1 Identification

- Product identifier
- Trade name: Formaldehyde
- Part number: WRK-151A
- CAS Number: 50-00-0
- EC number: 200-001-8
- Index number: 605-001-00-5
- 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 Australia Pty Ltd
  679 Springvale Road
  Mulgrave
  Victoria 3170, Australia
- Further information obtainable from:
  Telephone: 1800 802 402
  e-mail: pdl-msds_author@agilent.com
- Emergency telephone number: CHEMTREC®: +(61) - 290372994

2 Hazard(s) Identification

- Classification of the substance or mixture
  - Flam. Liq. 3 H226 Flammable liquid and vapour.
  - Acute Tox. 3 H301 Toxic if swallowed.
  - Acute Tox. 3 H311 Toxic in contact with skin.
  - Acute Tox. 3 H331 Toxic if inhaled.
  - Muta. 2 H341 Suspected of causing genetic defects.
  - Carc. 1B H350 May cause cancer.
  - Skin Corr. 1 H314 Causes severe skin burns and eye damage.

(Contd. on page 2)
Skin Sens. 1  H317  May cause an allergic skin reaction.

- Label elements
  - GHS label elements
    The substance is classified and labelled according to the Globally Harmonised System (GHS).
- Hazard pictograms
  - GHS02
  - GHS05
  - GHS06
  - GHS08

- Signal word Danger

- Hazard-determining components of labelling:
  - formaldehyde

- Hazard statements
  - Flammable liquid and vapour.
  - Toxic if swallowed.
  - Toxic in contact with skin.
  - Toxic if inhaled.
  - Causes severe skin burns and eye damage.
  - May cause an allergic skin reaction.
  - Suspected of causing genetic defects.
  - May cause cancer.

- Precautionary statements
  - If medical advice is needed, have product container or label at hand.
  - Keep out of reach of children.
  - Read label before use.
  - Obtain special instructions before use.
  - Do not handle until all safety precautions have been read and understood.
  - 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.
  - Do not breathe dusts or mists.
  - Wash thoroughly after handling.
  - Do not eat, drink or smoke when using this product.
  - Use only outdoors or in a well-ventilated area.
  - Contaminated work clothing should not be allowed out of the workplace.
  - Wear protective gloves/protective clothing/eye protection/face protection.
  - Use personal protective equipment as required.
  - IF SWALLOWED: Immediately call a POISON CENTER/doctor.
  - IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
  - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
  - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
  - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

(Contd. on page 3)
Trade name: Formaldehyde

IF exposed or concerned: Get medical advice/attention.
Call a POISON CENTER/doctor if you feel unwell.
Specific measures (see on this label).
If skin irritation or rash occurs: Get medical advice/attention.
Wash contaminated clothing 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 in a well-ventilated place. Keep cool.
Store locked up.
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 and Information on Ingredients

- Chemical characterisation: Substances
- CAS No. Description
  50-00-0 formaldehyde
- Identification number(s)
  - EC number: 200-001-8
  - Index number: 605-001-00-5

4 First Aid Measures

- Description of first aid measures
- General information:
  Immediately remove any clothing soiled by the product.
  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.
  Drink plenty of water and provide fresh air. Call for a doctor immediately.
- 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, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
6 Accidental Release Measures

- **Personal precautions, protective equipment and emergency procedures**
  - Mount respiratory protective device.
  - Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:**
  - Dilute with plenty of water.
  - 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).
  - Use neutralising agent.
  - 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**
    - Ensure good ventilation/exhaustion at the workplace.
    - Open and handle receptacle with care.
    - Prevent formation of aerosols.
  - **Information about fire - and explosion protection:**
    - Keep ignition sources away - Do not smoke.
    - Protect against electrostatic charges.
    - 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 and 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:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>NES Short-term</th>
<th>NES Long-term</th>
<th>Sen Short-term</th>
<th>Sen Long-term</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-00-0 formaldehyde</td>
<td>2.5 mg/m³, 2 ppm</td>
<td>1.2 mg/m³, 1 ppm</td>
<td>2.5 mg/m³, 2 ppm</td>
<td>1.2 mg/m³, 1 ppm</td>
</tr>
</tbody>
</table>

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

Eye protection:

Tightly sealed goggles
### 9 Physical and Chemical Properties

- **Information on basic physical and chemical properties**

  - **General Information**
    - **Appearance:**
      - **Form:** Fluid
      - **Colour:** Colourless
    - **Odour:** Pungent
    - **Odour threshold:** Not determined.
    - **pH-value:** Not determined.

- **Change in condition**
  - **Melting point/freezing point:** -92 °C
  - **Initial boiling point and boiling range:** -21 °C

- **Flash point:** 55 °C

- **Flammability (solid, gas):** Not applicable.

- **Ignition temperature:** ~300 °C

- **Decomposition temperature:** Not determined.

- **Auto-ignition temperature:** Not determined.

- **Explosion properties:** Not determined.

- **Explosion limits:**
  - **Lower:** 7 Vol %
  - **Upper:** 73 Vol %

- **Vapour pressure at 20 °C:** 1.7 hPa

- **Density at 20 °C:** 1.12 g/cm³

- **Relative density**
  - Not determined.

- **Vapour density**
  - Not determined.

- **Evaporation rate**
  - Not determined.

- **Solubility in / Miscibility with water:** Fully miscible.

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

- **Viscosity**
  - **Dynamic at 20 °C:** 2 mPas
  - **Kinematic:** Not determined.

- **Solvent content**
  - **Organic solvents:** 100.0 %
  - **VOC (EC):** 100.00 %
  - **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.
Trade name: Formaldehyde

- 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 relevant for classification:
      - ATE (Acute Toxicity Estimates)
        - Oral LD50 100 mg/kg (rat)
        - Dermal LD50 270 mg/kg (rabbit)
        - Inhalative LC50/4 h 0.59 mg/L (rat)
      - 50-00-0 formaldehyde
        - Oral LD50 100 mg/kg (rat)
        - Dermal LD50 270 mg/kg (rabbit)
        - Inhalative LC50/4 h 0.588 mg/L (rat)

- Primary irritant effect:
  - Skin corrosion/irritation: Strong caustic effect on skin and mucous membranes.
  - Serious eye damage/irritation: Strong caustic effect.
  - Respiratory or skin sensitisation: Sensitisation possible through skin contact.

- Additional toxicological information:
  - Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.
  - CMR effects: (carcinogenity, mutagenicity and toxicity for reproduction)
    - Muta. 2, Carc. 1B

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.
  - Additional ecological information:
    - General notes:
      - Water hazard class 2 (German Regulation) (Assessment by list): hazardous for water
      - Do not allow product to reach ground water, water course or sewage system.
      - Must not reach sewage water or drainage ditch undiluted or unneutralised.
      - Danger to drinking water if even small quantities leak into the ground.
    - Results of PBT and vPvB assessment
      - PBT: Not applicable.
      - vPvB: Not applicable.

(Contd. on page 8)
Trade name: Formaldehyde

13 Disposal considerations

· Waste treatment methods
  · Recommendation
    Must not be disposed together with household garbage. Do not allow product to reach sewage system.

· Uncleaned packaging:
  · Recommendation: Disposal must be made according to official regulations.
  · Recommended cleansing agents: Water, if necessary together with cleansing agents.

14 Transport information

· UN-Number
  · ADG, IMDG, IATA
    UN2209

· UN proper shipping name
  · ADG
    2209 FORMALDEHYDE SOLUTION
  · IMDG, IATA
    FORMALDEHYDE SOLUTION

· Transport hazard class(es)
  · ADG, IMDG, IATA

  · Class
    8 Corrosive substances.
  · Label
    8

· Packing group
  · ADG, IMDG, IATA
    III

· Environmental hazards:
  · Not applicable.

· Special precautions for user
  · Warning: Corrosive substances.

· Danger code (Kemler):
  · 80

· EMS Number:
  · 8-07

· Stowage Category
  · A

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

· Transport/Additional information:
  · ADG
    · Limited quantities (LQ)
      · 5L
    · Excepted quantities (EQ)
      · Code: E1
      · Maximum net quantity per inner packaging: 30 ml
      · Maximum net quantity per outer packaging: 1000 ml
  · Transport category
    · 3
  · Tunnel restriction code
    · E

(Contd. of page 7)
Trade name: Formaldehyde

15 Regulatory information

· Safety, health and environmental regulations/legislation specific for the substance or mixture
  · Australian Inventory of Chemical Substances
    Substance is listed.
  · Standard for the Uniform Scheduling of Medicines and Poisons
    S2, S6, S10

· Directive 2012/18/EU
· Named dangerous substances - ANNEX I
· Seveso category
  H2 ACUTE TOXIC
  P5c FLAMMABLE LIQUIDS
· Qualifying quantity (tonnes) for the application of lower-tier requirements 5 t
· Qualifying quantity (tonnes) for the application of upper-tier requirements 50 t

· National regulations:
  · Additional classification according to Decree on Hazardous Materials, Annex II:
    Carcinogenic hazardous material group I (extremely dangerous).
    Carcinogenic hazardous material group II (very dangerous).
    Carcinogenic hazardous material group III (dangerous).

· Information about limitation of use:
  Workers are not allowed to be exposed to this hazardous material. Exceptions can be made by the authorities in certain cases.
· 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
  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
  Flam. Liq. 3: Flammable liquids – Category 3
<table>
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<th>Safety Data Sheet according to WHS Regulations</th>
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<tbody>
<tr>
<td>Printing date 25.03.2019</td>
</tr>
<tr>
<td>Version number 3</td>
</tr>
<tr>
<td>Revision: 25.03.2019</td>
</tr>
</tbody>
</table>

**Trade name: Formaldehyde**

- Acute Tox. 3: Acute toxicity – Category 3
- Skin Corr. 1: Skin corrosion/irritation – Category 1
- Skin Sens. 1: Skin sensitisation – Category 1
- Muta. 2: Germ cell mutagenicity – Category 2
- Carc. 1B: Carcinogenicity – Category 1B

(Contd. of page 9)