Alternative material for plastic

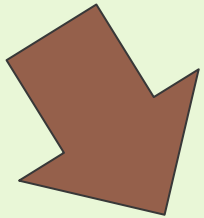
【W202012-1】Miyazaki Omiya Senior High School

The amount of plastic waste per capita

1st	USA	47.5kg
2nd	Japan	33.0kg
3rd	EU	32.5kg

Has increased more than 50 times in the last 20 years

Current paper containers
(most coated by plastic)



Containers only made by
paper material.

Experiment 1.

Papermaking process

Put both pulp on a gauze

Let it dry

Find the relation between the ratio and the strength.

Ratio

Mixing ratio	0:1	1:5	1:2	1:1	2:1	5:1	1:0
Goosegrass (g)	0	12.5	25	37.5	50	37.5	75
Paper (g)	75	37.5	50	37.5	25	12.5	0

Test steps

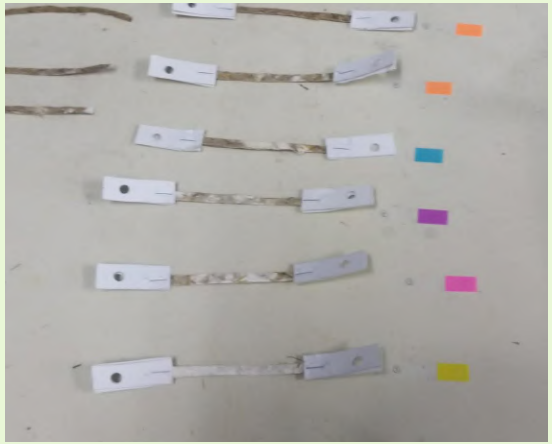
1. Cut the paper into 100mm x 5mm.

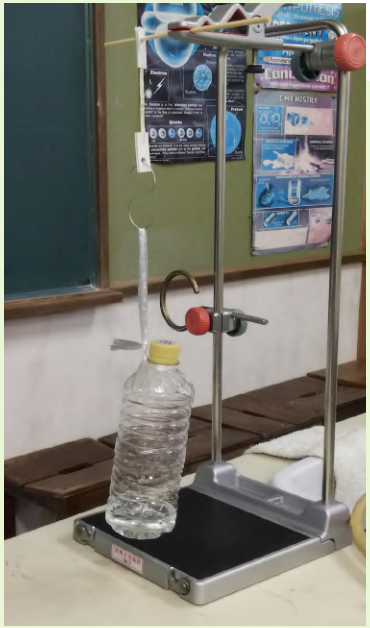
2. Cut a piece of construction paper 40mm x 15mm.

3. Tape both sides to the back, pinch both ends together, and make a hole in the center.

4. Attach the paper to an S-shaped wire and hung from a plastic bottle weight.

5. Take down the maximum weight

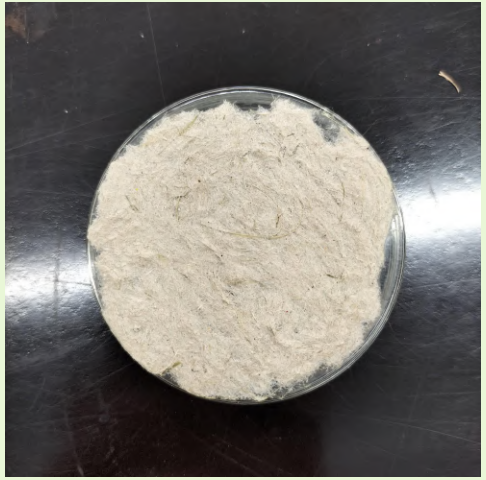




Experiment 2.

Papermaking process

Put all the pulp on a gauze



Let it dry

Find the relation between the pulp ratio and the strength

Ratio

ratio	1:1	5:1	1:5
Carton pulp(g)	37.5	62.5	12.5
Newspaper pulp(g)	37.5	12.5	62.5

Steps

1.Cut the paper into 100mm x 5mm.

2.Cut a piece of construction paper 40mm x 15mm.

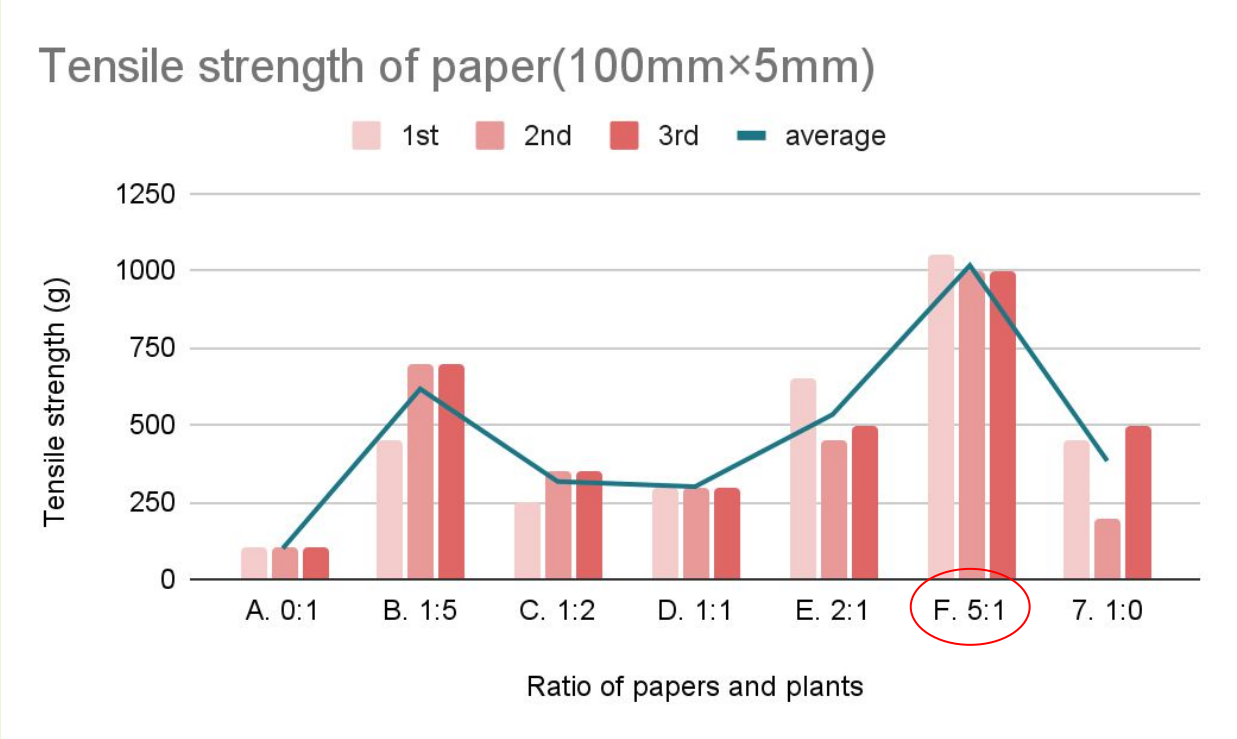
3. Staple the construction paper on the paper we Made for 1cm long

4. Hang the construction paper on the spring balance then pull the paper we made.

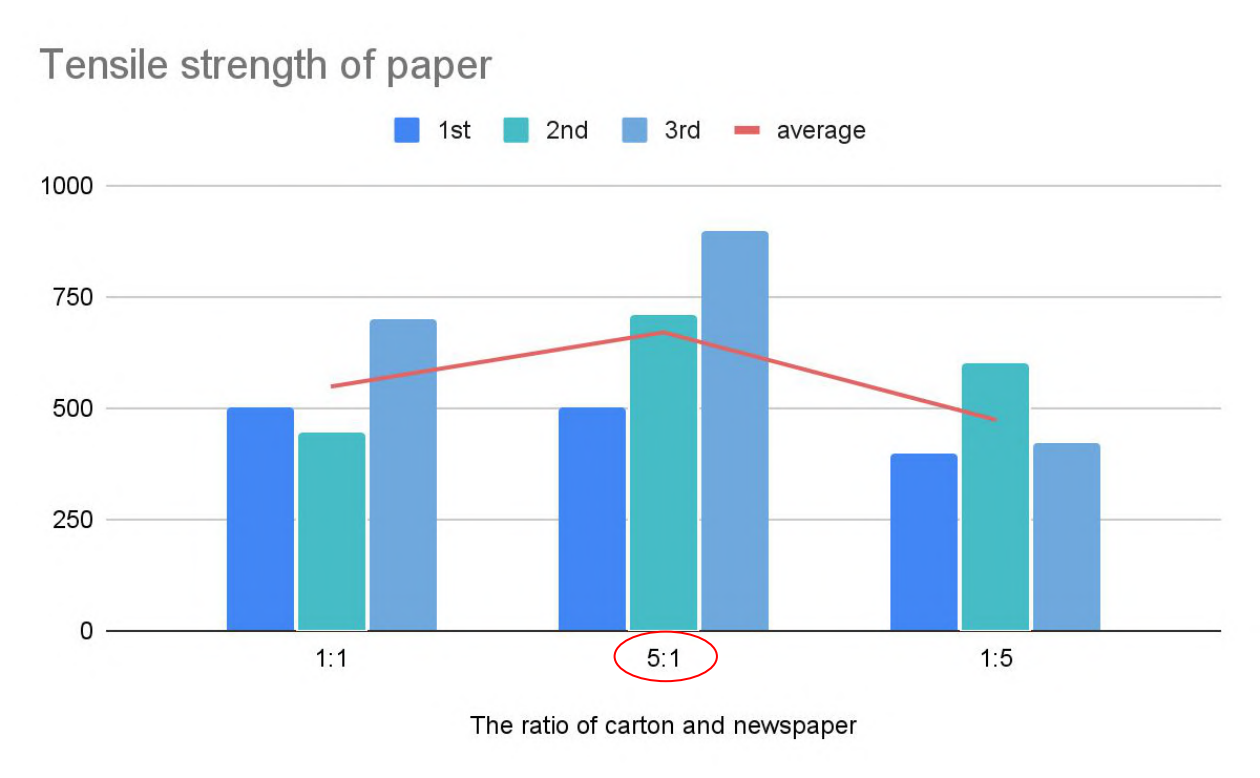
5. Take down the maximum weight which the paper does not break .

Conclusion

Experiment 1.



Experiment 2.



Future Work

1. Measure the data of the plastic and make a comparison

2. Measure the other indicators

Acknowledgement and References

We would like to thank Mr.Sekito for advising us what is happening in the world. Without his advice, we cannot do our experiment and we cannot reach our conclusion.Mother earth news (2017) Making paper from plants and leaves ・Eisei-an (2020) Let's make paper with natural materials・Japan External Trade Organization (JETRO) (2019) Japan's deplastic movement accelerates in Taiwan September 22, 2021・Japan Ethical Promotion Council (2021) "Disposable Plastics" world ranking released・Ministry of the Environment (2021) Domestic and overseas situation surrounding plastics・kikakurui.com (2015) Pulp - Hand-drawn paper for testing - Test method of physical properties ment (2016) Ministry of the Environment's efforts on marine waste and microplastics

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