1 Identification

- **Product identifier**
- **Product Name:** bis(Chloromethyl) ether
- **Part Number:** S-880
- **Application of the substance / the mixture** Certified Reference Material
- **Details of the supplier of the safety data sheet**
  - **Manufacturer/Supplier:** SPEX CertiPrep, LLC.
    203 Norcross Ave, Metuchen, NJ 08840 USA
  - **Information department:** product safety department
  - **Emergency telephone number:**
  Emergency Phone Number (24 hours)
  CHEMTREC (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**
  - Care. 1A H350 May cause cancer.
  - 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
  bis (chloromethyl) ether

- **Hazard statements**
  - Highly flammable liquid and vapor.
  - Causes skin irritation.
  - May cause cancer.
  - 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/flighting/equipment.
  - IF SWALLOWED: Immediately call a POISON CENTER/doctor.
  - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
  - Store locked up.
  - Dispose of contents/container in accordance with local/regional/national/international regulations.

(Contd. on page 2)
Product Name: bis(Chloromethyl) ether

- Classification system:
  - NFPA ratings (scale 0 - 4)
  
  Health = 1  
  Fire = 3  
  Reactivity = 0

- HMIS-ratings (scale 0 - 4)

  HEALTH
  Fire = *1  
  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 99.9%
  542-88-1 bis (chloromethyl) ether 0.1%

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:
    Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
    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, sand, extinguishing powder. Do not use water.
  - 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: Mouth respiratory protective device.

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures
  - Wear protective equipment. Keep unprotected persons away.
  - 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:
    - Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
    - Dispose contaminated material as waste according to item 13.
    - Ensure adequate ventilation.
    - Do not flush with water or aqueous cleansing agents
  - Reference to other sections
    - See Section 7 for information on safe handling.
    - See Section 8 for information on personal protection equipment.
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 protection against explosions and fires:
    - 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:
    - 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.

(Contd. on page 4)

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:
    - 540-84-1 2,2,4-trimethylpentane
      - PEL Long-term value: 2350 mg/m³, 500 ppm
      - n-Octane only
      - TLV Long-term value: 1401 mg/m³, 300 ppm
    - 542-88-1 bis (chloromethyl) ether
      - PEL see 29 CFR 1910.1003
      - REL See Pocket Guide App. A
      - TLV Long-term value: 0.0047 mg/m³, 0.001 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.
      - Store protective clothing separately.
      - 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.
Product Name: bis(Chloromethyl) ether

- Eye protection: Tightly sealed goggles

9 Physical and chemical properties

- Information on basic physical and chemical properties
  - General Information
    - Appearance: Liquid
    - Color: According to product specification
    - Odor: Characteristic
    - Odour Threshold: Not applicable.
    - pH-value: Not applicable.
  - Change in condition
    - Melting point/Melting range: Undetermined.
    - 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 applicable.
  - 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: 6.0 Vol %
    - Vapor pressure at 20 °C (68 °F): 15 hPa (11 mm Hg)
    - Density at 20 °C (68 °F): 0.69063 g/cm³ (5.763 lbs/gal)
    - Relative density: Not applicable.
    - Vapour density: Not applicable.
    - Evaporation rate: Not applicable.
  - Solubility in / Miscibility with Water: Not miscible or difficult to mix.
  - Partition coefficient (n-octanol/water): Not applicable.
  - Viscosity:
    - Dynamic: Not applicable.
    - Kinematic: Not applicable.
  - Solvent content:
    - Organic solvents: 99.9 %
    - VOC content: 99.9 %
    - 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:
  - 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:
  Harmful
  Irritant
  Carcinogenic.

- Carcinogenic categories
  - IARC (International Agency for Research on Cancer)
    542-88-1 bis (chloromethyl) ether
  - NTP (National Toxicology Program)
    542-88-1 bis (chloromethyl) ether
  - OSHA-Ca (Occupational Safety & Health Administration)
    542-88-1 bis (chloromethyl) ether

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.
- Ecotoxicological effects:
  - Remark: Very toxic for fish
  - Additional ecological information:
    - General notes:
      Water hazard class 3 (Self-assessment): 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.
      Very 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 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, ADR, IMDG, IATA
    UN1262
- UN proper shipping name
  - DOT
    Octanes
  - ADR
    1262 Octanes, ENVIRONMENTALLY HAZARDOUS
  - IMDG
    OCTANES, MARINE POLLUTANT
  - IATA
    OCTANES
### Transport hazard class(es)

- **DOT**
  - Class 3 Flammable liquids
  - Label 3

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

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

- **Packing group**
  - DOT, ADR, IMDG, IATA II

### Environmental hazards:

- **Product contains environmentally hazardous substances**: 2,2,4-trimethylpentane
- **Marine pollutant**: Symbol (fish and tree)
- **Special marking (ADR)**: Symbol (fish and tree)

### Special precautions for user

- **Warning**: Flammable liquids
- **Danger code (Kemler)**: 33
- **EMS Number**: F-E,S-E

### Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

- **Not applicable.**

### Transport/Additional information:

- **ADR**
  - **Excepted quantities (EQ)**
    - Code: E2
    - Maximum net quantity per inner packaging: 30 ml
    - Maximum net quantity per outer packaging: 500 ml

- **IMDG**
  - **Limited quantities (LQ) 1L**
    - Code: E2
    - Maximum net quantity per inner packaging: 30 ml
    - Maximum net quantity per outer packaging: 500 ml

### UN "Model Regulation":

- UN 1262 OCTANES, 3, II, (D/E), ENVIRONMENTALLY HAZARDOUS

### 15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  - **Sara**
    - Section 355 (extremely hazardous substances):
      - 542-88-1 bis (chloromethyl) ether
    - Section 313 (Specific toxic chemical listings):
      - 542-88-1 bis (chloromethyl) ether
    - TSCA (Toxic Substances Control Act):
      - All ingredients are listed.
### Proposition 65
- **Chemicals known to cause cancer:**
  - 542-88-1 bis (chloromethyl) ether
- **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
  - 542-88-1 bis (chloromethyl) ether A
- **TLV (Threshold Limit Value established by ACGIH)**
  - 542-88-1 bis (chloromethyl) ether A1
- **NIOSH-Co (National Institute for Occupational Safety and Health)**
  - 542-88-1 bis (chloromethyl) ether

### 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
- bis (chloromethyl) ether

### Hazard statements
- Highly flammable liquid and vapor.
- Causes skin irritation.
- May cause cancer.
- 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/flighting/equipment.
- IF SWALLOWED: Immediately call a POISON CENTER/doctor.
- If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
- Store locked up.
- Dispose of contents/container in accordance with local/regional/national/international regulations.

### National regulations:
- 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.

### 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
- SPEX CertiPrep, LLC.
- 1-732-549-7144

### Date of preparation / last revision
11/20/2015

### 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
Product Name: bis(Chloromethyl) ether

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)
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
Flam. Liq. 2: Flammable liquids, Hazard Category 2
Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
Carc. 1A: Carcinogenicity, Hazard Category 1A
STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3
Asp. Tox. 1: Aspiration hazard, Hazard Category 1