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

- **Product identifier**
  - **Trade name:** 2,4-Dinitroaniline
  - **Part number:** FRNH-179K
  - **CAS Number:** 97-02-9
  - **EC number:** 202-553-5
  - **Index number:** 612-040-00-1

- **Relevant identified uses of the substance or mixture and uses advised against**
  - Reagents and Standards for Analytical Chemical Laboratory Use

- **Details of the supplier of the safety data sheet**
  - **Manufacturer/Supplier:** Agilent Technologies Manufacturing GmbH & Co. KG
  - Hewlett-Packard-Str.8
  - 76337 Waldbronn
  - Germany

- **Further information obtainable from:**
  - Telephone: 0800 603 1000
  - pdl-msds_author@agilent.com
  - **Emergency telephone number:** CHEMTREC®: +(44)-870-8200418

2 Hazards identification

- **Classification of the substance or mixture**
  - **Classification according to Regulation (EC) No 1272/2008**

  - **GHS06 skull and crossbones**
    - Acute Tox. 2 H300 Fatal if swallowed.
    - Acute Tox. 1 H310 Fatal in contact with skin.
    - Acute Tox. 2 H330 Fatal if inhaled.

  - **GHS08 health hazard**
    - STOT RE 2 H373 May cause damage to organs through prolonged or repeated exposure.

  - **GHS09 environment**
    - Aquatic Chronic 2 H411 Toxic to aquatic life with long lasting effects.

- **Label elements**
  - **Labelling according to Regulation (EC) No 1272/2008**
    - The substance is classified and labelled according to the CLP regulation.

(Contd. on page 2)
Trade name: 2,4-Dinitroaniline

- **Hazard pictograms**
  - GHS06
  - GHS08
  - GHS09

- **Signal word** Danger

- **Hazard-determining components of labelling:**
  - 2,4-dinitroaniline

- **Hazard statements**
  - H300+H310+H330 Fatal if swallowed, in contact with skin or if inhaled.
  - H373 May cause damage to organs through prolonged or repeated exposure.
  - H411 Toxic to aquatic life with long lasting effects.

- **Precautionary statements**
  - P101 If medical advice is needed, have product container or label at hand.
  - P102 Keep out of reach of children.
  - P103 Read label before use.
  - P260 Do not breathe dust/fume/gas/mist/vapours/spray.
  - P262 Do not get in eyes, on skin, or on clothing.
  - P264 Wash thoroughly after handling.
  - P270 Do not eat, drink or smoke when using this product.
  - P271 Use only outdoors or in a well-ventilated area.
  - P273 Avoid release to the environment.
  - P280 Wear protective gloves / protective clothing.
  - P284 [In case of inadequate ventilation] wear respiratory protection.
  - P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
  - P330 Rinse mouth.
  - P302+P352 IF ON SKIN: Wash with plenty of water.
  - P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
  - P314 Get medical advice/attention if you feel unwell.
  - P320 Specific treatment is urgent (see on this label).
  - P361+P364 Take off immediately all contaminated clothing and wash it before reuse.
  - P391 Collect spillage.
  - P403+P233 Store in a well-ventilated place. Keep container tightly closed.
  - P405 Store locked up.
  - P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

- **Other hazards**
  - Results of PBT and vPvB assessment
  - **PBT:** Not applicable.
  - **vPvB:** Not applicable.

### 3 Composition/information on ingredients

- **Chemical characterisation: Substances**
  - **CAS No. Description**
    - 97-02-9 2,4-dinitroaniline
  - **Identification number(s)**
  - **EC number:** 202-553-5
### 4 First aid measures

- **General information:**
  Immediately remove any clothing soiled by the product. Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident. Remove breathing equipment only after contaminated clothing have been completely removed. In case of irregular breathing or respiratory arrest provide artificial respiration.

- **After inhalation:**
  Supply fresh air or oxygen; call for doctor. 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. Then consult a doctor.

- **After swallowing:**
  Do not induce vomiting; call for medical help immediately.

- **Information for doctor:**
  Most important symptoms and effects, both acute and delayed: No further relevant information available.

### 5 Firefighting measures

- **Extinguishing media**

- **Suitable extinguishing agents:** Use fire extinguishing methods suitable to surrounding conditions.

- **Special hazards arising from the substance or mixture:**
  During heating or in case of fire poisonous gases are produced.

- **Advice for firefighters:**
  Mount respiratory protective device.

### 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures:**
  Mount respiratory protective device.

- **Environmental precautions:**
  Do not allow product to reach sewage system or any water course. Inform respective authorities in case of seepage into water course or sewage system. Do not allow to enter sewers/ surface or ground water.

- **Methods and material for containment and cleaning up:**
  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.
7 Handling and storage

- Handling:
  - Precautions for safe handling
    Thorough dedusting.
    Ensure good ventilation/exhaustion at the workplace.
    Open and handle receptacle with care.

- Information about fire - and explosion protection: Keep respiratory protective device available.

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

8 Exposure controls/personal protection

- Additional information about design of technical facilities: No further data; see item 7.

- Control parameters
  - Ingredients with limit values that require monitoring at the workplace: Not required.
  - Additional information: The lists valid during the making 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.
      Store protective clothing separately.
      Avoid contact with the eyes and skin.
  
- Respiratory protection:
  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 11-13mil thickness are recommended for normal use. The breakthrough time is 1hr. For cleaning a spill where there is direct contact of the chemical, butyl rubber gloves are recommended 12-15mil 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
  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.

- Penetration time of glove material
  For normal use: nitrile rubber: 1 hour
  For direct contact with the chemical: butyl rubber: > 4 hours
Trade name: 2,4-Dinitroaniline

- Eye protection:
  Tightly sealed goggles

9 Physical and chemical properties

- Information on basic physical and chemical properties
  - General Information
  - Appearance:
    - Form: Crystalline powder
    - Colour: Not determined.
    - Odour: Characteristic
    - Odour threshold: Not determined.
  - pH-value: Not applicable.

- Change in condition
  - Melting point/freezing point: 188 °C
  - Initial boiling point and boiling range: Undetermined.

- Flash point: 224 °C

- Flammability (solid, gas): Product is not flammable.

- Decomposition temperature: Not determined.

- Auto-ignition temperature: Not determined.

- Explosive properties: Product does not present an explosion hazard.

- Explosion limits:
  - Lower: Not determined.
  - Upper: Not determined.

- Vapour pressure at 20 °C: 13 hPa

- Density at 20 °C: 1.61 g/cm³
  - Relative density: Not determined.
  - Vapour density: Not applicable.
  - Evaporation rate: Not applicable.

- Solubility in / Miscibility with water at 20 °C: 1 g/l

- Partition coefficient: n-octanol/water: Not determined.

- Viscosity:
  - Dynamic: Not applicable.
  - Kinematic: Not applicable.

- Solvent content:
  - VOC (EC) 0.00 %
Trade name: 2,4-Dinitroaniline

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
  Fatal if swallowed, in contact with skin or if inhaled.
- LD/LC50 values relevant for classification:

<table>
<thead>
<tr>
<th>ATE (Acute Toxicity Estimates)</th>
<th>Oral</th>
<th>285 mg/kg (rat)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dermal</td>
<td>LD50</td>
<td>5 mg/kg</td>
</tr>
<tr>
<td>Inhalative</td>
<td>LC50/4 h</td>
<td>0.05 mg/L</td>
</tr>
</tbody>
</table>

97-02-9 2,4-dinitroaniline

<table>
<thead>
<tr>
<th>Oral</th>
<th>LD50</th>
<th>285 mg/kg (rat)</th>
</tr>
</thead>
</table>

- Primary irritant effect:
- Skin corrosion/irritation: Based on available data, the classification criteria are not met.
- Serious eye damage/irritation: Based on available data, the classification criteria are not met.
- Respiratory or skin sensitisation: Based on available data, the classification criteria are not met.
- CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction):
- Germ cell mutagenicity: Based on available data, the classification criteria are not met.
- Carcinogenicity: Based on available data, the classification criteria are not met.
- Reproductive toxicity: Based on available data, the classification criteria are not met.
- STOT-single exposure: Based on available data, the classification criteria are not met.
- STOT-repeated exposure: May cause damage to organs through prolonged or repeated exposure.
- Aspiration hazard: Based on available data, the classification criteria are not met.

12 Ecological information

- Toxicity
- Aquatic toxicity: No further relevant information available.
- Persistence and degradability: No further relevant information available.
- Behaviour in environmental systems:
- Bioaccumulative potential: No further relevant information available.
- Mobility in soil: No further relevant information available.
Trade name: 2,4-Dinitroaniline

- Ecotoxical effects:
- Remark: Toxic for fish
- Additional ecological information:
- General notes:
  Water hazard class 3 (German Regulation) (Assessment by list): extremely hazardous for water
  Do not allow product to reach ground water, water course or sewage system, even in small quantities.
  Danger to drinking water if even extremely small quantities leak into the ground.
  Also poisonous for fish and plankton in water bodies.
  Toxic for aquatic organisms.
- 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 together with household garbage. Do not allow product to reach sewage system.

- European waste catalogue
  - HP 5 Specific Target Organ Toxicity (STOT)/Aspiration Toxicity
  - HP 6 Acute Toxicity
  - HP 14 Ecotoxic

- Uncleaned packaging:
- Recommendation: Disposal must be made according to official regulations.

14 Transport information

- UN-Number
  - ADR, IMDG, IATA: UN1596
- UN proper shipping name
  - ADR: 1596 DINITROANILINES, ENVIRONMENTALLY HAZARDOUS
  - IMDG, IATA: DINITROANILINES
- Transport hazard class(es)
  - ADR
    
    ![ADR symbol]

  - Class: 6.1 Toxic substances.
Trade name: 2,4-Dinitroaniline

- Label: 6.1
- IMDG, IATA

- Class: 6.1 Toxic substances.
- Label: 6.1

- Packing group: ADR, IMDG, IATA
- Packing group: II

- Environmental hazards:
- Special marking (ADR): Symbol (fish and tree)

- Special precautions for user:
- Danger code (Kemler): Warning: Toxic substances.
- Danger code (ADR): 60
- EMS Number: 6.1-03
- Stowage Category: A
- Segregation Code: SG15 Stow "separated from" class 3

- Transport in bulk according to Annex II of Marpol and the IBC Code: Not applicable.

- Transport/Additional information:
- ADR
  - Limited quantities (LQ): 500 g
  - Exected quantities (EQ): Code: E4
    - Maximum net quantity per inner packaging: 1 g
    - Maximum net quantity per outer packaging: 500 g
- Transport category: 2
- Tunnel restriction code: D/E

- IMDG
  - Limited quantities (LQ): 500 g
  - Exected quantities (EQ): Code: E4
    - Maximum net quantity per inner packaging: 1 g
    - Maximum net quantity per outer packaging: 500 g

- UN "Model Regulation":
  - UN 1596 DINITROANILINES, 6.1, II, ENVIRONMENTALLY HAZARDOUS

15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
- Directive 2012/18/EU
- Named dangerous substances - ANNEX I Substance is not listed.
- Seveso category
  - H1 ACUTE TOXIC
  - E2 Hazardous to the Aquatic Environment
- Qualifying quantity (tonnes) for the application of lower-tier requirements: 5 t
- Qualifying quantity (tonnes) for the application of upper-tier requirements: 20 t

(Contd. on page 9)
Trade name: 2,4-Dinitroaniline

- **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.

- **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
  - IATA: International Air Transport Association
  - GHS: Globally Harmonised System of Classification and Labelling of Chemicals
  - EINECS: European Inventory of Existing Commercial Chemical Substances
  - CAS: Chemical Abstracts Service (division of the American Chemical Society)
  - 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
  - Acute Tox. 2: Acute toxicity – Category 2
  - Acute Tox. 1: Acute toxicity – Category 1
  - STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2
  - Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2