

# MAKERS MANUAL #10

## Tessa Silva

# MILK PLASTIC

### INTRODUCTION

This manual provides step-by-step instructions on how to create a series of small sculptural key rings from a natural material made from milk. CASEIN is the name of the protein that can be extracted from milk, and commercial plastics made from this protein existed in the early 1900's.

You will learn to recreate a version of this 'milk plastic' at home by carrying out the very simple chemical process of separating milk curds from milk whey. This manual will offer suggestions on how to sculpt and press the milk material into different forms that can be used as decorative key rings – but feel free to create beyond this restriction! Try to source your milk responsibly or ask supermarkets if they have milk that has passed its sell by date and would otherwise go to waste.

#### STEP 1

Pour 200ml of skimmed milk into a saucepan and heat gently.



#### STEP 2

Stir in your food colouring of choice whilst the milk is warming up – one drop will result in a pastel colour, up to a tablespoon will result in a very dark colour. Note: the final result after drying will always be slightly darker than the colour you start with.

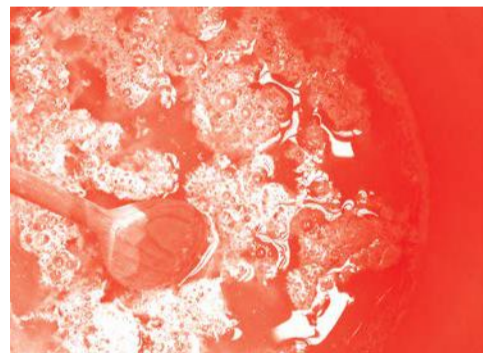


#### STEP 3

Remove the milk from the heat before it starts to simmer – you should still be able to put a finger in the milk and feel that it is very warm but not boiling!

#### STEP 4

Measure out 20ml of vinegar (the ratio of milk to vinegar is always approx 10:1) and stir it into the milk. You should see the milk curdle instantly and separate into solids and liquids.



If this doesn't happen straight away it means you have not added enough vinegar so gradually add splashes until you see it separate.

#### STEP 5

Drain away the liquids either through a sieve or piece of cheesecloth, or simply by spooning the solid material out of the pan.

#### STEP 6

You now have your dyed milk protein material! Gently squeeze out any excess liquid from the material - you want it wet enough to manipulate but not dripping.



#### STEP 7

From this point on the forms that you can create are endless. An example is to squeeze/roll the material into long worm-like forms and then experiment with twisting and tying into different knots. If you have any cookie cutter forms at home you can firmly press the material into the forms.



#### STEP 8

Using a nail/chopstick/drill bit or any other pointy object, gently press a hole all the way through your form. This will be to attach to a key ring once dried.



### BIO OF THE DESIGNER

Tessa Silva is a London based artist and maker of sculptural objects. Her practice focuses on how society is shaped by the materials that we use, and what that can tell us about human behaviours. With a focus on material research and exploration, the work draws inspiration from production methods that existed in the past.

### FURTHER READING

→ Why Materials Matter by Seetal Solamki Available at STORE STORE

→ Parsons bread book: A celebration of the art of baking bread and the great bakers of New York City  
Parsons School of Design, 1974  
<http://www.publiccollectors.org/Parsons-BreadBook.pdf>

→ The Story of Erinoid  
John Morgan, 2014

→ Museum of Design In Plastics  
<https://www.modip.ac.uk/>

→ Film: Cheese Making at Home, 1918  
<https://player.bfi.org.uk/free/film/watch-cheese-making-at-home-1918-online>

### LIST OF THINGS

#### MATERIALS

- 1 or 2 litres skimmed milk (MUST be skimmed containing 0% fat)
- 200ml white vinegar or lemon juice
- Food colouring (assorted)
- Key-ring link/chain

#### TOOLS

- Hob
- Saucepan
- Measuring jug
- Stirring spoon
- Sieve or cheesecloth
- Nail or drill bit
- Cookie-cutter forms (optional)

Makers Manual is a collaborative project between exciting makers and STORE STORE. Participation is free and no design background is necessary. You can share your creations using #makersmanual. We will pick our favourite submissions and publish the results in a limited printed edition of all of the manuals. Everyone who makes it into the book will receive a free copy.

This project is supported by Coal Drops Yard.

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#### STEP 9

Place your sculptural key ring piece in an airy place to dry. Depending on the size of your piece and the weather conditions it should dry to form a hard mass overnight.

#### STEP 10

Repeat the process! You may find that your first attempt didn't go to plan – use the first 200ml of milk to familiarise yourself with the way the material feels and how comfortable you are sculpting it. The material is at its best for forming immediately after it is taken out of the water and is still warm – so either pre-plan your forms or think fast! The more you play with it the harder it is to manipulate.

#### STEP 11

2 litres of milk allows you to repeat this exact process 10 times over, but feel free to alter the quantity of milk that you use to make larger or smaller amounts at a time. Just remember to take into consideration the milk to vinegar ratio when doing so.

#### STEP 12

Once all your pieces have dried – add them to your key chains. You can also sand down any flat edges for a smooth finish.



