

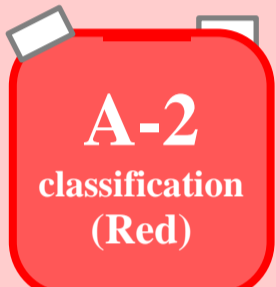

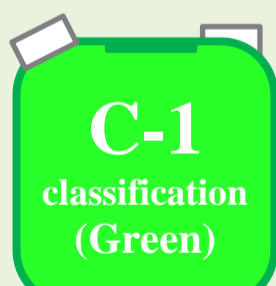
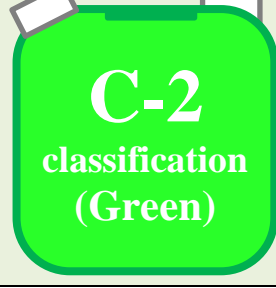



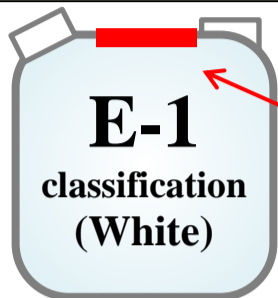
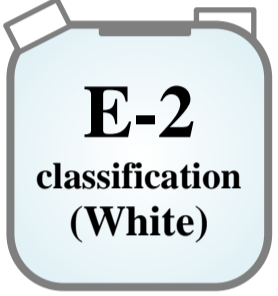



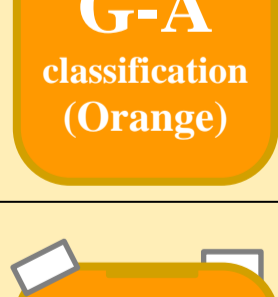
Sorting, Collection, and Classification Table for Experimental Waste (1)

Revised in June 2023

Classification and Color of the Tank	Type	Target	Summary
 A-1 classification (Red)	Flammable organic waste liquid (The tank size is 10 L.) Caution: The 1st to the 3rd washing waste liquids to be included together.	1. Aliphatic hydrocarbons. Waste solvents such as petroleum ether, hexane, heptane, and octane. 2. Oxygen-containing aliphatic compounds. Waste solvents such as acetal, alcohols, acetone, ethyl methyl ketone, and acetic acid esters. 3. Nitrogen-containing aliphatic compounds. Waste solvents such as acetonitrile. 4. Aromatic compounds. Waste solvents such as benzene and toluene. 5. Nitrogen-containing aromatic compounds. Waste solvents such as pyridine. 6. Other liquids that are classified as class I petroleum of hazardous materials. Waste solvents containing a small amount of non-explosive high-boiling organic compounds are acceptable. Caution: Precipitates and solid materials have to be filtrated.	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, are excluded. These materials have to be treated to safe and harmless ones under the responsibility of the dischargers. 2. Chemicals that cause health problems such as benzidine are excluded. These materials have to be treated to safe and harmless ones under the responsibility of the dischargers. 3. Filtration residues should be stored with their contents clearly identified, and their further treatment is outsourced to the contractor when collecting waste chemicals. 4. When containing heavy metals, specify their concentrations in the comment box of the request form. 5. When containing organic halogen compounds, it is classified as B.
 A-1 classification (metal)			
Containing special flammable materials		1. Special flammable materials containing flammable organic waste liquid Caution: Precipitates and solid materials have to be filtrated.	1. Special flammable materials , such as diethyl ether and carbon disulfide and pentane, should be reduced to 5% or less to the waste liquid and metal tanks discharged.
 A-2 classification (Red)	Waste oil	1. Waste oil such as kerosene, mineral spirits, light oil, and turpentine oil. 2. Waste oil such as heavy oil, creosote oil, spindle oil, turbine oil, and transformer oil. 3. Waste oil such as gear oil and motor oil. 4. Waste oil extracted from plants and animals (liquid). 5. Other liquids that are classified as class II to IV petroleum of hazardous materials. Waste solvents containing a small amount of non-explosive high-boiling organic compounds are acceptable. Caution: Precipitates and solid materials have to be filtrated. Caution: High viscosity waste oil should be diluted with kerosene etc. to reduce the viscosity.	1. Among transformer oil, PCB and waste oil containing PCB are excluded. 2. Filtration residues should be stored with their contents clearly identified, and their further treatment is outsourced to the contractor when collecting waste chemicals. 3. When mixing with waste liquids classified as A–1, it should be discharged as A–1.
 B classification (Brown)	Organic halogen waste liquid Caution: The 1st to the 3rd washing waste liquids to be included together.	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. 2. Waste liquids of organic halogen compounds containing water. Waste solvents containing a small amount of non-explosive high-boiling organic compounds are acceptable. Caution: Precipitates and solid materials have to be filtrated.	1. PCB and waste containing PCB are excluded. 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, are excluded. These materials have to be treated to be safe and harmless ones under the responsibility of the dischargers. 3. Filtration residues should be stored with their contents clearly identified, and their further treatment is outsourced to the contractor when collecting waste chemicals. 4. Adjust the pH to 4 or higher 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.).
 C-1 classification (Green)	Incombustible organic waste liquid (Inclusive of water) Caution: The 1st to the 3rd washing waste liquids to be included together.	1. Organic waste liquids containing 5% or higher of water. 2. Waste liquids of circulation-type aspirator. 3. Organometallic waste liquid (e.g., chelated complexes). 4. Aqueous phase having been used for extraction of organic reactions. 5. Water-mixed waste liquids containing organic halogen compounds are classified as B. 6. Waste liquids containing cyanide ions or the metal-cyano complexes are classified as E–2. Caution: Precipitates and solid materials have to be filtrated.	1. PCB and waste containing PCB are excluded. 2. Adjust the pH to 4 or higher 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.). 3. When inorganic fluorine and phosphoric acid compounds are contained, their treatment is outsourced to the contractor when collecting waste chemicals. 4. Filtration residues should be stored with their contents clearly identified, and their further treatment is outsourced to the contractor when collecting waste chemicals. 5. Avoid mixing oxidants such as hydrogen peroxide and perchloric acid with organic solvents. 6. Waste liquids containing mercury are excluded.
 C-2 classification (Green)	Photograph waste liquid Caution: The 1st to the 3rd washing waste liquids to be included together.	1. Developing waste liquid. 2. Stopping waste liquid. 3. Copying waste liquid. 4. Fixing waste liquid. Caution: Precipitates and solid materials have to be filtrated.	1. Filtration residues should be stored with their contents clearly identified, and their further treatment is outsourced to the contractor when collecting waste chemicals.

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 (extension 92-7529 (only in Japanese)) <http://www.env.tohoku.ac.jp/index-j.html>

Sorting, Collection, and Classification Table for Experimental Waste (2)

Classification and Color of the Tank	Type	Target	Summary
 <p>D classification (Yellow)</p>	<p>Inorganic mercury-based waste liquid</p> <p>Caution: The 1st to the 3rd washing waste liquids to be included together.</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.</p> <p>Caution: Precipitates and solid materials have to be filtrated.</p>	<p>1. Metallic mercury, amalgam mercury, and unneeded mercury-based reagents, chemicals, organomercury, organic compounds and organic solvents are excluded. These waste liquids have to be stored at the discharger, and their further treatment is outsourced to the contractor when collecting waste chemicals.</p> <p>2. Filtration residues should be stored with their contents clearly identified, and their further treatment is outsourced to the contractor when collecting waste chemicals.</p>
 <p>E-1 classification (White)</p>	<p>Free cyanide-based waste liquid (Wrap in a red tape)</p> <p>Caution: The 1st to the 3rd washing waste liquids to be included together.</p>	<p>1. Free cyanide-based waste liquids that have been stored at a pH of 11 or higher. 2. The solvents are limited to inorganic aqueous solutions.</p> <p>Caution: Precipitates and solid materials have to be filtrated.</p>	<p>1. Cyanide-based waste liquid must be kept at a pH of 11 or higher 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.).</p> <p>2. When containing mercury cyanide or mercury, they have to be stored at the discharger, and their further treatment is outsourced to the contractor when collecting waste chemicals.</p> <p>3. Filtration residues should be stored with their contents clearly identified, and their further treatment is outsourced to the contractor when collecting waste chemicals.</p>
 <p>E-2 classification (White)</p>	<p>Persistent cyan waste liquid</p> <p>Caution: The 1st to the 3rd washing waste liquids to be included together.</p>	<p>1. The persistent metal-cyano complex such as $KAg(CN)_2$, $K_2Ni(CN)_4$, $K_3Cu(CN)_4$, $K_3Fe(CN)_6$, $K_4Fe(CN)_6$, $K_3Co(CN)_6$, $KAu(CN)_2$, with the dissociation constant of cyanide ions of 10^{-21} 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 have to be filtrated.</p>	<p>3. Filtration residues should be stored with their contents clearly identified, and their further treatment is outsourced to the contractor when collecting waste chemicals.</p>
 <p>F-1 classification (Blue)</p>	<p>General inorganic waste liquid [Heavy metal waste liquid, chromic acid waste liquid]</p> <p>Caution: The 1st to the 3rd washing waste liquids to be included together.</p>	<p>1. Waste liquids of inorganic acid such as hydrochloric acid, sulfuric acid, and nitric acid. 2. Waste liquids containing a chromic acid-sulfuric acid mixture. 3. Waste liquids containing heavy metals such as Fe, Ni, Co, Zn, Cu, Mn, Cd, Pb, Ga, Cr, V, Ti, Ge, Sn etc. 4. Waste liquids containing light metals such as Al and Mg.</p> <p>Caution: If gas evolution is observed, discharge it after gas evolution has ceased. Caution: When containing organic materials, it is classified as C-1. Caution: Precipitates and solid materials have to be filtrated.</p>	<p>1. For cyan, refer to E classification. 2. The extracted aqueous waste liquids containing heavy metals having been used for organic reactions are classified as C-1. 3. If the waste liquid contains beryllium (carcinogen), thallium (neuropathic disorder) or osmium (mucosal skin disorder), contact the ECC. 4. When containing inorganic fluorine, phosphate compounds and bromine, it is classified as F-2. 5. Filtration residues should be stored with their contents clearly identified, and their further treatment is outsourced to the contractor when collecting waste chemicals.</p>
 <p>F-2 classification (White)</p>	<p>Inorganic fluorine-, bromide-, and phosphoric acid-based waste liquid</p> <p>Caution: The 1st to the 3rd washing waste liquids to be included together.</p>	<p>1. Hydrofluoric acid, etching waste liquid. 2. Inorganic phosphate waste liquid. 3. Inorganic waste liquids containing bromine or its compounds.</p> <p>Caution: Vapor inhalation of hydrogen fluoride causes pulmonary edema, and its adhesion to the skin causes hemorrhagic ulcers. Caution: If gas evolution is observed, discharge it after gas evolution has ceased. Caution: Precipitates and solid materials have to be filtrated.</p>	<p>1. In the case of etching waste liquid, specify metals that may be mixed in the comment box of the request form. 2. Aqueous ammonium solutions should not be mixed as much as possible. 3. Filtration residues should be stored with their contents clearly identified, and their further treatment is outsourced to the contractor when collecting waste chemicals.</p>
 <p>G-A classification (Orange)</p>	<p>Biological waste liquid</p> <p>Caution: The 1st to the 3rd washing waste liquids to be included together. Caution: Infectious waste and mutagenic substances are excluded.</p>	<p>Waste liquids that is non-infectious and highly-flammable. For example, xylene waste liquids, xylene-alcohol waste liquids.</p> <p>Caution: Precipitates and solid materials have to be filtrated.</p>	<p>1. The water content is 5% or less. 2. Filtration residues should be stored with their contents clearly identified, and their further treatment is outsourced to the contractor when collecting waste chemicals. 3. If filtration with a filter paper is difficult, use a sieve of about 80 mesh.</p>
 <p>G-C classification (Orange)</p>	<p>Biological waste liquid (Inflammable one)</p> <p>Caution: The 1st to the 3rd washing waste liquids to be included together. Caution: Infectious waste and mutagenic substances</p>	<p>Waste liquid that is non-infectious and flame retardant. For example, ethidium bromide waste liquid, 20%-formalin waste liquid.</p> <p>Caution: Precipitates and solid materials have to be filtrated.</p>	<p>1. Waste liquids containing 5% or more of water. 2. Adjust the pH to 4 or higher 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.). 3. If the concentration of ethidium bromide waste liquid is 1 ppm or higher, specify that in the comment box of the request form (the tank will be disposed.). 4. Filtration residues should be stored with their contents clearly identified, and their further treatment is outsourced to the contractor when collecting waste chemicals. 5. If filtration with a filter paper is difficult, use a sieve of about 80 mesh.</p>