Product Introduction

Wastewater treatment agents

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Introduction

Industrial wastewater contains various substances such as organic substances and heavy metals, and it is necessary to separate and remove the pollutant components because the wastewater causes environmental destruction when the wastewater is directly flowed into rivers and the sea. We provide optimum treatment agents and treatment facilities for various wastewaters.

Product Summary

As for industrial wastewater containing heavy metals, there is a neutralization aggregation method as the most common wastewater treatment method, and a wastewater treatment process as shown in Figure 1 is performed in a plating factory. The wastewater treatment agents of JASCO have lined up heavy metal scavengers, coagulation aids, polymer flocculants, defoaming agents, etc. mainly used in pH adjustment tanks or coagulation tanks. (Table 1)

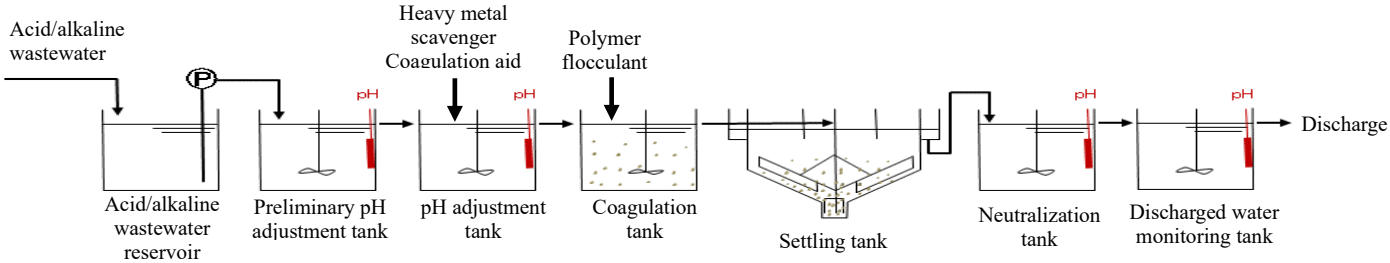


Figure 1: Wastewater Flow Diagram[1] (acid/alkaline)

Table 1: Major Wastewater Treatment Agents of JASCO

Purpose	Type	Product name	Purpose	Type	Product name
Coagulation aids (inorganic)	Aluminum	W-803	Polymer flocculants	Cationic	W-830
		W-814			7F026
		W-850B		Anionic	W-835
		P-0415			W-836 (medium anion)
	Calcium	W-801			W-837 (emulsion type)
	Magnesium	M-0604			W-1200A (strong anion)
		7H049			7F030 (medium anion)
	Other	7D012			7F031 (low-priced of W-835)
Coagulation aids (organic)	Dicyandiamide	W-840			7M054 (strong anion)
		7G039		Nonionic	7G046
	Melamine	K-0403	Defoaming agents	Silicon	Defoaming agent S
Heavy metal scavengers	Inorganic	M-0925			Defoaming agent R (solid)
		7F033			7G036
	Organic	W-850A	Reducing agents	For hexavalent chromium	W-822
		W-856			W-825
		7F025			
	Inorganic organic mixture	W-855			

Treatment process

Depending on the components of the wastewater, the treatment is divided into cyanogen, chromium, and acid/alkaline. The treatment process of the acid/alkaline is as shown in Figure 1. In addition to this, a decomposition step of cyanogen is required in the case of cyanogen, and a reduction step of chromium is required in the case of chromium. For the components in Table 2, it is necessary to separately treat or dilute them. (except for the substances 1 and 2 in Table 2)[1]

Table 2: Wastewater and Concentrated Waste Liquid containing Components that Need Separate Treatment

1	Trivalent chromium
2	Nickel-cyanide complex
3	Complexing agent (chelating agent)
4	High COD, BOD
5	Oil, Surfactant
6	Fluorine (especially Borofluoride)
7	Hydrogen peroxide
8	Nitrogen, Phosphorus

Mechanisms

Metal ions other than hexavalent chromium have regions where hydroxide is formed and the solubility decreases. Solid-liquid separation of wastewater is facilitated by utilizing this precipitation range. Basically, wastewater containing heavy metals is treated using neutralization aggregation. (Figures 2 and 3)

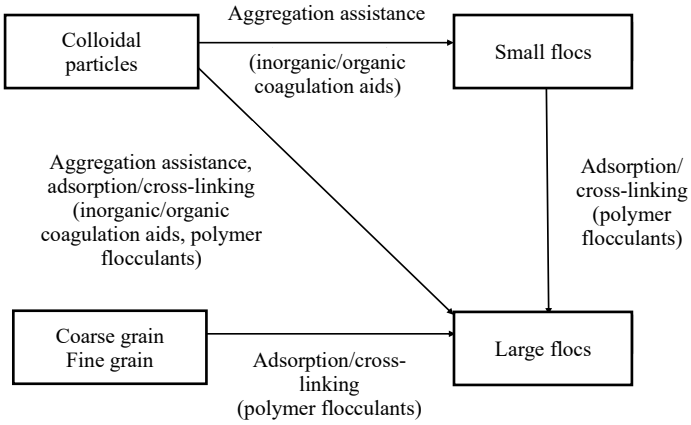


Figure 2: Process of Floc Formation

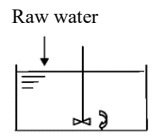
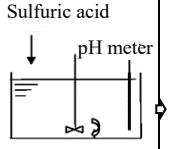
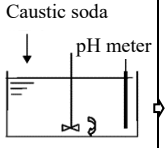
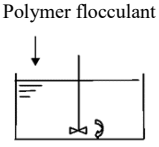
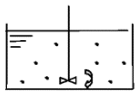
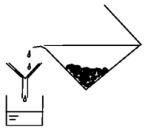
Add raw water	Primary pH adjustment (pH2.0 to 3.0)	Secondary pH adjustment (pH9.0 to 11.0)	Aggregation 1	Aggregation 2	Solid-liquid separation	Analysis
						1. hexavalent chromium Determine the filtrate by pack test or diphenylcarbazide absorption spectrophotometry. 2. zinc, total chromium, copper, nickel, etc. Bring the filtrate to an acidic atmosphere with nitric acid or hydrochloric acid for heavy metal determination, and measure by pack test or atomic absorption spectrophotometry.
Add raw water into the beaker of about 300 to 500 mL until its 80 percent full.	Set the agitator and pH meter. Normally, about 10% dilute sulfuric acid is added with the target of pH 2.5.	About 10% caustic soda is added with the target of pH 10.0.	Take out the pH meter and add 2 to 5 mL/L of 0.05 to 0.1% anionic polymer flocculant.	Immediately after adding the polymer flocculant, stir strongly for 10 seconds, stir weakly for 60 seconds, stop stirring, and let it stand for 10 minutes.	After 10 minutes, check the SV (volume of sludge (%)) and filter the supernatant through a very coarse paper or cloth to collect the filtrate.	

Figure 3: Example of Neutralization Agglutination Experiment

In closing

In wastewater treatment, inflow control is important, and fractionation and treatment according to the components of wastewater are necessary. For actual industrial effluent, sufficient verification is necessary in many cases where the basic flow alone does not work. JASCO has developed and offered various wastewater treatment agents such as heavy metal scavengers, coagulation aids, polymer flocculants, and defoaming agents based on previous experience.

Literature

1: Japan Surface Finishing Suppliers Association kankyoutaisakuiinkai mekkihaisuisyorisisetunohyouzyunnsiyousisin, 5, 53-54 (2012)