

# Early ON

@ Home

## Homemade "Plastic"

### Supplies

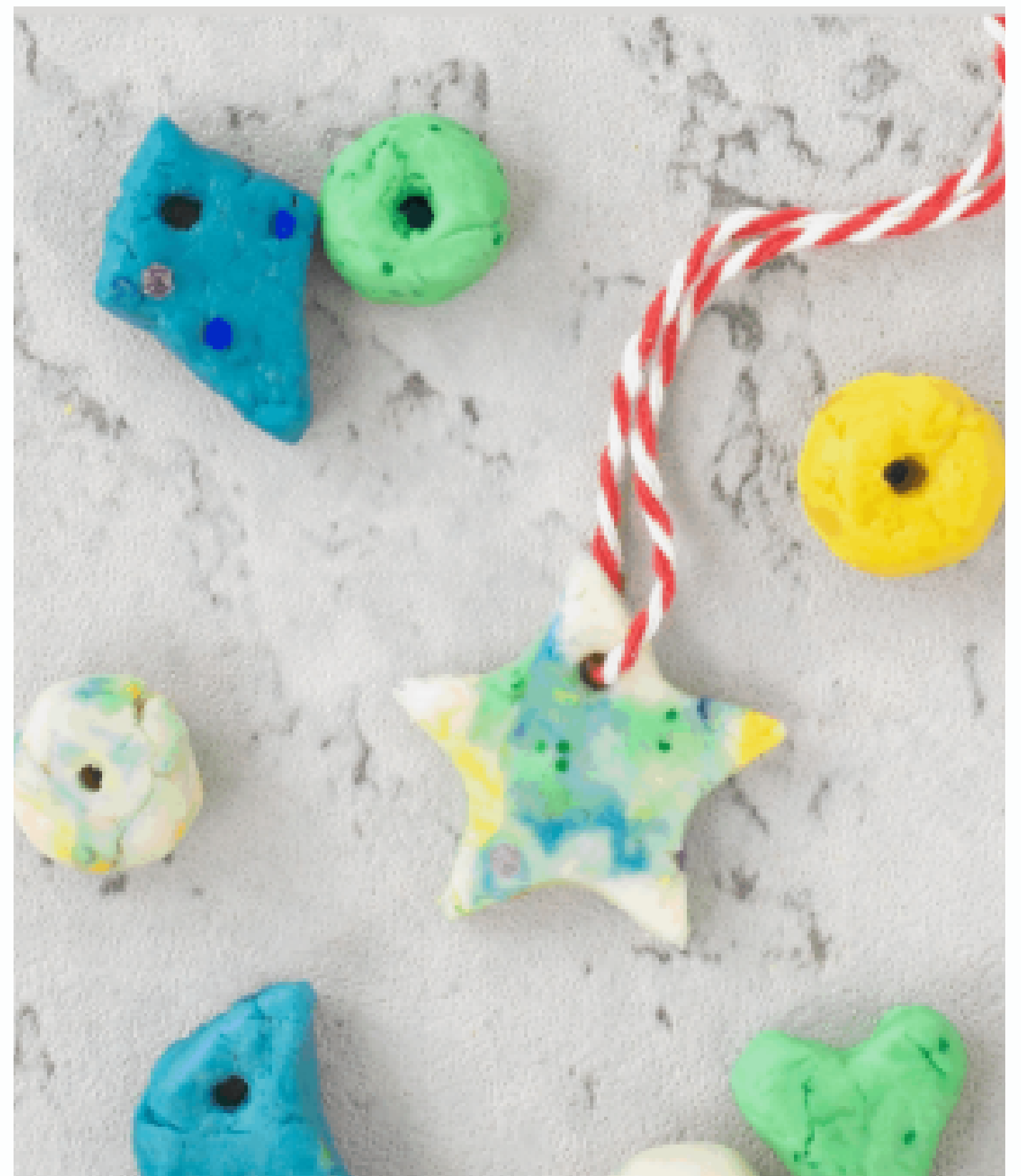
- 1 cup of milk
- 4 tbsp. white vinegar

### Directions

- Heat milk in the microwave for 1.5 minutes. It needs to be hot, but not boiling.
- Stir in 4 tbsp. of white vinegar. The milk will start to clump as the acid in the vinegar breaks down the milk protein. Stir for about 1 minute.
- Strain the mixture pushing liquid out of the clumps. The clumps should remain in the strainer.
- Transfer the clumps to a paper towel. Continue to push out the liquid.
- Shape and add food colouring if you wish. Cookie cutters are a great idea to use to shape.
- Let dry for 48 hours. Once dry they are ready to be used for decoration, play, Christmas tree ornaments, etc.

### The Science

Milk consists of casein and whey protein. Casein has a negative charge, disperses and usually folds up. When vinegar is added to milk, positive ions neutralize the casein, they unfold and rearrange into long polymer chains. The casein coagulates to form a solid.



### Questions to Ask Before

- What do you think the milk will do in the vinegar?
- What shapes will you create?

### Questions to Ask After

- What would happen if we added food colouring to the mixture?
- How long do you think the plastic will last?