Culinary Institute of America

Pastry Boot Camp

Day 5: Introduction to Chocolate

Learning Objectives

- Explore the origin, varieties, and harvesting methods of cocoa beans.
- Identify the key stages in the chocolate making process, including:
  - Fermentation
  - Drying and cleaning
  - Roasting and cracking
  - Grinding, milling, and conching
  - Tempering and molding
- Understand the methods for melting, tabling, and tempering chocolate.
- Recognize the common additives used in chocolate production.
- Distinguish between the different types of chocolate and their characteristics.

Origin of Cocoa

Cocoa comes from the seeds of the cocoa tree, a tropical plant native to Central and South America

Major growing regions:

- Central, South America
- East, West Africa
- Indonesia, New Guinea

- It thrives only within 20° north and south of the equator in hot, humid climates

Cocoa Bean Varieties

- **Criollo**
  - Rare and delicate
  - Mild flavor, low bitterness
- **Forastero**
  - Most common (80% of global production)
  - Strong, bold flavor
- **Trinitario**
  - Hybrid of criollo and forastero
  - Balanced flavor and aroma
  - More resilient than criollo

The Journey of a Cocoa Bean

From bean to bar: the chocolate making process

1. Harvesting
2. Fermentation
3. Drying
4. Cleaning
5. Roasting
6. Cracking & winnowing
7. Grinding, milling & conching
8. Tempering & molding

Harvesting

Ripe cocoa pods are cut from the cocoa tree and split open to remove the beans

- Pods grow directly on the trunk and large branches
- Hand harvested using a machete

Fermentation

Beans are fermented in boxes or covered piles for several days to develop flavor

- Fermentation starts the process of developing “chocolate” flavor
- Heat from this process kills the germs

Drying

Fermented beans are dried in the sun to reduce moisture and prepare for storage or transport

- Drying process can take several weeks
- Allows the beans to be stored and shipped without danger of spoilage

Cleaning

- Beans are separated from foreign materials like stones, twigs, or dust
- A stream of air blows away light contaminants such as husk and dust
- Beans pass through magnets to catch any stray metal fragments

Roasting

Dried beans are roasted to enhance flavor and make the shell easier to remove

- Intensifies and builds flavor.
- Reduces moisture.
- Each producer has different procedure to develop their desired flavor.

Cracking & Winnowing

The roasted beans are cracked open, and the shells are removed, leaving behind nibs

- Broken shell is winnowed from the beans.
- Beans pass through rollers, crushed into smaller and smaller particles.
- Heat from friction melts the cocoa butter.
- Mixture referred to as cocoa mass.

Grinding, Milling, and Conching

Nibs are ground into cocoa mass, then refined in a conching machine for smoothness and flavor development

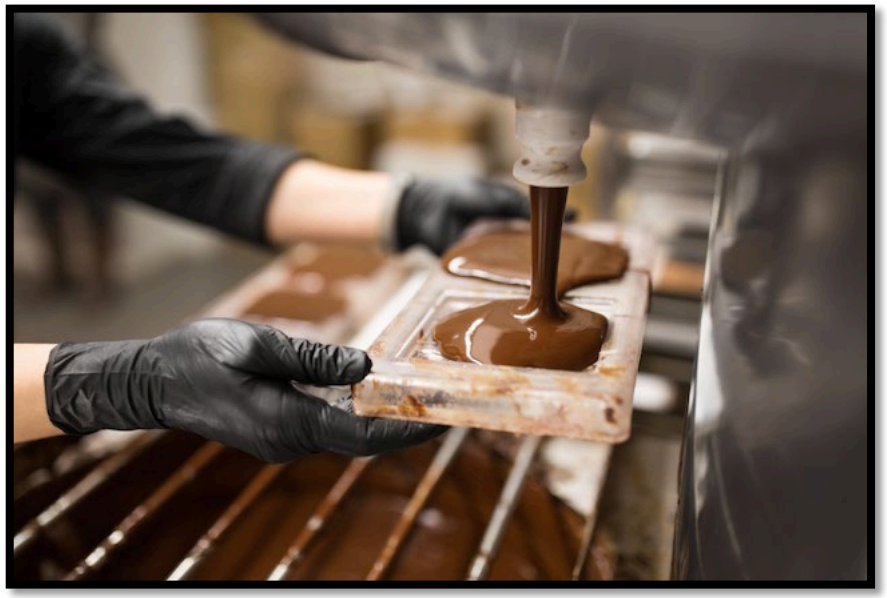
- Beans pass through rollers, crushed into smaller and smaller particles
- Heat from friction melts cocoa butter

Conching

- Chocolate mixed for hours
- Removes acidic tastes and aromas

Tempering and Molding

The chocolate is carefully cooled and agitated to stabilize it before being poured into molds



- Still liquid chocolate is tempered to maintain color and texture
- Chocolate poured into molds and allowed to harden
- Chocolate packaged, stored, and shipped

Common Additives in Chocolate

- **Sugar** - sweetens the naturally bitter chocolate
- **Milk solids** – used in milk chocolate for a creamy texture and flavor
- **Lecithin** (soy or sunflower) acts as an emulsifier to improve texture
- **Vanilla** – enhances and rounds out the chocolate flavor
- **Cocoa butter** – added to improve mouthfeel
- **Salt** – balances sweetness and enhances flavor

Types of Chocolate

Milk Chocolate

- Contains cocoa solids, cocoa butter, sugar, and milk solids
- Creamy, sweet, and smooth

Dark Chocolate

- High cocoa solids and cocoa butter, little to no milk solids
- Rich, intense flavor and firm texture

White Chocolate

- Made from cocoa butter, sugar, and milk solids
- No cocoa solids, so its sweet and milk in flavor

Other Types of Chocolate

Ruby Chocolate

- Naturally pink from specific cocoa beans.
- Fruity, slightly tart flavor with a creamy texture

Couverture Chocolate

- High-quality chocolate with extra cocoa butter
- Ideal for tempering and coating due to its smooth melt and shine

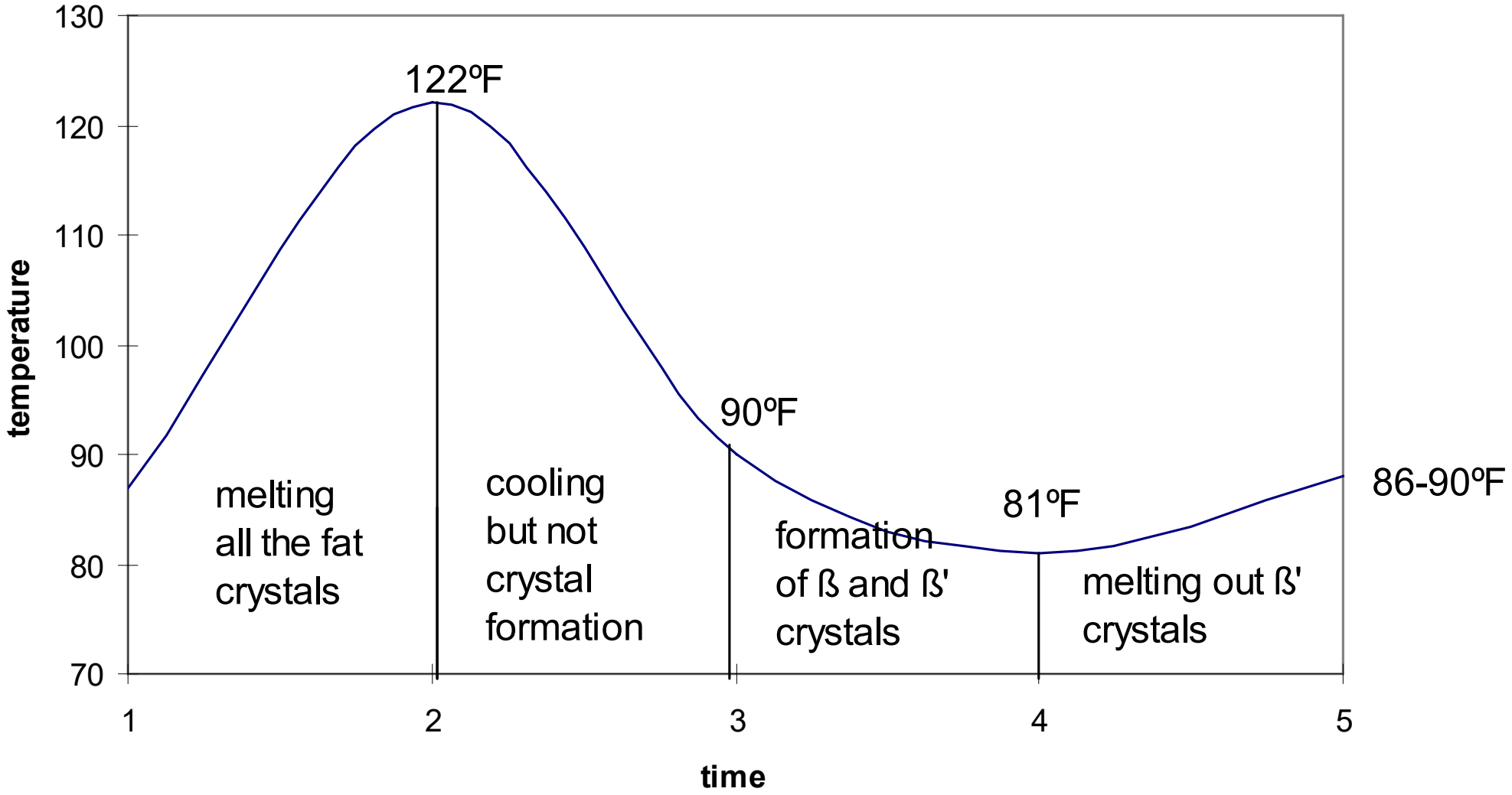
What is Chocolate Tempering?

Tempering is the process of carefully heating and cooling chocolate to stabilize the cocoa butter crystals

This ensure the chocolate:

- Has a smooth, glossy finish
- Snaps cleanly when broken
- Sets firmly and doesn't melt easily on touch
- Has a longer shelf life

tempering chocolate



Working with Chocolate: Melting

Chocolate must be gently melted over low heat or a double boiler to prevent burning

- Chop chocolate into small pieces
- Place in a clean, dry bowl
- Place bowl over pot of steaming water
- Stir gently and often as it melts
- Heat only to 110°-115˚F

Tabling Method

A portion of melted chocolate is cooled on a marble surface, then recombined to control crystal formation

1. Pour ½ melted chocolate on marble slab
2. Spread it thin, then scrape it back into a pile
3. Repeat until the chocolate cools and thicken slightly
4. Add it back to the bowl of warm chocolate
5. Stir well to combine
6. Check if its tempered
7. If not, gently warm and repeat as needed

Compound Chocolate

- Also known as “coating chocolate”
- Made without cocoa butter
- Usually vegetable fats (like palm or coconut oil) instead
- More affordable than couverture or real chocolate
- Does not require tempering
- Simply melt and use – ideal for quick dipping or coating

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Any Questions?