General course　Group110
# How to get PVC from eraser shavings

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Motivation

When I was studying,I came up with eraser shavings can be available for making new eraser.

Previous Research

We mixed eraser shavings with cyclohexanone and dissolved in hot water, then filtered it using glass filter paper and silica gel, which have the property of absorbing graphite. We mix it with a plasticizer and heated to solidify.

図1　　図2
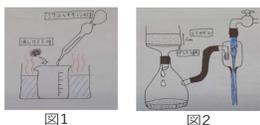
How to resarch

①Collect white eraser shavings.
②MIx with an organic solvent called aceto for 30 min to dissolve the eraser shavings.
　(eraser shavings:acetone)
　＝(1:9　1:5　1:10　1:20)
③Filter the mixture by placing silica gel on filter paper and adding methanol to the filtrate.
④We identify what is the white substance
　1)burn it
　2)burn it with a heated copper wire
⑤We change the heating time,which use the most white substance appeared ratio
　(30min　35min　40min)
⑥collectin rate calculation
collection rate=the amount of the substance/ the amount of eraser shaving*100

Hypothesis

　When the ratio between eraser shavings and acetone is 1:20, the eraser shavings dissolve well and we can get a large amount of PVC. Also, the longer the heating time is, the more PVC we can get .

Result

①Experiment of changing the ratio between eraser shavings and acetone

ratio	result
1：9	couldn't filter
1：5	couldn't dissolve
1：10	couldn't filter
1：20	white substance appeared(0.01g)

②Experiment of　changing heating time

heating time	result
30 min	white substance appeared (0.01g)
35 min	white substance appeared(0.1g)
40 min	white substance appeared(0.4g)

③Identification of the substance
1)Black smoke occurred.
2)fire turned it green.
④culaculate collection rate
appeared substance(g)/eraser shaving(g)
=0.4/2.5=0.16
　so the collection rate is 16%

Consideration

　When the ratio is 1:20, we could get the substance more. Also,the longer the heating time, the more the substance appeared. From result ③, it is believed that the appeared substance is PVC. However, the recovery rate when the most PVC appeared was 16%, so that it can be said that the way we experimented with is not efficient.

Perspestive

　We could not get accurate datas because the number of studies was small and we could not keep the temperature belong 50℃.

References

・「消しカスを活カス〜そして未来を照らす〜」山口県下関西高等学校　自然科学科　化学1班
・塩素の入ったプラスチックの見分け方 http://qualita.co.jp/recycle-plastic.html