### Technical Information Sheet

<table>
<thead>
<tr>
<th>1. Name of technology</th>
<th>Comprehensive recycling technology for waste oil</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Type of technology</td>
<td>Promotion of recycled heavy oil, lubricants and chemical products (concrete separating compound, etc.) produced with waste oil as raw materials to achieve cost reduction and contribute to the effective utilization and preservation of limited resources.</td>
</tr>
</tbody>
</table>
| 3. Description of technology | **Objective and application of technology**

A technology to manufacture recycled heavy oil, lubricants and chemical products (concrete separating compound, etc.) with waste oil (waste engine oil, waste lubricants and waste transmission oil) discharged from factories and car repair shops as raw materials.

Because a portion of the raw materials we deal with is hazardous substances—including dangerous substances—we carry out thorough preliminary sample inspections when we receive these materials. We also handle reception containers (metal drums, etc.) using a bar-code management system to ensure safe and proper operations.

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**Process flow of water and foreign particle removal**

- Main processes only without detailed ones

**Stationary heating and oil-water separation**

- **Heated agitation and light component removal**
- **Centrifugal separation**

**Clay and membrane filtration**

- **Membrane filtration and reduced-pressure distillation**

**Heavy oil**

- **Recycled heavy oil**

**Lubricants**

- **Recycled lubricants**

**Transmission oil**

- **Chemical products (concrete separation compound, corrosion prevention agent, curing agent, etc.)**

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**Collection**

- **Primary treatment**

- **Secondary treatment**

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**Recycled products and chemical products**
As a pioneer of waste oil recycling, we provide recycled heavy oil with high quality equivalent to Bunker A as well as recycled lubricants by utilizing our accumulated technologies and expertise.

### Recycled heavy oil

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Reaction</th>
<th>Burning point</th>
<th>Kinetic viscosity</th>
<th>Moisture content</th>
<th>Sulfur content</th>
<th>Gross heat value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recycled oil (general standards)</td>
<td>Neutral or alkaline</td>
<td>70°C or more</td>
<td>50 CST or more</td>
<td>1.0% or less</td>
<td>1.0% or less</td>
<td>10,000 kcal or less</td>
</tr>
<tr>
<td>Bunker A</td>
<td>Neutral</td>
<td>60°C or more</td>
<td>20 CST or more</td>
<td>0.3% or less</td>
<td>0.5% or less</td>
<td>—</td>
</tr>
<tr>
<td>Our product</td>
<td>Neutral</td>
<td>70°C to 130°C</td>
<td>15 to 30 CST</td>
<td>0.5% or less</td>
<td>0.5% or less</td>
<td>10,500 kcal or less</td>
</tr>
<tr>
<td>Bunker B</td>
<td>Neutral</td>
<td>60°C or more</td>
<td>50 CST or more</td>
<td>0.4% or less</td>
<td>3.0% or less</td>
<td>—</td>
</tr>
<tr>
<td>Bunker C</td>
<td>Neutral</td>
<td>60°C or more</td>
<td>250 CST or more</td>
<td>0.5% or less</td>
<td>3.5% or less</td>
<td>—</td>
</tr>
</tbody>
</table>

Chemical products (concrete separating compound, etc.) using recycled oil are blended with our original fatty acids and functions as a chemical reaction type mold release agent that enables a concrete structure to have beautiful white finishing.

This concrete separating compound is also an environmentally-friendly product allowing formworks to be easily removed, thereby improving their shelf life.
4. Classification of technology

(1) Applicable fields
Industrial waste treatment, Collection, transportation, storage, Recycling

(2) Target waste
Waste oil (waste lubricants including waste engine oil)

(3) Services provided
Plant construction, Waste treatment service, Technical cooperation/ licensing, Consulting

5. Countries to which this technology can be provided
Asian countries

6. Keywords
Recycle, waste oil, waste lubricants, waste transmission oil, recycled heavy oil, recycled lubricants, building works, civil engineering works, concrete, separation agent, cost reduction, resource conservation

7. Contact information
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