As a sugar syrup is cooked, water boils away, the sugar concentration increases, and the temperature rises. The highest temperature that the sugar syrup reaches tells you what the syrup will be like when it cools. In fact, that’s how each of the temperature stages discussed below is named.

For example, at 235° F, the syrup is at the “soft-ball” stage. That means that when you drop a bit of it into cold water to cool it down, it will form a soft ball.

Most candy recipes will tell you to boil your sugar mixture until it reaches one of the stages below. For the best results and most accuracy, we recommend that you use both a candy thermometer and the cold water test. It's also a good idea to test your thermometer's accuracy by placing it in plain boiling water. At sea level, it should read 212° F. If it reads above or below this number, make the necessary adjustments when cooking your candy syrup.

Note: The temperatures specified here are for sea level. At higher altitudes, subtract 1° F from every listed temperature for each 500 feet above sea level.

|  |  |
| --- | --- |
| **Thread Stage**  230° F–235° F  sugar concentration: 80%  At this relatively low temperature, there is still a lot of water left in the syrup. When you drop a little of this syrup into cold water to cool, it forms a liquid thread that will not ball up.  Cooking sugar syrup to this stage gives you not candy, but syrup—something you might make to pour over ice cream. |  |
| **1. Soft-Ball Stage**  235° F–240° F  sugar concentration: 85%  At this temperature, sugar syrup dropped into cold water will form a soft, flexible ball. If you remove the ball from water, it will flatten like a pancake after a few moments in your hand.  Fudge, pralines, and fondant are made by cooking ingredients to the soft-ball stage. |  |
| **2. Firm-Ball Stage**  245° F–250° F  sugar concentration: 87%  Drop a little of this syrup in cold water and it will form a firm ball, one that won’t flatten when you take it out of the water, but remains malleable and will flatten when squeezed.  Caramels are cooked to the firm-ball stage. |  |
| **3. Hard-Ball Stage**  250° F–265° F  sugar concentration: 92%  At this stage, the syrup will form thick, "ropy" threads as it drips from the spoon. The sugar concentration is rather high now, which means there’s less and less moisture in the sugar syrup. A little of this syrup dropped into cold water will form a hard ball. If you take the ball out of the water, it won’t flatten. The ball will be hard, but you can still change its shape by squashing it.  Nougat, marshmallows, gummies, divinity, and rock candy are cooked to the hard-ball stage. |  |
| **4. Soft-Crack Stage**  270° F–290° F  sugar concentration: 95%  As the syrup reached soft-crack stage, the bubbles on top will become smaller, thicker, and closer together. At this stage, the moisture content is low. When you drop a bit of this syrup into cold water, it will solidify into threads that, when removed from the water, are flexible, not brittle. They will bend slightly before breaking.  Saltwater taffy and butterscotch are cooked to the soft-crack stage. |  |
|  |  |
| **5. Hard-Crack Stage**  300° F–310° F  Sugar concentration: 99%  The hard-crack stage is the highest temperature you are likely to see specified in a candy recipe. At these temperatures, there is almost no water left in the syrup. Drop a little of the molten syrup in cold water and it will form hard, brittle threads that break when bent. **CAUTION:** To avoid burns, allow the syrup to cool in the cold water for a few moments before touching it!  Toffee, nut brittles, and lollipops are all cooked to the hard-crack stage. | |