TEMPERING
THE BASICS

Guittard CHOCOLATE COMPANY

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 crystalizes 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.

The precise temperatures and methods outlined in this guidance document are for general purposes. Modification to these methods may be necessary given differing equipment and workspace conditions. For questions, contact your Guittard Chocolate representative.