

**Tempering** - The process of turning melted chocolate into a solid mass of stable cocoa butter crystals with a fine, even grained texture, accomplished with controlled cooling of the chocolate with agitation, to form many fine-grained beta crystals, as opposed to other crystal forms which are unstable and of random formation.

- All chocolate requires tempering
- Cocoa butter melts between 80-120°F
- Poor temper is noted by a spotty or mottled surface, gray streaks, and crumbly or cheesy texture
- Well-tempered chocolate contracts and releases

**Fat Bloom** - Cocoa butter crystallizing or re-crystallizing at the chocolate surface (fat bloom may also appear throughout the chocolate) without going through the tempering/pre-crystallization process, resulting in a dull, fuzzy, white haze appearance. Causes include: high temperatures, incompatible fats, & poor tempering/cooling.

**Sugar Bloom** - Moisture in contact with chocolate surface dissolves sugar, forming a syrup, which crystallizes when moisture evaporates.

**Seeding** - A process to pre-crystallize chocolate by inoculating melted chocolate with beta form-V crystals from previously tempered, pre-crystallized chocolate.

#### Under-temper characteristics:

- Will not set properly
- Poor release
- Cheesy texture
- Fat bloom

#### Over-temper characteristics:

- Grainy texture
- Dull surface

#### Melting:

- Water bath or jacketed kettle (prevent contact with water or steam)
- Overnight in a chocolate melter or warming box
- Microwave on medium for short intervals with stirring

#### Other key temperatures when working with chocolate:

- Chocolate storage: 60-70°F (15.5-21°C), <50% relative humidity, well ventilated, free from foreign aromas
- Work space environment: 68-75°F (20-23°C)
- Moulds: 85-90°F (29-32°C)
- Confectionery Centers: 70-80°F (21-26°C), depending on center composition
- If using a cooling tunnel with multiple temperature zones:
  - Initial cooling 65-70°F (18-21°C)
  - Main cooling 55-60°F (12-15.5°C)
  - Exit cooling 65-70°F (18-21°C)

*Thermometers with 1-2 degree calibrations are essential for good tempering results.*