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CABLE FLOTATION

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1. General Information

With the development of technology, the product variety and production rate in the electrical-electronics sector has been increasing. Depending on the increase in purchasing power and the desire to benefit from new technology, the frequency of product change increases and accordingly, unused products are scrapped. Scrapped products are called electronic waste (e-waste). E-waste is not suitable for storage like other types of waste. The storage of these wastes causes serious damage to the environment and living because of the toxic element and components. On the other hand, e-waste contain valuable metals such as Au, Ag, Cu and PGM group (Ahirwar & Tripathi, 2021).



Şekil 1. The scrapped E-waste.

Due to the high valuable metal content, E-waste are preferred as a secondary source. Thanks to the recycling of these wastes, primary resources will be preserved by providing metal recovery, saving the energy consumed during primary resources will be ensured, and harmful components will not be stored, and the damage to the environment and living beings will be minimized (Kaya, 2016).

One of the important secondary source for Cu is cables. Cu has the high electric conductivity that makes it to use in electronic sector. Cu can be beneficiated using several alternative techniques such as gravity separation, flotation or metallurgical techniques

In this experiment, the selective recovery of metals and plastics from scrap cables will be investigated by the flotation method, which can be used as an alternative for industrial application.

2. Purpose of Experiment

The investigation of selective metal recovery from waste cables by flotation

3. Experimental Procedure

Sample: 200 gr waste cable (copper, aluminum, alloys and plastic types)

Used material-device: Flotation machine, balloon jock, spray bottle, stopwatch, measure, pH meter.

Method: Flotation experiments will carried out using 3418 A as collector and MIBC as frother in the experiment performed in 2 stages.

- Conditioning time: 5 min
- Flotation time: 2 min



Şekil 2. Cu cable

Groups	3418 A (g / t)		MIBC (g / t)	
	1st stage	2nd stage	1st stage	2nd stage
1	0	50	0	0
2	0	50	20	20
3	50	50	20	20
4	100	100	20	20
5	200	200	20	20

4. Requests

1. Provide information about the studies carried out in Turkey regarding the collection and classification of e-waste.
2. Which methods can be used in metal recovery from waste cables alternative to flotation? Explain your suggestion giving reasons.
3. Discuss the effect of the amount of frother and collector on the products obtained by observing the products obtained by each group as a result of the experiments. (This will not discussed during pandemic)

REFERENCES

- Ahirwar, R., & Tripathi, A. K. (2021). E-waste management: A review of recycling process, environmental and occupational health hazards, and potential solutions. *Environmental Nanotechnology, Monitoring & Management*.
- Kaya, M. (2016). Recovery of metals and nonmetals from electronic waste by physical and chemical recycling processes. *Waste Management*, 64-90.

