1 Identification

· Product identifier
  · Trade name: NFD, FPD Validation PQ 2
  · Part number: 33819030-2
  · Application of the substance / the mixture Reagents and Standards for Analytical Chemical Laboratory Use

· Details of the supplier of the safety data sheet
  · Manufacturer/Supplier: Agilent Technologies, Inc.
    5301 Stevens Creek Blvd.
    Santa Clara, CA 95051 USA
  · Information department:
    Telephone: 800-227-9770
    e-mail: pdl-msds_author@agilent.com
  · Emergency telephone number: CHEMTREC®: 1-800-424-9300

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.
  · Causes skin irritation.
  · May cause drowsiness or dizziness.
  · May be fatal if swallowed and enters airways.

(Contd. on page 2)
· 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.
  Specific treatment (see on this label).
  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.
  Call a poison center/doctor if you feel unwell.
  Take off contaminated clothing and wash it before reuse.
  If skin irritation occurs: Get medical advice/attention.
  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
    Fire = 3
    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.

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

4 First-aid measures
· Description of first aid measures
  · After inhalation: In case of unconsciousness place patient stably in side position for transportation.
Trade name: NFD, FPD Validation PQ 2

· 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
  298-00-0 parathion -methyl (ISO) 0.11 mg/m³

  PAC-2:
  540-84-1 2,2,4-trimethylpentane 830 ppm
  298-00-0 parathion -methyl (ISO) 1.2 mg/m³

  PAC-3:
  540-84-1 2,2,4-trimethylpentane 5000* ppm
  298-00-0 parathion -methyl (ISO) 3.5 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.
- **Control parameters**
  - **Components with limit values that require monitoring at the workplace:**
    | Component            | PEL Long-term value | TLV Long-term value |
    |----------------------|---------------------|---------------------|
    | 2,2,4-trimethylpentane | 2350 mg/m³, 500 ppm | 1401 mg/m³, 300 ppm |
  - **n-Octane only**
  - **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:**
    - When used as intended with Agilent instruments, the use of the product under normal laboratory conditions and with standard practices does not result in significant airborne exposures and therefore respiratory protection is not needed.
    - Under an emergency condition where a respirator is deemed necessary, use a NIOSH or equivalent approved device/equipment with appropriate organic or acid gas cartridge.
  - **Protection of hands:**
    - Although not recommended for constant contact with the chemicals or for clean-up, nitrile gloves 11-13 mil thickness are recommended for normal use. The breakthrough time is 1 hr. For cleaning a spill where there is direct contact of the chemical, butyl rubber gloves are recommended 12-15 mil thickness with breakthrough times exceeding 4 hrs. Supplier recommendations should be followed.
  - **Material of gloves**
    - For normal use: nitrile rubber, 11-13 mil thickness
    - For direct contact with the chemical: butyl rubber, 12-15 mil thickness
  - **Penetration time of glove material**
    - For normal use: nitrile rubber: 1 hour
    - For direct contact with the chemical: butyl rubber: >4 hours

(Contd. on page 5)
9 Physical and chemical properties

- Information on basic physical and chemical properties
- General Information
- Appearance:
  - Form: Fluid
  - Color: Colorless
- Odor:
  - 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): 0.692 g/cm³ (5.77474 lbs/gal)
- Relative density
- 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 %
Trade name: NFD, FPD Validation PQ 2

<table>
<thead>
<tr>
<th>VOC content:</th>
<th>100.00 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solids content:</td>
<td>0.0 %</td>
</tr>
<tr>
<td>Other information</td>
<td>No further relevant information available.</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>LD/LC50 values that are relevant for classification:</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATE (Acute Toxicity Estimate)</td>
</tr>
<tr>
<td>Dermal</td>
</tr>
<tr>
<td>Inhalative</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>IARC (International Agency for Research on Cancer)</th>
</tr>
</thead>
<tbody>
<tr>
<td>103-33-3 azobenzene</td>
</tr>
<tr>
<td>298-00-0 parathion -methyl (ISO)</td>
</tr>
</tbody>
</table>

- 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 solution
  - IMDG: OCTANES solution, MARINE POLLUTANT
  - IATA: OCTANES solution
- Transport hazard class(es)
  - DOT
  - Class: 3 Flammable liquids
  - Label: 3

(Contd. on page 8)
Trade name: NFD, FPD Validation PQ 2

(Contd. of page 7)

- **IMDG**
  - Class
  - Label
    - 3 Flammable liquids

- **IATA**
  - Class
  - Label
    - 3 Flammable liquids

- **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
  - **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):**
  - 298-00-0 parathion -methyl (ISO)

(Contd. on page 9)
Trade name: NFD, FPD Validation PQ 2

- **Section 313 (Specific toxic chemical listings):**
  - 298-00-0 parathion -methyl (ISO)

- **TSCA (Toxic Substances Control Act):**
  - 540-84-1 2,2,4-trimethylpentane
  - 103-33-3 azobenzene

- **Proposition 65**
  - **Chemicals known to cause cancer:**
    - 103-33-3 azobenzene
  - **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
    - 103-33-3 azobenzene B2
  - **TLV (Threshold Limit Value established by ACGIH)**
    - 298-00-0 parathion -methyl (ISO) 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).
  - **GHS 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. 
Specific treatment (see on this label). 
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. 
Call a poison center/doctor if you feel unwell. 
Take off contaminated clothing and wash it before reuse. 
If skin irritation occurs: Get medical advice/attention. 
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

The information contained in this document is based on Agilent's state of knowledge at the time of preparation. 
No warranty as to its accurateness, completeness or suitability for a particular purpose is expressed or implied.

- Date of preparation / last revision 08/15/2018 / 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 
  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.