1. IDENTIFICATION

1. Product Name
   1) Product Name : POTASSIUM CARBONATE - Solid (Granular & Powder)
   2) Other Name : Dipotassium carbonate, Potash, Pearl ash

2. Recommended Use and Restriction on Use
   1) General use : Kali Soap •Kali Glass •Optical Glass Materials
dyeing •tannage •Photos •Analytical reagents, ingredients for
pharmaceuticals. Chemicals used for operations
   2) Restriction on Use : Not available

3. Manufacturer/Distributor Information :

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Address</th>
<th>Emergency Phone No.</th>
<th>Division in charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNID Co., Ltd.</td>
<td>115, Aam-daero 287beon-gil(Hakik-Dong), Nam-Ku, Incheon, Korea.</td>
<td>(TEL)+81-32-830-7777 (FAX)+81-32-832-4491</td>
<td>Environmental Safety Team</td>
</tr>
<tr>
<td>UNID Co., Ltd.</td>
<td>17th Ferrum Tower, #19 Eulji-ro-5-gil(suha-dong), Jung-gu, Korea.</td>
<td>(TEL)+81-2-3709-9500 (FAX)+81-2-755-0711</td>
<td>Sales Team</td>
</tr>
</tbody>
</table>

Home Page : www.unid.co.kr

2. HAZARD IDENTIFICATION

1. GHS Classification

<table>
<thead>
<tr>
<th>Physical Hazards</th>
<th>Health Hazards</th>
<th>Environmental Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Skin corrosion/irritation Cat. 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Serious eye damage/irritation Cat. 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Specific Target organ Toxicity(single exposure) Cat. 3</td>
<td></td>
</tr>
</tbody>
</table>

2. GHS label elements, including precautionary statements

1) Hazard symbols

![Hazard Symbol]
2) Signal word: Warning

3) Hazard statement
   - H315 Causes skin irritation
   - H319 Causes serious eye irritation
   - H335 May cause respiratory irritation
   - H336 May cause drowsiness or dizziness

4) Precautionary statement

<table>
<thead>
<tr>
<th>Prevention</th>
<th>Response</th>
<th>Storage</th>
<th>Disposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>- P264 Wash thoroughly after handling.</td>
<td>- P312 Call a POISON CENTER or doctor/physician if you feel unwell.</td>
<td>- P405 Store locked up.</td>
<td>- P501 Dispose of contents/container in accordance with local/regional/national/international regulation.</td>
</tr>
<tr>
<td>- P280 Wear protective gloves/protective clothing/eye protection/face protection.</td>
<td>- P362 Take off contaminated clothing and wash before reuse.</td>
<td>- P403+P233 Store in a well-ventilated place. Keep container tightly closed.</td>
<td></td>
</tr>
<tr>
<td>- P261 Avoid breathing dust/fume/gas/mist/vapours/spray.</td>
<td>- P302+P351+P338 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.</td>
<td>- P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</td>
<td></td>
</tr>
<tr>
<td>- P271 Use only outdoors or in a well-ventilated area.</td>
<td>- P332+P313 IF ON SKIN: Wash with plenty of soap and water.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- P337+P313 IF eye irritation persists: Get medical advice/attention.</td>
<td>- P334+P313 IF SKIN IRRITATION OCCURS: Get medical advice/attention.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- P304+P340 IF INhaled: Remove victim to fresh air and keep at rest in a position comfortable for breathing.</td>
<td>- P302+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Other hazards which do not result in classification:
   - NFPA Grade (0-4 level): Health-1, Flammability-0, Reactivity-0

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Other name</th>
<th>CAS Number</th>
<th>Contents(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>POTASSIUM CARBONATE</td>
<td>-</td>
<td>584-08-7</td>
<td>99.5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS NO</th>
<th>KE NO</th>
<th>UN NO</th>
<th>EN NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>POTASSIUM CARBONATE</td>
<td>584-08-7</td>
<td>TS7750000</td>
<td>-</td>
<td>209-529-3</td>
</tr>
</tbody>
</table>

4. FIRST-AID MEASURES
1. Eye Contact:
   - Immediately Lift eyelid and flush eyes with flowing water.
   - Lift eyelid and completely remove materials. Ensure irrigation under eyelids by occasionally lifting the upper and lower lids.
   - Transport to hospital, or doctor.
   - Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

2. Skin Contact:
   - Remove contaminated clothing and shoes immediately.
   - Flush skin and hair with running water (and soap if available).
   - Seek medical attention in event of irritation.

3. Inhalation:
   - If inhalation of fume or combustion, move to the fresh air.
   - Go to where the fresh air and if you necessary, Conduct artificial respiration.
   - If not breathing, give artificial respiration.
   - If breathing is difficult, give oxygen.

4. Ingestion:
   - Wash out mouse with water.
   - If swallowed do NOT induce vomiting.
   - Lay the patient down as head would be lower than body for suffocation prevention if occur vomiting.
   - Get medical attention immediately.

5. Delayed and immediate effects and also chronic effects from short and long term exposure:
   - May cause eye, skin, respiratory irritation when exposed.
   - May cause lung effect of Long-term exposure to dust of high concentrations.
   - Ingestion may cause nausea, vomiting and stomach and severe digestive system irritation and burns.
   - Inhalation may cause respiratory irritation.
   - If contact with skin May cause irritation and Caustic effect is analogous to Potassium hydroxide.
   - If contact with eye May cause irritation and Caustic effect is analogous to Potassium hydroxide.

6. First-aid treatment and note to physician:
   - Treatment may vary with condition of victim and specifics of incident.

5. FIRE-FIGHTING MEASURES

1. Suitable (Unsuitable) extinguishing media:
   - Extinguishing media: Dry chemical powder, CO2, Water, foam.
   - If large fire, use regular extinguishing media or flood with fine water spray.
- Unsuitable extinguishing media : Do not use water-jet.

2. Specific hazards arising from the chemical :
- Non flammability.
- Substance itself does not Burn but Decompose when heated may cause corrosive/toxic fume.
- Fire risk can be ignored but Containers may rupture or explode if exposed.
- Hazardous combustion product : Thermal decomposition may produce gas or/and fume of Carbon dioxide, carbon monoxide, potassium oxide.

3. Special protection actions and equipments for fire-fighting :
- Firefighters should wear self contained breathing apparatus and protective clothing.
- If safe to do so, remove containers from path of fire.
- If removal is impossible, cool containers and surrounding area with water.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not allow run-off from fire fighting to enter drains or water courses.
- Do not impervious water inside containers.

6. ACCIDENTAL RELEASE MEASURES

1. Personal precautions
- Wear appropriate personal protective equipment and avoid inhalation or contact with eyes and skin.
- Wear appropriate personal protective equipment (see section 8. EXPOSURE CONTROLS/PERSONAL PROTECTION).
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Keep unnecessary people away.
- Ventilate leak areas.
- Avoid dust formation.

Isolate of spilled material (Small spills : Adsorption of absorbent etc.)
- Possibly collect recoverable product (used for shovel or vaccum vehicle).
- Residue is neutralized for the acid.
- Move container to safe area from the leak area.
- Wear personal protect clothes, protective equipment.

2. Environmental precautions :
- Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.
- If large spills, advise emergency services.

3. Methods and materials for containment and cleaning up
1) Small spills
- Remove the spilled material.
7. HANDLING AND STORAGE

1. Handling
   - Use to dry removal method and Suppression occurrence of dust.

2) Large spills
   - For disposal of spilled material in appropriate containers collected.
   - Wash spill area with plenty of water.

7. HANDLING AND STORAGE

1. Handling
   - Wear appropriate personal protective equipment (see section 8. EXPOSURE CONTROLS / PERSONAL PROTECTION).
   - Avoid contact with incompatible materials.
   - Use in a well-ventilated area.
   - Do not mixed storage and transportation of grocery, fodder, medicines, food.
   - When handling, DO NOT eat, drink or smoke.
   - Avoid breathing dust and contact with the eyes, skin.
   - Wash hands with soap and water after handling.
   - Minimize occurrence of dust and accumulation.

2. Storage Precautionary Statements
   - Save and handle applicable laws and regulations.
   - the original container should be stored.
   - Store away from water or moisture and store in dry area (strong hygroscopic property).
   - The container withstand for physical damage should be stored.
   - Save in cool, dry and well ventilated place.
   - Stored in airtight containers and Avoid contact with water and moistures.
   - Absorption is the cause of the reduction of the concentration with Potassium Carbonate.
   - Do not store with Volatile Organic Compounds. Product may discolor.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

1. Exposure Limits
   - Exposure limit under ISHL (KOREA) : Not applicable
   - ACGIH limit : Not applicable
   - Biological exposure limits : Not applicable

2. Engineering Controls
   - The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fume hood. Provide mechanical ventilation of confined spaces.

3. Personal Protective Equipment
   1) Respiratory Protection:
      - Under conditions of frequent use or heavy exposure, Respiratory protection may be
needed.

- Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use.
  - Dust, mist, fume-purifying respiratory protection
  - Air-purifying respirator with a corpuscle filter of high efficiency
  - Any respiratory protection with a electromotion fan (for dust, mist, fume-purifying)

- For Unknown Concentration or Immediately Dangerous to Life or Health
  - Self-contained breathing apparatus (pressure-demand or other positive-pressure mode in combination)
  - Supplied-air respirator with full facepiece

2) Eye protection:
- Wear primary eye protection such as splash resistant safety goggles with a secondary protection faceshield.
- Provide an emergency eye wash station and quick drench shower in the immediate work area.

3) Hand protection: Wear appropriate protective gloves.

4) Body protection: Wear appropriate protective cloth.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

1. Appearance: Solid / Colorless or white
2. Odor: Odorless
3. Odor threshold: Not available
4. pH: 11.0 (0.02 M Solution)
5. Melting point / Freezing point: 1636°F (891°C) / Not available
6. Initial Boiling Point / Boiling Ranges: Decomposition / Not available
7. Flash point: Not available
8. Evaporation Rate: Not available
9. Flammability (solid, gas): Not available
10. Upper/Lower Flammability or explosive limits: Not available
11. Vapor pressure: Not available
12. Solubility: soluble(water)
13. Vapor density: Not available
14. Relative density: 2.428 (25°C) (Water=1)
15. Partition coefficient of n-octanol/water: Not available
16. Autoignition Temp. : Not available (Not applicable)
17. Decomposition Temp. : Not available
18. Viscosity : : Not available
19. Molecular weight : 138.21

10. STABILITY AND REACTIVITY

1. Stability
   - This material is stable under recommended storage at normal temperature and pressure.

2. Possibility of Hazardous Reaction
   - Polymerization : Will not occur.

3. Conditions to Avoid
   - Keep away from heat, flame, sparks and source of ignition.

4. Materials to Avoid
   - Avoid contact with Oxidants (Acids, nitrates, chlorine bleach, the chlorine used in pools).
   - Because the reaction with Aluminum, Fluoro, Magnesium, Silicon, Chlorine Trifluoride, Powder metal should be avoided.

5. Hazardous Decomposition Products :
   - Carbon compounds, potassium and its compound.

11. TOXICOLOGICAL INFORMATION

1. Information of Exposure route :
   1) (Respiratory tract) : May cause respiratory irritation.
   2) (Oral) : Not Classified.
   3) (Eye ∙Skin) : Causes serious eye irritation. Causes skin irritation.

2. Delayed and immediate effects and also chronic effects from short and long term exposure
   1) Acute Toxicity :
      - Oral Toxicity : LD50 > 2000mg/kg b.w. (Rat)
      - Dermal Toxicity : Not available
      - Inhalation Toxicity : Not available
   2) Skin corrosion/irritation :
      - Irritation is observed.
   3) Serious eye damage/irritation :
- Irritation is observed.
4) Respiratory sensitization: Not available
5) Skin sensitization:
   - In the intracutaneous skin sensitisation test, allergic skin reactions is not observed.
6) Carcinogenicity: Not applicable
7) Germ cell mutagenicity:
   - Ames test: Negative
   - Gene mutation (mammalian cell gene mutation assay): Negative
   - Chromosome aberration (mammalian chromosome aberration test): Negative
8) Reproductive toxicity:
   - No adverse effects were observed in the reproductive sturdy using the rats for high concentration.
9) Specific Target organ Toxicity (single exposure):
   - May cause respiratory irritation.
10) Specific Target organ Toxicity (repeated exposure):
    - No adverse effects are observed in the repeated exposure sturdy using the rodents.
11) Aspiration hazard: Not available

12. ECOLOGICAL INFORMATION

1. Ecotoxicity:
   - Acute aquatic toxicity
     • Fish: LC50=68mg/L, 96hr, Oncorhynchus mykiss
     • Daphnia magna: EC50=430mg/L, 48hr, Daphnia magna (non-GLP)
     • Algal: Not available

2. Persistence and degradability: Not available

3. Bioaccumulation: Not available

4. Mobility in soil: Not available

5. Other adverse effects: Not available

13. DISPOSAL CONSIDERATIONS

1. Disposal methods:
   - The user of this product must properly characterize the waste/container generated from the use of this product in accordance with all applicable federal, state and/or local laws and regulations in order to determine the proper disposal of the waste in
accordance with all applicable federal, state and/or local laws and regulations.

2. Special precautions for disposal

- The user of this product must disposal by oneself or entrust to waste disposer or person who other’s waste recycle and dispose, person who establish and operate waste disposal facilities.
- Dispose of waste in accordance with local regulation.

### 14. TRANSPORT INFORMATION

1. UN Number : Not regulated for transport of dangerous goods
2. UN Proper Shipping name : Not applicable
3. Transport hazard class(es) : Not applicable
4. Packing group : Not applicable
5. Sea pollutants : Not applicable
6. Special precautions for user related to transport or transportation measures :
   - EmS FIRE SCHEDULE : Not applicable
   - EmS SPILLAGE SCHEDULE : Not applicable

### 15. REGULATORY INFORMATION

1. ISHL(The industrial Safety and Health Law in Korea) : Not applicable
2. The Toxic Chemical Control Act in Korea(TCCA in Korea) : Not applicable
3. Dangerous goods Safety Management Law in Korea : Not applicable
4. Waste Management Law in Korea : Not applicable
5. Other regulations
   1) POPs Management Law : Not applicable
   2) Information of EU Classification :
      - Classification : Not Classification
      - Symbol(s) and Indication(s) of Danger : Not applicable
      - Risk and Safety Phrases : Not applicable
   3) US REGULATIONS :
      - CERCLA section 103 (40 CFR 302.4) : Not regulated
      - SARA section 302 (40 CFR 355.30) : Not regulated
      - SARA section 304 (40 CFR 355.40) : Not regulated
      - SARA Hazard Categories, SARA section 311/312 (40 CFR 370.21)
        ACUTE: YES
16. OTHER INFORMATION

1. Reference
   1) The Korea Occupational Safety and Health Agency; KOSHA MSDS
   2) Korean regulations
      : Industrial Safety and Health Law, Waste Management Law, Toxic Chemical Control Act, ENFORCEMENT DECREES OF THE WATER QUALITY AND ECOSYSTEM CONSERVATION ACT.

2. Issue date: 2010. 03. 12

3. Revision number and Last date revised: 2014. 11. 21

4. Written Authority: UNID Co., Ltd. (http://www.unid.co.kr Tel. 032-830-7777)