1. PRODUCT AND COMPANY IDENTIFICATION

   A. Product name: *E. coli* extract
   B. Recommended use: Research use only
   C. Supplier: Bioneer corporation
      - Address: 8-11, Munpyeongseoro, Daedeok-gu, Daejeon 306-220 Republic of Korea
      - Telephone: +82-42-930-8777

2. HAZARDS IDENTIFICATION

   A. Emergency Overview
      No information available.

   B. GHS Label elements, including precautionary statements
      - Pictogram

      - Signal word: Warning
      - Hazard statement(s):
         H302 Harmful if swallowed

      - Precautionary statements:
         Prevention:
         - P264: Wash thoroughly after handling.
         - P270: Do not eat, drink or smoke when using this product
Response:

P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell

P330: Rinse mouth

Storage:

No information available.

Disposal:

P501: Dispose of contents/container to...

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No</th>
<th>Weight (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tris base</td>
<td>77-86-1</td>
<td>1%~5%</td>
</tr>
<tr>
<td>Potassium acetate</td>
<td>127-08-2</td>
<td>1%~5%</td>
</tr>
<tr>
<td>S1~S4</td>
<td>Trade secrets</td>
<td>98%~90%</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

A. Eye Contact: Rinse immediately with plenty of water, also under the eyelids, for at few minutes. Remove contact lenses. If symptoms persist, call a physician.

B. Skin Contact: If skin problems occur, discontinue use. If skin irritation persists, call a physician. May cause an allergic skin reaction.

C. Inhalation: Immediately call a doctor/physician.

D. Ingestion: Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

E. Most important symptoms/effects, acute and delayed: None known.

F. Notes to Physician: May cause sensitization of susceptible persons.

5. FIRE-FIGHTING MEASURES

A. Suitable extinguishing media: No information available.

B. Special Hazard: No information available.

C. Special protective equipment for fire-fighters: As in any fire, wear self-contained breathing apparatus and full protective gear.
6. ACCIDENTAL RELEASE MEASURES

A. Personal precautions: No information available.
B. Environmental precautions: No information available.
C. Methods for cleaning up: No information available.

7. HANDLING AND STORAGE

A. Advice on safe handling: No information available.
B. Storage condition: No information available.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A. Exposure Guidelines: No information available.
B. Engineering Measures: No information available.
C. Personal Protective Equipment
   - Eye protection: No information available.
   - Hand protection: No information available.
   - Skin and body protection: No information available.

9. PHYSICAL AND CHEMICAL PROPERTIES

- Physical state: No information available
- pH: No information available
- Melting/freezing point: No information available
- Boiling point/boiling range: No information available
- Flash point: No information available
- Evaporation rate: No information available
- Flammability (solid, gas): No information available
- Flammability Limits in Air (Upper/Lower): No information available
- Vapor pressure: No information available
- Vapor Density: No information available
- Relative Density: No information available
- Water solubility: No information available
- Solubility in other solvents: No information available
- Partition coefficient: n-octanol/water: No information available
Autoignition temperature: No information available.
Decomposition temperature: No information available
Viscosity of product: No information available
Molecular weight: No information available

10. STABILITY AND REACTIVITY

A. Stability: No information available
B. Hazardous reactions: No information available
C. Conditions to avoid: No information available
D. Materials to avoid: No information available
E. Hazardous decomposition products: No information available

11. TOXICOLOGICAL INFORMATION

Principle Routes of Exposure: Skin Contact. Eye Contact. Inhalation.
Inhalation: Irritating to respiratory system.
Skin Contact: Irritating to skin.
Ingestion: Harmful if swallowed.
Eye Contact: Irritating to eyes.

12. ECOLOGICAL INFORMATION

A. Acute Toxicity: No information available
B. Persistence and degradability: No information available.
C. Bioaccumulative potential: No information available.
D. Mobility: No information available
E. Other adverse effects: No information available

13. DISPOSAL CONSIDERATIONS

A. Waste from Residues / Unused Products: Dispose of in accordance with local regulations.
B. Contaminated packaging: Dispose of in accordance with local regulations.
14. TRANSPORT INFORMATION

A. UN/ID no : No information available
B. Proper shipping name : No information available
C. Hazard Class : No information available
D. Packing group : No information available
E. Description : No information available
F. Emergency Response Guide Number : No information available

15. REGULATORY INFORMATION

A. Occupational health and safety act : No information available
B. TCCA regulations : No information available
C. Dangerous goods safety management act : No information available
D. Waste management regulation : No information available
E. International regulations : No information available

16. OTHER INFORMATION

A. Issuing date : 26–April–2013
B. Revision date : 26–April–2013

C. Disclaimer

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. BIONEER corporation shall not be held liable for any damage resulting from handling or from contact with the above product.