1 Identification

· Product identifier
  · Trade name: GC x GC Testing Solution
  · Part number: ZX-TESTMIX-01
  · 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: +1-800-424-9300
  Outside US: +1-703-527-3887

2 Hazard(s) identification

· Classification of the substance or mixture
  GHS08 Health hazard
  Carc. 1B  H350  May cause cancer.
  Acute Tox. 4  H302  Harmful if swallowed.
  Skin Irrit. 2  H315  Causes skin irritation.
  Eye Irrit. 2A  H319  Causes serious eye irritation.

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

  GHS07  GHS08

· Signal word Danger

· Hazard-determining components of labeling: dichloromethane

· Hazard statements
  Harmful if swallowed.
  Causes skin irritation.
  Causes serious eye irritation.
  May cause cancer.

(Contd. on page 2)


46.0.5

· Precautionary statements
 Obtain special instructions before use.
 Do not handle until all safety precautions have been read and understood.
 Wash thoroughly after handling.
 Do not eat, drink or smoke when using this product.
 Wear protective gloves/protective clothing/eye protection/face protection.
 If swallowed: Call a poison center/doctor if you feel unwell.
 If on skin: Wash with plenty of water.
 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
 Continue rinsing.
 IF exposed or concerned: Get medical advice/attention.
 Specific treatment (see on this label).
 Rinse mouth.
 If skin irritation occurs: Get medical advice/attention.
 If eye irritation persists: Get medical advice/attention.
 Take off contaminated clothing and wash it before reuse.
 Store locked up.
 Dispose of contents/container in accordance with local/regional/national/international regulations.

· Classification system:
 · NFPA ratings (scale 0 - 4)

 2 0 0
 Health = 2
 Fire = 0
 Reactivity = 0

· HMIS-ratings (scale 0 - 4)

HEALTH 2
FIRE 0
REACTIVITY 0

Health = 2
Fire = 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:

| 75-09-2 dichloromethane | 99.397% |

4 First-aid measures

· Description of first aid measures
 · General information:
 Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
 · 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.
Trade name: GC x GC Testing Solution

5 Fire-fighting measures

- Extinguishing media
  - Suitable extinguishing agents: Use fire fighting measures that suit the environment.
  - 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 Not required.
- 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>PAC-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>75-09-2 dichloromethane</td>
<td>75-09-2 dichloromethane</td>
</tr>
<tr>
<td>142-82-5 heptane</td>
<td>142-82-5 heptane</td>
</tr>
<tr>
<td>111-84-2 nonane</td>
<td>111-84-2 nonane</td>
</tr>
<tr>
<td>124-18-5 decane</td>
<td>124-18-5 decane</td>
</tr>
<tr>
<td>1120-21-4 undecane</td>
<td>1120-21-4 undecane</td>
</tr>
<tr>
<td>112-40-3 dodecane</td>
<td>112-40-3 dodecane</td>
</tr>
<tr>
<td>108-88-3 toluene</td>
<td>108-88-3 toluene</td>
</tr>
<tr>
<td>91-20-3 naphthalene</td>
<td>91-20-3 naphthalene</td>
</tr>
</tbody>
</table>
### Trade name: GC x GC Testing Solution

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Chemical Name</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>91-20-3</td>
<td>naphthalene</td>
<td>83 ppm</td>
</tr>
<tr>
<td>111-65-9</td>
<td>octane</td>
<td>385 ppm</td>
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</tbody>
</table>

**PAC-3:**

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Chemical Name</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>75-09-2</td>
<td>dichloromethane</td>
<td>6,900 ppm</td>
</tr>
<tr>
<td>142-82-5</td>
<td>heptane</td>
<td>5,000 ppm</td>
</tr>
<tr>
<td>111-84-2</td>
<td>nonane</td>
<td>440 ppm</td>
</tr>
<tr>
<td>124-18-5</td>
<td>decane</td>
<td>150 ppm</td>
</tr>
<tr>
<td>1120-21-4</td>
<td>undecane</td>
<td>110 ppm</td>
</tr>
<tr>
<td>112-40-3</td>
<td>dodecane</td>
<td>3700 ppm</td>
</tr>
<tr>
<td>108-88-3</td>
<td>toluene</td>
<td>500 ppm</td>
</tr>
<tr>
<td>91-20-3</td>
<td>naphthalene</td>
<td>500 ppm</td>
</tr>
<tr>
<td>111-65-9</td>
<td>octane</td>
<td>5000 ppm</td>
</tr>
</tbody>
</table>

### 7 Handling and storage

- **Handling:**
- **Precautions for safe handling:** Ensure good ventilation/exhaustion at the workplace.
- **Information about protection against explosions and fires:** No special measures required.
- **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 receptacle tightly sealed.
- **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:**
    - **75-09-2 dichloromethane**
      - **PEL** Short-term value: 125 ppm
      - Long-term value: 25 ppm
      - see 29 CFR 1910.1052
      - **REL** See Pocket Guide App. A
      - **TLV** Long-term value: 174 mg/m³, 50 ppm
        - **BEI**
  - **Ingredients with biological limit values:**
    - **75-09-2 dichloromethane**
      - **BEI** 0.3 mg/L
        - Medium: urine
        - Time: end of shift
        - Parameter: Dichloromethane (semi-quantitative)
- **Additional information:** The lists that were valid during the creation were used as basis.
Trade name: GC x GC Testing Solution

· 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.
  · 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

· 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 cannot 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.
  · Eye protection:
    Safety glasses

· Tightly sealed goggles

9 Physical and chemical properties

· Information on basic physical and chemical properties
  · General Information
    · Appearance:
      Form: Fluid
      Color: Colorless
      Odor: Like chlorine
      Odor threshold: Not determined.
    · pH-value: Not determined.
  · Change in condition
    Melting point/Melting range: -95.1 °C (-139.2 °F)
    Boiling point/Boiling range: 40 °C (104 °F)
  · Flash point: Not applicable.
  · Flammability (solid, gaseous): Not applicable.
  · Ignition temperature: 605 °C (1,121 °F)
  · Decomposition temperature: Not determined.
Trade name: GC x GC Testing Solution

- Auto igniting: Product is not selfigniting.
- Danger of explosion: Product does not present an explosion hazard.

- Explosion limits:
  - Lower: 13 Vol %
  - Upper: 22 Vol %

- Vapor pressure at 20 °C (68 °F): 360 hPa (270 mm Hg)

- Density at 20 °C (68 °F): 1.29694 g/cm³ (10.82296 lbs/gal)
- Relative density: Not determined.
- Vapor density: Not determined.
- Evaporation rate: Not determined.

- Solubility in / Miscibility with Water at 20 °C (68 °F): 20 g/l

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

- Viscosity:
  - Dynamic at 20 °C (68 °F): 0.43 mPas
  - Kinematic: Not determined.

- Solvent content:
  - Organic solvents: 99.8 %
  - VOC content: 0.45 %
    - 5.9 g/l / 0.05 lb/gl

- Solids content: 0.1 %
- 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:
    ATE (Acute Toxicity Estimate)
    
    | Route    | LD50          | LC50/4 h |
    |----------|---------------|----------|
    | Oral     | 1,610 mg/kg (rat) |          |
    | Dermal   | >2,012 mg/kg (rat) |         |
    | Inhalative | 88.5 mg/L (rat) |          |
Trade name: GC x GC Testing Solution

75-09-2 dichloromethane

<table>
<thead>
<tr>
<th>Route</th>
<th>LD50</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>1,600 mg/kg (rat)</td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td>&gt;2,000 mg/kg (rat)</td>
<td></td>
</tr>
<tr>
<td>Inhalative</td>
<td>LC50/4 h 88 mg/L (rat)</td>
<td></td>
</tr>
</tbody>
</table>

• Primary irritant effect:
  - on the skin: Irritant to skin and mucous membranes.
  - on the eye: Irritating effect.
  - Sensitization: No sensitizing effects known.

• Additional toxicological information:
The product shows the following dangers according to internally approved calculation methods for preparations:
  Harmful
  Irritant

• Carcinogenic categories
  - IARC (International Agency for Research on Cancer)
    | Compound               | Carcinogenicity |
    |------------------------|-----------------|
    | 75-09-2 dichloromethane| 2A              |
    | 108-88-3 toluene       | 3               |
    | 91-20-3 naphthalene    | 2B              |
  - NTP (National Toxicology Program)
    | Compound               | Carcinogenicity |
    |------------------------|-----------------|
    | 75-09-2 dichloromethane| R               |
    | 91-20-3 naphthalene    | R               |
  - OSHA-Ca (Occupational Safety & Health Administration)
    | Compound               | Carcinogenicity |
    |------------------------|-----------------|
    | 75-09-2 dichloromethane|               |

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.
### 14 Transport information

<table>
<thead>
<tr>
<th>UN-Number</th>
<th>UN1593</th>
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<tr>
<td>DOT, IMDG, IATA</td>
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<td><strong>UN proper shipping name</strong></td>
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</tr>
<tr>
<td>DOT</td>
<td>Dichloromethane</td>
</tr>
<tr>
<td>IMDG, IATA</td>
<td>DICHLOROMETHANE</td>
</tr>
<tr>
<td><strong>DOT</strong></td>
<td></td>
</tr>
<tr>
<td>Class</td>
<td>6.1 Toxic substances</td>
</tr>
<tr>
<td>Label</td>
<td>6.1</td>
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<tr>
<td><strong>IMDG, IATA</strong></td>
<td></td>
</tr>
<tr>
<td>Class</td>
<td>6.1 Toxic substances</td>
</tr>
<tr>
<td>Label</td>
<td>6.1</td>
</tr>
<tr>
<td><strong>Packing group</strong></td>
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</tr>
<tr>
<td>DOT, IMDG, IATA</td>
<td>III</td>
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<tr>
<td><strong>Environmental hazards:</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Special precautions for user</strong></td>
<td>Warning: Toxic substances</td>
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<tr>
<td><strong>Danger code (Kemler):</strong></td>
<td>60</td>
</tr>
<tr>
<td><strong>EMS Number:</strong></td>
<td>F-A,S-A</td>
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<tr>
<td><strong>Segregation groups</strong></td>
<td>Liquid halogenated hydrocarbons</td>
</tr>
<tr>
<td><strong>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Transport/Additional information:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>DOT</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Quantity limitations</strong></td>
<td>On passenger aircraft/rail: 60 L</td>
</tr>
<tr>
<td></td>
<td>On cargo aircraft only: 220 L</td>
</tr>
<tr>
<td><strong>IMDG</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Limited quantities (LQ)</strong></td>
<td>5L</td>
</tr>
<tr>
<td><strong>Excepted quantities (EQ)</strong></td>
<td>Code: E1</td>
</tr>
<tr>
<td></td>
<td>Maximum net quantity per inner packaging: 30 ml</td>
</tr>
<tr>
<td></td>
<td>Maximum net quantity per outer packaging: 1000 ml</td>
</tr>
</tbody>
</table>

(Contd. on page 9)
### 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):**
      - 75-09-2 dichloromethane
      - 108-88-3 toluene
      - 91-20-3 naphthalene
  - **TSCA (Toxic Substances Control Act):**
    All ingredients are listed.
  - **Proposition 65**
    - **Chemicals known to cause cancer:**
      - 75-09-2 dichloromethane
      - 91-20-3 naphthalene
    - **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:**
      - 108-88-3 toluene
  - **Carcinogenic categories**
    - **EPA (Environmental Protection Agency)**
      - 75-09-2 dichloromethane: L
      - 142-82-5 heptane: D
      - 108-88-3 toluene: H
      - 91-20-3 naphthalene: C, CBD
    - **TLV (Threshold Limit Value established by ACGIH)**
      - 75-09-2 dichloromethane: A3
      - 108-88-3 toluene: A4
      - 91-20-3 naphthalene: A4
    - **NIOSH-Ca (National Institute for Occupational Safety and Health)**
      - 75-09-2 dichloromethane: A1
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
Trade name: GC x GC Testing Solution

- **Hazard pictograms**

  ![Pictogram GHS07](image)
  ![Pictogram GHS08](image)

- **Signal word** Danger

- **Hazard-determining components of labeling:**
  dichloromethane

- **Hazard statements**
  Harmful if swallowed.
  Causes skin irritation.
  Causes serious eye irritation.
  May cause cancer.

- **Precautionary statements**
  Obtain special instructions before use.
  Do not handle until all safety precautions have been read and understood.
  Wash thoroughly after handling.
  Do not eat, drink or smoke when using this product.
  Wear protective gloves/protective clothing/eye protection/face protection.
  If swallowed: Call a poison center/doctor if you feel unwell.
  If on skin: Wash with plenty of water.
  If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  IF exposed or concerned: Get medical advice/attention.
  Specific treatment (see on this label).
  Rinse mouth.
  If skin irritation occurs: Get medical advice/attention.
  If eye irritation persists: Get medical advice/attention.
  Take off contaminated clothing and wash it before reuse.
  Store locked up.
  Dispose of contents/container in accordance with local/regional/national/international regulations.

- **National regulations:**
  - **Additional classification according to Decree on Hazardous Materials:**
    Carcinogenic hazardous material group III (dangerous).
  - **Information about limitation of use:**
    Workers are not allowed to be exposed to the hazardous carcinogenic materials contained in this preparation.
    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

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.

- **Date of preparation / last revision** 02/02/2018 / -

- **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
<table>
<thead>
<tr>
<th>EINECS: European Inventory of Existing Commercial Chemical Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELINCS: European List of Notified Chemical Substances</td>
</tr>
<tr>
<td>CAS: Chemical Abstracts Service (division of the American Chemical Society)</td>
</tr>
<tr>
<td>NFPA: National Fire Protection Association (USA)</td>
</tr>
<tr>
<td>HMIS: Hazardous Materials Identification System (USA)</td>
</tr>
<tr>
<td>VOC: Volatile Organic Compounds (USA, EU)</td>
</tr>
<tr>
<td>LC50: Lethal concentration, 50 percent</td>
</tr>
<tr>
<td>LD50: Lethal dose, 50 percent</td>
</tr>
<tr>
<td>PBT: Persistent, Bioaccumulative and Toxic</td>
</tr>
<tr>
<td>vPvB: very Persistent and very Bioaccumulative</td>
</tr>
<tr>
<td>NIOSH: National Institute for Occupational Safety</td>
</tr>
<tr>
<td>OSHA: Occupational Safety &amp; Health</td>
</tr>
<tr>
<td>TLV: Threshold Limit Value</td>
</tr>
<tr>
<td>PEL: Permissible Exposure Limit</td>
</tr>
<tr>
<td>REL: Recommended Exposure Limit</td>
</tr>
<tr>
<td>BEI: Biological Exposure Limit</td>
</tr>
</tbody>
</table>

Acute Tox. 4: Acute toxicity – Category 4
Skin Irrit. 2: Skin corrosion/irritation – Category 2
Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
Carc. 1B: Carcinogenicity – Category 1B