

Improvement of Casein Plastic II

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Abstract

Casein in milk was precipitated using acetic acid and dried using a vacuum desiccator to create casein plastic. Fibers were added to the casein plastic to increase its durability value. The addition of the fibers increased the durability value.

Introduction

The disruption of ecosystems by plastic waste has become a problem, and we aim to put casein plastic to practical use as a first step toward preventing this problem. In addition, fibers will be added to make it stronger.

Theory and Experiment

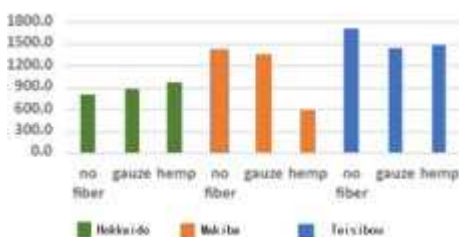
Heat 400mL of milk. 20mL of acetic acid diluted to 5% is added to the heated milk. Stir and strain out the precipitate using a net. The mixture is then inserted into a mold and force is applied from above. The molded product is placed in a vacuum desiccator and dried to produce casein plastic. In the fiber experiment 1, it was added so as to sandwich the fibers, and in the fiber experiment 2, it was added at the same time as the acetic acid. Endurance experiments were then performed.

Results

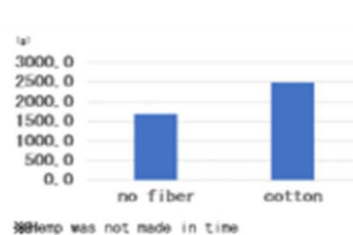
In fiber experiment 1, durability values decreased except in Hokkaido.

In fiber experiment 2, durability values increased.

(Graph of fiber experiment 1)



(Graph of fiber experiment 2)



Discussion

Fiber experiment 1: We considered that the sandwiching of the fibers, not removing the oil from the hemp, and the amount and thickness of the fibers contributed to the decrease in durability value.

Fiber experiment 2: We considered that the strength increased as the amount of cotton added approached the proper value.

Conclusion

The durability value could be increased by adding fiber.

References

創成化学工学実験 (ichinoseki.ac.jp)