



national science week 2021

Tempering Chocolate

What is tempered chocolate?

It is chocolate that has gone through the tempering process. The tempering process involves three basic steps; heating the chocolate, cooling and the carefully heating again.

Cocoa butter fats can crystallise into six different forms. Each different crystal form results in different properties and changes the chocolate. The main purpose of tempering is to make sure that only the most desirable form is present. The chocolate that is shiny, smooth and crisp so it makes the satisfying snap we associate with good chocolate.

Chocolate that isn't tempered has cocoa butter crystals of varying size. This causes the surface of the chocolate to appear mottled and/or matte and makes the chocolate to crumbly.



Can I temper any chocolate?

Not all chocolate is created equal. Any chocolate snob could tell you that!

There are two main chocolate types at the supermarket – compound chocolate and real chocolate.

Compound chocolate	Real chocolate
Doesn't taste quite as nice	It usually better tasting
Contains vegetable fat/oil or palm oil	Contains cocoa butter (no vegetable oil)
Often more crumbly and soft	Usually shiny and "snaps" when you break it or bite it
Can be melted but not tempered	Must be tempered
"Sets" at room temperature after being melted	Will only "set" at room temperature after melting if it has been tempered

Compound chocolate is not always clearly labelled. You need to check the list of ingredients to ensure you buy the chocolate you are after.

Why would I want to temper chocolate?

The only time you really need to temper chocolate at home is when you're making your own chocolates, moulds, decorations or perhaps to give your desserts a glossy, hard chocolate finish.

How do I temper chocolate?

There are a range of different techniques, such as:

- Microwaving
- Seeding
- Tabling or tempering from scratch
- Using freeze dried cocoa powder

Other information

- See all the tempering techniques and find out more here https://www.howtocookthat.net/public_html/temper-chocolate/



Instructions for tempering chocolate – seeding method

Time required: 30 minutes

Recipe difficulty: Medium

Ingredients

300 g dark (preferably couverture) chocolate - chopped

Optional – dried fruit, berries, biscuits, lollies – anything you wish to coat in your tempered chocolate.

Equipment

- Saucepan
- Glass or metal bowl that sits snugly in and over saucepan
- Kitchen scales
- Chopping board and knife
- Stove
- Food thermometer
- Silicone spatula or metal spoon (do not use a wooden spoon)
- Oven gloves
- Baking paper
- Optional – chocolate moulds

Method

1. Chop chocolate into small evenly-sized chunks (5mm x 5mm).
2. Partially fill saucepan with water. Place bowl on top and ensure that water cannot touch bottom of the bowl once boiling (otherwise the chocolate can get too hot making it lose its shine or even worse burn it).
3. Set up bain-marie or double boiler (more info here: [https://www.wikihow.com/Make-a-Double-Boiler-\(Bain-Marie\)](https://www.wikihow.com/Make-a-Double-Boiler-(Bain-Marie)))
4. Add around 2/3 of chopped chocolate to bowl.
5. Heat while gently stirring until the temperature reaches 45°C on a cooking thermometer.
6. Remove the bowl from the heat and stir in the remaining 1/3 unmelted chocolate.
7. Stir with a spatula from time to time to ensure it melts as evenly as possibly.
8. As soon as the temperature cools to 27°C, return the bowl to the bain-marie and reheat.
9. Stirring gently until the chocolate reaches 32°C. When the chocolate is smooth and shiny, it is ready.

Test: Once the tempering process is complete check you've been successful by taking a small amount and smearing onto baking paper for up to 5 mins. If properly tempered, the chocolate should set evenly and feel dry to the touch.

Do not let any water come in contact with your chocolate during this process or it will “seize”.

Tempering temperatures vary based on the chocolate

- **dark chocolate**, melt to 45°C, cool to 27°C, and reheat to 32°C.
- **milk chocolate**, melt to 45°C, cool to 26°C, and reheat to 29°C.
- **white chocolate**, melt to 40°C, cool to 25°C and reheat to 28°C.

Did you know?

Well made chocolate has the unusual characteristic of cooling your mouth as it melts. As the fat crystals in the chocolate melt, this phase change (from solid to liquid) uses your mouth's heat making it feel cold.