

## Sorting, Collection, and Classification Table for experimental waste (1)

Revised in April 2020

Classification and Color of the polyethylene container	Type	Target	Summary
<div style="border: 2px solid red; border-radius: 15px; padding: 10px; text-align: center; width: fit-content; margin: 0 auto;"> <p><b>A-1 classifi -cation (Red)</b></p> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>10L tanks should be used.</p> </div>	<p><b>Flammable organic waste liquid</b> (The capacity of the container is 10 L.)</p> <p><b>Caution: Includes 1st to 3rd washing waste liquid.</b></p>	<ol style="list-style-type: none"> <li>1. Aliphatic hydrocarbons Waste solvents such as petroleum ether, hexane, heptane, and octane</li> <li>2. Oxygen-containing aliphatic compounds Waste solvents such as acetal, alcohols, acetone, ethyl methyl ketone, and acetic acid esters</li> <li>3. Nitrogen-containing aliphatic compounds Waste solvents such as acetonitrile</li> <li>4. Aromatic compounds Waste solvents such as benzene and toluene</li> <li>5. Nitrogen-containing aromatic compounds Waste solvents such as pyridine</li> <li>6. Other liquids that are classified as hazardous materials petroleum No.1 Waste solvents containing a small amount of non-explosive high-boiling organic compounds are acceptable.</li> </ol> <p><b>Caution: Precipitates and solid materials should be filtrated.</b></p>	<ol style="list-style-type: none"> <li>1. Explosive materials themselves, materials that can easily make explosive materials, materials having N–O, N–N, O–O, O–X bonds, or metal acetylides, should be excluded. These materials should be treated to safe and harmless ones under the responsibility of the dischargers.</li> <li>2. Chemicals that cause health problems such as benzidine should be excluded. These materials should be treated to safe and harmless ones under the responsibility of the dischargers.</li> <li>3. The filtration residue should be stored with labeling its contents clearly, and <b>requested to the contractor at the time of chemical waste collection.</b></li> <li>4. <b>Special flammable materials</b> such as diethyl ether or carbon disulfide <b>should be reduced to 5% or less to the waste liquid</b>, and discharged.</li> <li>5. When containing heavy metal, the heavy metal concentration is specified in the comment box of the request form.</li> <li>6. When containing organic halogen compounds, it should be classified as B.</li> </ol>

<p style="text-align: center;"><b>A-2 classifi -cation (Red)</b></p>	<p><b>Waste oil</b></p>	<ol style="list-style-type: none"> <li>1. Waste oil such as kerosene, mineral spirits, light oil, and turpentine oil</li> <li>2. Waste oil such as heavy oil, creosote oil, spindle oil, turbine oil, and transformer oil</li> <li>3. Waste oil such as gear oil and motor oil</li> <li>4. Waste oil such as animal and vegetable oil (liquid)</li> <li>5. Other liquids that are classified as hazardous materials petroleum No.2-4</li> </ol> <p>Waste solvents containing a small amount of non-explosive high-boiling organic compounds are acceptable.</p> <p><b>Caution: Precipitates and solid materials should be filtrated.</b>  <b>Caution: High viscosity waste oil should be diluted with kerosene etc. to reduce viscosity</b></p>	<ol style="list-style-type: none"> <li>1. In the category of transformer oil, PCB and waste oil containing PCB should be excluded.</li> <li>2. The filtration residue and oil sludge should be stored with labeling its contents clearly, and <b>requested to the contractor at the time of chemical waste collection.</b></li> <li>3. When mixing with waste liquids classified as A-1, it should be discharged as A-1.</li> </ol>
<p style="text-align: center;"><b>B classifi -cation (Brown)</b></p>	<p><b>Organic halogen waste liquid</b></p> <p><b>Caution: Includes 1st to 3rd washing waste liquid.</b></p>	<ol style="list-style-type: none"> <li>1. Waste liquids containing organic halogen compounds. Waste solvents such as chloroform, methylene chloride, trichloroethylene, carbon tetrachloride, trifluoroacetic acid, methyl bromide, methyl iodide, chlorobenzene, and benzyl chloride.</li> <li>2. Waste liquids of organic halogen compounds containing water.</li> </ol> <p>Waste solvents containing a small amount of non-explosive high-boiling organic compounds are acceptable.</p> <p><b>Caution: Precipitates and solid materials should be filtrated.</b></p>	<ol style="list-style-type: none"> <li>1. PCB and waste containing PCB should be excluded.</li> <li>2. Explosive materials themselves, materials that can easily make explosive materials, materials having N-O, N-N, O-O, O-X bonds, or metal acetylides, should be excluded. These materials should be treated to safe and harmless ones under the responsibility of the dischargers.</li> <li>3. The filtration residue should be stored with labeling its contents clearly, and <b>requested to the contractor at the time of chemical waste collection.</b></li> <li>4. <b>Adjust the pH to 4 or more before discharging. If it is difficult to adjust the pH, specify that in the comment box of the request form (the tank will be disposed.).</b></li> </ol>

<p style="text-align: center;"><b>C-1 classification (Green)</b></p>	<p>Incombustible organic waste liquid (which includes water)</p> <p><b>Caution:</b> Includes 1st to 3rd washing waste liquid.</p>	<ol style="list-style-type: none"> <li>1. Organic waste liquids containing <b>5% or more</b> of water</li> <li>2. Circulation-type aspirator waste liquids</li> <li>3. Organometallic waste liquid (e.g., chelated complexes).</li> <li>4. Aqueous phase used for extraction of organic reactions</li> <li>5. Water-mixed waste liquids containing organic halogen compounds should be classified as B.</li> <li>6. Waste liquids containing cyanide ions or the metal-cyano complexes should be classified as E-2.</li> </ol> <p><b>Caution: Precipitates and solid materials should be filtrated.</b></p>	<ol style="list-style-type: none"> <li>1. PCB and waste containing PCB should be excluded.</li> <li>2. <b>Adjust the pH to 4 or more before discharging. If it is difficult to adjust the pH, specify that in the comment box of the request form (the tank will be disposed.).</b></li> <li>3. When inorganic fluorine and phosphoric acid compounds are contained, <b>request to the contractor at the time of chemical waste collection.</b></li> <li>4. The filtration residue should be stored with labeling its contents clearly, and <b>requested to the contractor at the time of chemical waste collection.</b></li> <li>5. Avoid mixing oxidants such as hydrogen peroxide and perchloric acid with organic solvents.</li> <li>6. Waste liquids containing mercury should be excluded.</li> </ol>
<p style="text-align: center;"><b>C-2 classification (Green)</b></p>	<p>Photograph waste liquid</p> <p><b>Caution:</b> Includes 1st to 3rd washing waste liquid.</p>	<ol style="list-style-type: none"> <li>1. Developing waste liquid</li> <li>2. Stopping waste liquid</li> <li>3. Copying waste liquid</li> <li>4. Fixing waste liquid</li> </ol> <p><b>Caution: Precipitates and solid materials should be filtrated.</b></p>	<ol style="list-style-type: none"> <li>1. The filtration residue should be stored with labeling its contents clearly, and <b>requested to the contractor at the time of chemical waste collection.</b></li> </ol>

If you have any questions, access the following URL and send a consultation form (only in Japanese):  
<http://www.env.tohoku.ac.jp/mail/input2.html>  
 Tohoku University Environment Conservation Center (ECC)  
 TEL 795-7529, FAX 795-7530      <http://www.env.tohoku.ac.jp/index-j.html>

### Sorting, Collection, and Classification Table for experimental waste (2)

Classification and Color of the polyethylene container	Type	Target	Summary
<div style="border: 2px solid yellow; border-radius: 15px; padding: 10px; text-align: center; width: fit-content; margin: auto;"> <p><b>D</b> classifi -cation (Yellow)</p> </div>	<p>Inorganic mercury-based waste liquid</p> <p>Includes 1st to 3rd washing waste liquid.</p>	<p>1. Inorganic mercury-based waste liquids 2. When containing other heavy metals, label it such as "arsenic-containing" or "copper-containing" and specify their concentrations.</p> <p>Caution: The mercury ion concentration should be reduced to 1000 ppm or less. Caution: Precipitates and solid materials should be filtrated.</p>	<p>1. Metallic mercury, amalgam mercury, and unneeded mercury-based reagents, chemicals, organomercury, organic compounds and organic solvents should be excluded. These waste liquids should be stored at the discharger, and requested to the contractor at the time of chemical waste collection. 2. The filtration residue should be stored with labeling its contents clearly, and requested to the contractor at the time of chemical waste collection.</p>
<div style="border: 2px solid black; border-radius: 15px; padding: 10px; text-align: center; width: fit-content; margin: auto;"> <p><b>E-1</b> classifi -cation (White)</p> </div>	<p>Free cyanide-based waste liquid (Tape with red vinyl tape) Includes 1st to 3rd washing waste liquid.</p>	<p>1. Free cyanide-based waste liquids stored at a pH of 11 or more 2. The solvents should be limited to inorganic aqueous solutions.</p> <p>Caution: Precipitates and solid materials should be filtrated.</p>	<p>1. Cyanide-based waste liquid should be kept at a pH of 11 or more for the safety. If it is difficult to adjust the pH, specify that in the comment box of the request form (the tank will be disposed.). 2. When containing mercury cyanide or mercury, they should be stored at the discharger, and request the contractor at the time of chemical waste collection.</p>
<div style="border: 2px solid black; border-radius: 15px; padding: 10px; text-align: center; width: fit-content; margin: auto;"> <p><b>E-2</b> classifi -cation (White)</p> </div>	<p>Persistent cyan waste liquid</p> <p>Includes 1st to 3rd washing waste liquid.</p>	<p>1. The persistent metal-cyano complex such as <math>KAg(CN)_2</math>, <math>K_2Ni(CN)_4</math>, <math>K_3Cu(CN)_4</math>, <math>K_3Fe(CN)_6</math>, <math>K_4Fe(CN)_6</math>, <math>K_3Co(CN)_6</math>, <math>KAu(CN)_2</math>, with the dissociation constant of cyanide ions of <math>10^{-21}</math> or less 2. Free cyanide-based waste liquids containing heavy metal 3. Free cyanide-based waste liquids containing organic compounds or organic solvents</p> <p>Caution: Precipitates and solid materials should be filtrated.</p>	<p>3. The filtration residue should be stored with labeling its contents clearly, and requested to the contractor at the time of chemical waste collection.</p>

<p style="text-align: center;"><b>F-1</b> <b>classifi</b> <b>-cation</b>  (Blue)</p>	<p>General inorganic waste liquid [heavy metal waste liquid, chromic acid waste liquid]</p> <p>Includes 1st to 3rd washing waste liquid.</p>	<ol style="list-style-type: none"> <li>1. Waste liquids of inorganic acid such as hydrochloric acid, sulfuric acid, and nitric acid</li> <li>2. Waste liquids containing a chromic acid–sulfuric acid mixture</li> <li>3. Waste liquids containing heavy metals such as Fe, Ni, Co, Zn, Cu, Mn, Cd, Pb, Ga, Cr, V, Ti, Ge, Sn etc.</li> <li>4. Waste liquids containing light metals such as Al and Mg</li> </ol> <p>Caution: If gas generation is observed, discharge it after gas generation has stopped. Caution: <b>When containing organic materials, it should be classified as C–1.</b> Caution: Precipitates and solid materials should be filtrated.</p>	<ol style="list-style-type: none"> <li>1. Refer to E classification about cyan.</li> <li>2. The extracted aqueous waste liquids containing heavy metals used for organic reactions should be classified as C–1.</li> <li>3. If the waste liquid contains beryllium (carcinogen), thallium (neuropathic disorder) or osmium (mucosal skin disorder), contact the ECC.</li> <li>4. <b>When containing inorganic fluorine, phosphate compounds and bromine, it should be classified as F–2.</b></li> <li>5. The filtration residue should be stored with labeling its contents clearly, and <b>requested to the contractor at the time of chemical waste collection.</b></li> </ol>
<p style="text-align: center;"><b>F-2</b> <b>classifi</b> <b>-cation</b>  (White)</p>	<p>Inorganic fluorine-based and inorganic phosphoric acid-based waste liquid</p> <p>Includes 1st to 3rd washing waste liquid.</p>	<ol style="list-style-type: none"> <li>1. Hydrofluoric acid, etching waste liquid</li> <li>2. Inorganic phosphate waste liquid</li> <li>3. Inorganic waste liquids containing bromine or its compounds.</li> </ol> <p>Caution: Vapor inhalation of hydrogen fluoride causes pulmonary edema, and its adhesion to the skin causes hemorrhagic ulcers, so be careful. Caution: If gas generation is observed, discharge it after gas generation has stopped. Caution: Precipitates and solid materials should be filtrated.</p>	<ol style="list-style-type: none"> <li>1. In the case of etching waste liquid, specify metals that may be mixed in the comment box of the request form.</li> <li>2. Aqueous ammonium solutions should not be included to the extent possible.</li> <li>3. The filtration residue should be stored with labeling its contents clearly, and <b>requested to the contractor at the time of chemical waste collection.</b></li> </ol>
<p style="text-align: center;"><b>G-A</b> <b>classifi</b> <b>-cation</b>  (Orange)</p>	<p>Biological waste liquid (flammable one)</p> <p>Includes 1st to 3rd washing waste liquid.</p> <p>Infectious waste and mutagenic substances are excluded.</p>	<p>Waste liquids that is non-infectious and <b>easy to burn</b> Ex.) Xylene waste liquids, xylene–alcohol waste liquids</p> <p>Caution: Precipitates and solid materials should be filtrated.</p>	<ol style="list-style-type: none"> <li>1. <b>The water content should be 5% or less.</b></li> <li>2. The filtration residue should be stored with labeling its contents clearly, and <b>requested to the contractor at the time of chemical waste collection.</b></li> <li>3. If filtration with filter paper is difficult, use a sieve of about 80 mesh.</li> </ol>

<p style="text-align: center;"><b>G-C classifi -cation (Orange)</b></p>	<p>Biological waste liquid (inflammable one)</p> <p>Includes 1st to 3rd washing waste liquid.</p> <p>Infectious waste and mutagenic substances are excluded.</p>	<p>Waste liquid that is non-infectious and is <b>difficult to burn</b></p> <p>Ex.) Ethidium bromide waste liquid 20% -formalin waste liquid</p> <p>Caution: Precipitates and solid materials should be <b>filtrated.</b></p>	<ol style="list-style-type: none"> <li>1. Waste liquids containing <b>5% or more</b> of water</li> <li>2. <b>Adjust the pH to 4 or more before discharging. If it is difficult to adjust the pH, specify that in the comment box of the request form (the tank will be disposed.)</b></li> <li>3. <b>If the concentration of ethidium bromide waste liquid is 1 ppm or more, specify that in the comment box of the request form (the tank will be disposed.)</b></li> <li>4. The filtration residue should be stored with labeling its contents clearly, and <b>requested to the contractor at the time of chemical waste collection.</b></li> <li>5. If filtration with filter paper is difficult, use a sieve of about 80 mesh.</li> </ol>
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