1.  Product and Company Identification
   A. Product Name  
   D-5251
   B. Recommended use of the chemical  
   Rubber, Paper, Wood, Plastic, Metal, Glass or rock wool insulation etc.
   C. Manufacturer/Supplier/Distributor Information  
   - Name  
   DAEHEUNG CHEMICAL CO., LTD.
   - Address  
   68, Sandan-ro 64beon-gil, Pyeongtaek-si, Gyeonggi-do, Korea
   - Emergency phone number  
   82-31-668-1424

2.  Hazards identification
   A. Hazard Risk Classification  
   Flammable Liquid : Category 2
   Skin Corrosion/Irritation : Category 2
   Serous Eyes Damage/Eye Irritation : Category 2
   Reproductive Toxicity : Category 2
   Specific Target Organ Toxicity (Single Exposure) : Category 2
   Specific Target Organ Toxicity (Single Exposure) : Category 3(Narcotic effects)
   Specific Target Organ Toxicity (Single Exposure) : Category 3(Respiratory tract irritation)
   Specific Target Organ Toxicity (Repeated Exposure) : Category 2
   Aspiration Hazard : Category 2
   Hazardous to the aquatic environment, acute toxicity : Category 1
   B. Label elements including precautionary statements  
   - Symbol
   - Signal Word  
   Danger
   - Hazard Risk Statement  
   H225 Highly flammable liquid and vapour Causes severe skin burns and eye damage
   H305 May be harmful if swallowed and enters airways
   H315 Causes skin irritation
   H319 Causes serious eye irritation
   H335 May cause respiratory irritation
   H361 Suspected of damaging fertility or the unborn child
   H360 May damage fertility or the unborn child
   H400 Very toxic to aquatic life
   - Precautionary Statement  
   Prevention  
   P201 Obtain special instructions before use
   P202 Do not handle until all safety precautions have been read and understood
   P210 Keep away from heat/sparks/open flames/hot surfaces – No smoking
   P233 Keep container tightly closed
Prevention

P240 Ground/bond container and receiving equipment
P241 Use explosion-proof electrical/ventilating/light/…/equipment
P242 Use only non-sparking tool
P243 Take precautionary measures against static discharge
P260 Do not breathe dust/fume/gas/mist/vapours/spray
P261 Avoid breathing dust/fume/gas/mist/vapours/spray
P264 Wash … thoroughly after handling
P261 Avoid breathing dust/fume/gas/mist/vapours/spray
P270 Do not eat, drink or smoke when using this product
P273 Avoid release to the environment
P280 Wear protective gloves/protective clothing/eye protection/face protection
P281 Use personal protective equipment as required
P301+P310 IF SWALLOWED : Immediately call a POISON CENTER or doctor/physician
P302+P352 IF ON SKIN : Wash with soap and water
P303+P361+P353 IF ON SKIN (or hair) : Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340 IF INHALED : Remove victim to fresh air and keep at rest in a position comfortable for breathing
P305+P351+P338 IF IN EYES : Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing
P308+P311 IF exposed or concerned : Call a POISON CENTER or doctor/physician
P309+311 IF exposed or you feel unwell : Get medical advice/attention if you feel unwell
P312 Call a POISON CENTER or doctor/physician if you feel unwell
P314 Get Medical advice/attention if you feel unwell
P317 Do NOT induce vomiting
P362 Take off contaminated clothing and wash before reuse
P391 Collect spillage
P403+P233 Store in a well ventilated place. Keep container tightly closed
P403+P235 Store in a well ventilated place. Keep cool.
P405 Store locked up
P501 Dispose of contents/container to ...

Response

C. Other Hazard: Risk which are not included in the classification criteria (e.g. dust explosion hazard)

<table>
<thead>
<tr>
<th>CYCLO-HEXANE</th>
<th>ACETONE</th>
<th>PARA-TERTIARY-BUTYLPHENOL-FORMALDEHYDE RESIN</th>
<th>NEOPRENE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Fire</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Reactivity</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Disposal

Storage

P403+P233 Store in a well ventilated place. Keep container tightly closed
P403+P235 Store in a well ventilated place. Keep cool.
P405 Store locked up

Disposal

P501 Dispose of contents/container to ...
4. First aid measures

A. Eye contact
   Flush with water, lifting upper and lower lids occasionally.
   Consult a physician if irritation persists.

B. Skin contact
   with soap and water. Consult a physician if irritation persists.

C. Inhalation
   If affected, remove individual to fresh air. Use only in well ventilated areas.

D. Ingestion
   Consult a physician if irritation persists.

E. Indication of immediate medical attention
   and notes for physician
   Consult a physician if irritation persists.

5. Fire-Fighting measures

A. Suitable (and unsuitable) extinguishing media
   Dry chemical, Carbon dioxide, Foam, Water spray for large fires.

B. hazards arising from the chemical (e.g. nature of any hazardous combustion products)
   When it is exposed to the flame of heat, there is a danger.
   The fume is heavie’r air and moves more distance, it could backfire by ignition sources.

C. Special protective equipment and precautions for fire-fighters
   Shut off fuel if possible to do without hazard
   Evacuate area and fight fire from a safe distance.
   To the case where the formation fire occurs from the store area, it uses the unmanned hose carrier or the other atals, it must throw away
   When the tank, the freight car and the tank truck are enveloped in fire, it will have to quarantine over half-mile(approximately 800m)
   Apply water from a safe distance to cool and protect surrounding area.
   Firefighters should wear proper protective equipment

6. Accidental release measures

A. Personal precautions, protective equipment and emergency procedures
   Use personal protective equipment.
   Do not inhale the volatilized solvent directly.
   In order to prevent the dangerous the approach other than the interested party.

B. Environmental precautions and protective procedures
   Do not allow to enter drains or waterways.
   Do not discharge into the subsoil/soil
   Absorb spills with waste or dry sand or earth, then place in a chemical waste container
   For large spills, prevent them from entering into sewers, watercourse or low area by mounding soil, then recover to a chemical waste container.

C. Methods and materials for containment and cleaning up
   Take up with absorbent materials(sand, kieselguhr, universal binder)
   Dispose of absorbed material in accordance with the regulations.

7. Handling and storage

A. Precautions for safe handling
   Wear suitable chemical resistant gloves, safety goggles, dust mask and other protective clothing.
   Use in the well–ventilated areas. Prevent build-up electrostatic charge(by grounding).
   Shower and eye bath. Keep away from acidic material.
B. Conditions for safe storage (including any incompatibilities)

Store in its original container in a cool environment, keep away from heat, spark, and open flame. Ground containers during storage and transfer operations to avoid static spark.

Ideal storage temp. range for ease of handling is 10 – 27°C

8. Exposure controls & personal protection

A. Control parameters (e.g. occupational exposure limit values, biological limit values)

<table>
<thead>
<tr>
<th>Substance</th>
<th>TWA ppm</th>
<th>STEL ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>CYCLO-HEXANE</td>
<td>200</td>
<td>700</td>
</tr>
<tr>
<td>ACETONE</td>
<td>500</td>
<td>1188</td>
</tr>
</tbody>
</table>

- ACGIH limit values

<table>
<thead>
<tr>
<th>Substance</th>
<th>TWA ppm</th>
<th>STEL ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>CYCLO-HEXANE</td>
<td>100</td>
<td>750</td>
</tr>
<tr>
<td>ACETONE</td>
<td>500</td>
<td>750</td>
</tr>
</tbody>
</table>

- Biological limit values

No data available

B. Appropriate engineering controls

The following exposure control techniques may be used to effectively minimize.

C. Personal protective equipment

- Respiratory protection
  A respirator that is recommended or approved for use may be necessary for spray application or other situations such as high temperature use which may produce inhalation exposures.

- Eye protection
  Liquid chemical goggles. Vapor resistant goggles should be worn when contact lenses are in use. In a splash hazard environment chemical goggles should be used in combination with a full face-shield.

- Hands protection
  Use proper chemical resistant gloves.

- Body protection
  Permeation resistant gloves (butyl rubber, nitrile rubber). Cover as much of the exposed skin area as possible with appropriate clothing (long sleeve shirts, trousers, etc.) If skin cream are used, keep the area protected only the cream to minimum.

9. Physical and chemical properties

A. Appearance

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Viscous liquid</td>
</tr>
<tr>
<td>Color</td>
<td>Yellowish</td>
</tr>
<tr>
<td>Odour</td>
<td>Solvent</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>56–81 °C</td>
</tr>
<tr>
<td>Flashing point</td>
<td>–19.65 °C (–20 °C)</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>Upper/lower flammability or explosive limits</td>
<td>10(8.4–13) % / 1.58(1.3–2.5) %</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Solubility</td>
<td>Not soluble in water</td>
</tr>
<tr>
<td>Vapor density</td>
<td>Above 2</td>
</tr>
<tr>
<td>Relative density</td>
<td>0.83±0.05</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>No data available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>321.35 °C (245–465 °C)</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>1,200–1,300 cps (20 °C)</td>
</tr>
<tr>
<td>Formula mass</td>
<td>No data available</td>
</tr>
</tbody>
</table>
10. Stability and reactivity

A. Chemical stability and possibility of hazardous reactions
   Stable under normal conditions

B. Conditions to avoid
   Avoid the fire, spark, flame, and other ignition sources
   The fume has an explosive characteristic.
   Avoid the overheating of container.

C. Incompatible materials
   flammable material

D. Hazardous decomposition products
   CO, CO₂, nitrogen compounds

11. Toxicological information

A. Information on the likely routes of exposure

   No data available

B. Health hazards information

   LD₅₀ > 2000 mg/kg
   Rat (EHC(1990), SIDS(1997))

   LD₅₀ 5280 mg/kg
   Rat (EHC(1990), PATTY(1994), SIDS(1997))

   LD₅₀ 40000 mg/kg
   Rat

   LD₅₀ > 2000 mg/kg
   Rabbit

   LD₅₀ 12705 mg/kg
   Rabbit (EHC(1990), PATTY(1994), SIDS(1997))

   LD₅₀ > 5000 mg/kg
   Rabbit

   LD₅₀ 12870 mg/kg
   Rabbit (EHC(1990), PATTY(1994), SIDS(1997))

   LD₅₀ 70 ng/L
   LC₅₀ 32000 ppm

   No skin irritation
   Rabbit

   Result: Mild skin irritation – 24 h
   Rabbit

   Irritation to skin

   Can cause weak irritation

   Group 3 : Not classifiable as to carcinogenicity to humans

   A4

   No data available

   No data available

   May cause drowsiness or dizziness.
NEOPRENE
- Specific target organ toxicity (repeated exposure)  
  May cause drowsiness or dizziness.
- Aspiration hazard  
  No data available

CYCLO-HEXANE
- May be fatal if swallowed and enters airways.

12. Ecological information
A. Aquatic and terrestrial ecotoxicity
   - Fish
     ACETONE
     LC50 > 100 mg/l 96 hr
     CYCLO-HEXANE
     EC50 0.9 mg/l 48 hr
   - Shellfish

B. Persistence and degradability
   - Bioaccumulative potential
     CYCLO-HEXANE
     BCF 129
     CYCLO-HEXANE
     77 (%) 28 day

C. Bioaccumulative potential
   - Bioaccumulative

D. Mobility in soil
   - No data available

E. Other adverse effects
   - No data available

13. Disposal considerations
A. Disposal method  
   Destroy the product by incineration
B. Disposal precaution  
   Destroy the product by incineration

14. Transport information
A. UN number  
   1133
B. UN proper shipping name  
   ADHESIVES containing flammable liquid
C. Transport hazard class:  
   3
D. Packing group (if applicable)  
   II
E. Marin pollution (yes/no)  
   Yes
F. Special precaution which a user to be aware of or needs to comply with in connection with transport or conveyance either within or outside their premises:  
   F=E, S=D

15. Regulatory information
A. Industrial Safety and Health Act
   - Management harmful agents  
     CYCLO-HEXANE, ACETONE
   - Working environment measurement target material  
     CYCLO-HEXANE, ACETONE
     (measurement period: 6 months)
   - Special medical examination the substance  
     CYCLO-HEXANE, ACETONE
     (diagnostic period: 12 months)
   - Exposure limits set material  
     CYCLO-HEXANE, ACETONE
B. Toxic Chemical Control Act  
   Not Applicable
C. Dangerous Material Safety Control Act  
   The 4th type, the 1st petroleum type 200ℓ
D. Wastes Management Act  
   Designated Wastes
E. Other requirements in domestic and other countries
   - Domestic
     Persistent Organic Pollutant Control Act  
     CYCLO-HEXANE  
     Not applicable
     ACETONE  
     Not applicable
<table>
<thead>
<tr>
<th>Chemical</th>
<th>Applicability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neoprene</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Cyclo-hexane</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Acetone</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Para-tertiary-butyphenol-formaldehyde resin</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Neoprene</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Cyclo-hexane</td>
<td>453.599 kg / 1000 lb</td>
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<tr>
<td>Acetone</td>
<td>2267.995 kg / 5000 lb</td>
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<tr>
<td>Neoprene</td>
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<tr>
<td>Cyclo-hexane</td>
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<td>Cyclo-hexane</td>
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<tr>
<td>Acetone</td>
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</tr>
</tbody>
</table>
16. Other information

A. Information source and references

- CYCLO–HEXANE
  - (3) IUCLID
  - (4) NLM
- ACETONE
- PARA–TERTIARY–BUTYLPHENOL–FORMALDEHYDE RESIN
- NEOPRENE
  - Corporate Solution From Thomson Micromedex (http://csi.micromedex.com)

B. Issuing date

November 6, 2012

C. Revision number and date

3 / July 22, 2015

D. others