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SEDR-5

SECTION 1. Chemical product and company identification

Product name: SEDR-5
Recommended use of the chemical and restrictions on use: Developer for Photoresist
Supplier: Taiwan Nanocrystals Inc.
Address: No.4, Aly. 3, Ln. 52, Sec. 1, Dongmen Rd., East Dist., Tainan City 701, Taiwan (R.O.C.)
Tel: +886-6-208-5209
E-mail address: twnc@twncqsds.com

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
Corrosive to metals (Category 1), H290
Acute toxicity, Oral (Category 4), H302
Skin corrosion (Category 1A), H314
For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 Label elements
GHS-Pictogram:

⚠️ ⚠️

Signal word: Danger
Hazard statement(s):
H290 May be corrosive to metals.
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage
Precautionary statement(s):
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P280 Wear protective gloves/ protective clothing/ eye protection/ face
P240 Ground/bond container and receiving equipment protection.
P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
   Rinse mouth.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing.
   Rinse skin with water/shower.
P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
   Immediately call a POISON CENTER/doctor.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove
   contact lenses, if present and easy to do. Continue rinsing.
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2.3 Other hazards
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/Information on ingredients

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No.</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium hydroxide</td>
<td>1310-58-3</td>
<td>4%</td>
</tr>
<tr>
<td>D.I. Water</td>
<td>7732-18-5</td>
<td>71%</td>
</tr>
<tr>
<td>Surfactant</td>
<td>Confidential</td>
<td>25%</td>
</tr>
</tbody>
</table>

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most Important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2)

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media
Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
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5.2 Special hazards arising from the substance or mixture
Potassium oxides

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
Gives off hydrogen by reaction with metals.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided. Avoid heat, flame and ignition source.

6.3 Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.

7.2 Conditions for safe storage, including any incompatibilities
Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Absorbs carbon dioxide (CO2) from air.

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters
Derived No Effect Level (DNEL)

<table>
<thead>
<tr>
<th>Application Area</th>
<th>Exposure routes</th>
<th>Health effect</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term local effects</td>
<td>1 mg/m³</td>
</tr>
<tr>
<td>Consumers</td>
<td>Inhalation</td>
<td>Long-term local effects</td>
<td>1 mg/m³</td>
</tr>
</tbody>
</table>

8.2 Exposure controls
Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of
workday.

Personal protective equipment

Eye/face protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove’s outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Body Protection

Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

| a) Appearance | Pear Yellow Liquid |
| b) Odour | No order |
| c) Odour Threshold | No data available |
| d) pH | 14 |
| e) Melting point/freezing point | 0 °C below (D.I. Water) |
| f) Initial boiling point and boiling range | 100°C ~ (D.I. Water) |
| g) Flash point | Not flammable |
| h) Evaporation rate | Not flammable |
| i) Flammability (solid, gas) | Not flammable |
| j) Upper/lower flammability or explosive limits | Not flammable |
| k) Vapour pressure | No data available |
| l) Vapour density | No data available |
| m) Relative density | 1.1 |
| n) Water solubility | 100% |
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| o) Partition coefficient: n-octanol/ water | No data available |
| p) Auto-ignition temperature | Not flammable |
| q) Decomposition temperature | No data available |
| r) Viscosity | 10–20 CPS (at 25°C) |
| s) Explosive properties | No data available |
| t) Oxidizing properties | No data available |

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
No data available

10.5 Incompatible materials

10.6 Hazardous decomposition products
Other decomposition products - Potassium oxides
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects
Acute toxicity
LD50 Oral - Rat - 333 mg/kg(Potassium hydroxide)
Skin corrosion/irritation
Skin - Rabbit(Potassium hydroxide)
Result: Severe skin irritation - 24 h
Serious eye damage/eye irritation
Eyes - Rabbit(Potassium hydroxide)
Result: Corrosive to eyes
(OECD Test Guideline 405)
Respiratory or skin sensitisation
No data available(Potassium hydroxide)
Germ cell mutagenicity
No data available(Potassium hydroxide)
In vitro mammalian cell gene mutation test(Potassium hydroxide)
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mouse lymphoma cells
Result: negative

Carcinogenicity
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity
No data available (Potassium hydroxide)

Specific target organ toxicity - single exposure
No data available (Potassium hydroxide)

Specific target organ toxicity - repeated exposure
No data available (Potassium hydroxide)

Aspiration hazard
No data available (Potassium hydroxide)

SECTION 12: Ecological Information

12.1 Toxicity
Toxicity to fish LC50 - Gambusia affinis (Mosquito fish) - 80 mg/l - 96 h (Potassium hydroxide)

12.2 Persistence and degradability
The methods for determining the biological degradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects
Harmful to aquatic life.

SECTION 13: Disposal considerations

13.1 Waste treatment methods
Product
Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.

SECTION 14: Transport information
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14.1 UN number: 3082

14.2 UN proper shipping name:
ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

14.3 Transport hazard class(es): 9

14.4 Packaging group: III

14.5 Environmental hazards: yes

SECTION 15: Regulatory information

15.1 Applicable regulations:
Recommended guidelines, rules and standards for chemical safety handling, storage, transportation, loading / unloading hazard, classification and labeling, need to refer the regulations below:
Rules of Label and Hazard Communication for Dangerous and Harmful Materials
Airborne Permissible Exposure Concentration of Harmful Materials at the Labor Work Environment
Labor Safety and Health Law
Labor Safety and Health Law Enforcement Rules
Rules for Roed Traffic Safety
Fire Services Act

SECTION 16: Other information

16.1 References:
The SDS of SIGMA-ALDRICH
The database of SDS of Council of Labor Affairs, Executive Yuan, Taiwan

16.2 Prepared by
Chih-Jung Chen Manager
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