boiling point/Boiling range: 99°C (°F)
- Flash point: -12°C (°F)
- Flammability (solid, gaseous): Not applicable.
- Ignition temperature: 410°C (°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 (mm Hg)
- Density at 20°C (68 °F): 0.692 g/cm³ (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: 100.00 %
    - 1,000.0 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:
      ATE (Acute Toxicity Estimate)
      | Route   | LD50     | LC50        |
      |----------|----------|-------------|
      | Oral     | >5,000 mg/kg (rat) |
      | Dermal   | >2,000 mg/kg (rabbit) |
      | Inhalative | >33.5 mg/L (rat) |

540-84-1 2,2,4-trimethylpentane

<table>
<thead>
<tr>
<th>Route</th>
<th>LD50</th>
<th>LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>&gt;5,000 mg/kg (rat)</td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td>&gt;2,000 mg/kg (rabbit)</td>
<td></td>
</tr>
<tr>
<td>Inhalative</td>
<td>&gt;33.52 mg/L (rat)</td>
<td></td>
</tr>
</tbody>
</table>

· 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.
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
  UN1262

- DOT, IMDG, IATA
  Octanes mixture
  OCTANES mixture, MARINE POLLUTANT
  OCTANES mixture

- Transport hazard class(es)
  - DOT
    3 Flammable liquids
  - IMDG
    3 Flammable liquids
Trade name: OFN @ 1 pg/µL

| · Label                                      | 3 |
| · IATA                                       |   |
| · Class                                      | 3 Flammable liquids |
| · Label                                      |   |

| · 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                      | On passenger aircraft/rail: 5 L |
|                                             | On cargo aircraft only: 60 L |

| · IMDG                                       |   |
| · Limited quantities (LQ)                   | 1L |
| · Exempted 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 MIXTURE, 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                                                                |
| · Proposition 65                                                                               |
| · Chemicals known to cause cancer:                                                              |
| None of the ingredients is listed.                                                              |
Trade name: OFN @ 1 pg/µL

- **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
      - II
  - **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.
  - 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.

- **In case of fire:** Use for extinction: CO2, powder or water spray.

- **Store in a well-ventilated place. Keep cool.**
45.2.5 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.

   · Department issuing SDS: Document Control / Regulatory
   · Contact: regulatory@ultrasci.com
   · Date of preparation / last revision 09/22/2017 / -
   · 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
   · * Data compared to the previous version altered.