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

- Product identifier
  - Trade name: OFN Solution 6 (50 pg/µL)
  - Part number: LECO-022-6
  - 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.

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

- Hazard pictograms

- 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.
  - 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)**
    - 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.

<table>
<thead>
<tr>
<th>Dangerous components:</th>
<th>100.0%</th>
</tr>
</thead>
<tbody>
<tr>
<td>540-84-1 2,2,4-trimethylpentane</td>
<td></td>
</tr>
</tbody>
</table>

(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

| PAC-1: | 540-84-1 2,2,4-trimethylpentane | 230 ppm |
| PAC-2: | 540-84-1 2,2,4-trimethylpentane | 830 ppm |
| PAC-3: | 540-84-1 2,2,4-trimethylpentane | 5000 ppm |

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.

## 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:**
    - **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.
Trade name: OFN Solution 6 (50 pg/µL)

- **Eye protection:**
  - Tightly sealed goggles

### 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**

- **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:**
  - **Organic solvents:** 100.0 %
  - **VOC content:** 100.0 %
    - 1000.0 g/l / 8.35 lb/gl

(Contd. on page 6)
44.1.9 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**:
      - 540-84-1 2,2,4-trimethylpentane
        - Oral LD50 >5000 mg/kg (rat)
        - Dermal LD50 >2000 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.
Trade name: OFN Solution 6 (50 pg/µL)

- **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
## 44.1.9

- **IATA**
- **Class**: 3 Flammable liquids
- **Label**: 3
- **Packing group**: DOT, IMDG, IATA
- **Class**: 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.

## 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 Solution 6 (50 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.
  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.
44.1.9 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.

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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.

- **Department issuing SDS:** Document Control / Regulatory
- **Contact:** regulatory@ultrasci.com
- **Date of preparation / last revision** 02/17/2017 / -
- **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.*