

Molded Sugar Candy (Soft Sugar Candy)



by STEPHEN CHILDS

Adapted from C.O. Willits and C.H. Hill 1976. *Maple Syrup Producers Manual*. USDA Agriculture Handbook No. 134 and North American Maple Syrup Producers Manual, 2nd ed, 2006

Background

Molded sugar candy is a popular maple value-added product. Approximately 7 ½ pounds (3.4 Kg) of molded sugar can be prepared from one gallon (4.4 liters) of maple syrup. Molded maple sugar contains nothing other than maple sugar with little or no free syrup, thus it is stiff and can be molded into a variety of shapes. The crystals in molded sugar are larger than in maple cream and can be sensed on the tongue, but they should not be so large as to have an unpleasant sandy or gritty texture.

The temperature and humidity of the room where you make candy will affect the quality of the candy and repeatability of the process. Best results will occur at normal room temperature (68-72oF) and humidity in the 40-45% range. Dry days are best and rainy or humid days should be avoided.

Syrup Grade and Invert Sugar

Syrup Grade and Invert Sugar

Molded sugar can be made from any of the top three grades of syrup with an invert sugar level between 0.5% and 1.5% with the ideal being about 1%. Lower levels of invert sugar in the syrup tend to produce large crystals that give the sugar a grainy texture. Lower levels also can cause problems because the syrup is more likely to crystallize in the pan as it is cooling before stirring. Higher levels of invert sugar tends to make the candy very slow to harden. This can make pieces difficult to remove from the molds and pieces may become misshapen when handled.

For details on measuring and adjusting the invert sugar levels in syrup see Bulletin 203 covering this topic. A chart on the glucose meter readings preferred when making molded maple sugar is given below.

» Glucose Meter Readings

Reading	1 - 10 invert
mg/dL	invert %
20	0.4
30	0.6
40	0.8
50	1
60	1.2
70	1.4
80	1.6
90	1.8
100	2

*The light gray indicates values for **usable** syrup for molded maple sugar*

*The darker gray indicates values for **ideal** syrup for molded maple sugar*



Heating Syrup

Concentrate the Syrup

Heat the syrup to 32° to 34° F (18° to 19° C) above the boiling point of water. Then cool the pan of cooked syrup to the temperature required for the hardness of candy that you want before stirring. The following chart roughly outlines the candy hardness obtained when you begin stirring the syrup at different temperatures.

» Candy Hardness

- >200°F at agitation = a harder candy more suitable for crystal coating
- 190°F to 175°F at agitation = a medium hard candy
- <170°F at agitation = a softer candy but may be too soft to coat

Harder Candy

Where the candy will be crystal coated or handled in bulk packages you may find a harder piece of molded sugar candy works better. The harder molded sugar is made by beginning to stir the cooling syrup at around 200°F. Crystal coating then softens and protects the candy making it more desirable to the consumer. Filling the molds with the hotter syrup usually is easier as the syrup should flow readily.

Medium Hard Candy

A medium hardness molded sugar candy can be made by beginning the stirring when the syrup temperature has cooled to between 190°F to 175°F. This medium hardness makes the molded sugar durable for handling yet suitable for crystal coating and a nice level of hardness for the consumer.

Soft Candy

Allowing the syrup to cool to less than 170°F before stirring makes a fairly soft molded sugar candy. This softer candy is by far the most attractive for eating appeal for the customer. The softer candy is recommended when doing demonstrations where the candy will be consumed soon, such as at fairs or farmers markets. However, the softer candy can be soft enough to be squashed or broken with handling and can be more easily dissolved if you attempt to crystal coat. It may need to have the crystal coating syrup cooler to coat it successfully. Filling the molds to make the softer candy is also the most difficult. The syrup can be very thick and come out in globs that may need to be pressed into the molds with a table knife or putty knife. Candy stirred cooler may also lack some of the mold detail compared to pieces that were put into the mold at a hotter temperature.

Stirring

Stirring and Crystal Development

Once the syrup has been properly heated then cooled to the temperature to make the desired hardness of candy, it must be stirred, either by hand with a large spoon or with a commercial maple sugar machine. The lower the temperature to which the syrup is cooled before stirring, the finer (smaller) will be the sugar crystals formed in the candy. However, large batches



(how large is large?) of candy are commonly cooled only to approximately 200° F (93° C), or higher, because when cooled to lower temperatures it becomes almost impossible to mold the entire batch before it becomes too stiff. Rapidly filling the molds will result in greater consistency of product.

When stirring, the syrup solution must be watched carefully as it becomes lighter in color, somewhat thicker, and has a creamy opaque appearance. This is the result of the many tiny sugar crystals that form and increase in size in response to the agitation of the syrup. Stirring will take only a few minutes, usually less than five. With experience you will learn the exact moment to pour the syrup into the molds. If the mixture is stirred too long, the thickened syrup will “set up” (harden) in the pan. It’s best to err on the early side. It can be very helpful to have a bottle of warm water with a mist pump to lightly mist sugar that becomes too hard in the trough of the candy machine or mixing pot. This will re-liquefy the hard sugar and allow it to fill the molds. Be careful not to use too much misting as this may risk the quality of the molded sugar.

Molding

While the sugar is still soft and plastic, pour or pack it into rubber or metal molds. Molds with a variety of shapes are available from all equipment dealers and cooking suppliers. If packing the molds by hand is necessary, use a wide-blade putty knife or spatula. When using a maple candy machine, the semi-liquid sugar can be run directly into the molds without packing or leveling. Use a rigid support under rubber molds to prevent them from flexing during handling. Place molds on a rack to cool. It sets up in 10 to 30 minutes. Then the individual pieces can be removed from the mold. Sugars formed by pouring rather than packing have an attractive glazed surface. Fresh maple candies can be stored in cool dry conditions for a few weeks.

Candy Machine

Making Molded Sugar Candy with a Candy Machine

A candy machine is a good investment if large batches of candy are made on a regular basis. Most commercial candy machines can make up to 18 pounds (8.2 kg) of candy at one time. The metal pan that holds the boiled syrup on a candy maker is called a “pig”, because of its shape and the pouring snout at the front. Immediately after the boiling syrup has reached the proper temperature the syrup is poured into the pig. The syrup can also be boiled directly in the pig. Place the pig on the candy machine shelf and tip it up into the locked position, first making certain the nose valve is completely shut. It is not necessary to let the syrup cool much when using a candy machine; experiment to see what works best. Make sure the trough valve is closed before adding any syrup to the trough. Open the pig nose valve slightly and allow a half-inch or less of syrup to flow into the trough. Close the valve, turn on the motor and the stirring coil will slowly rotate. Watch carefully at the front of the trough by the valve. After a few minutes the syrup will become lighter in color, somewhat thicker and have a creamy, paste-like, opaque appearance. At this critical stage the syrup has lost some of its gloss because many tiny sugar crystals have formed to cause this change in appearance. Stirring will only take a few minutes, usually less than three.

Open the trough valve and allow the opaque, partially crystallized syrup to flow out into your mold. Don’t wait too long to complete this step because the sugar may harden in the nose of the trough. It’s better to open the trough valve a bit too soon and have only semi-crystallized sugar flow out for the first few molds. They will harden in time. At the same time, slightly



open the nose valve of the pig to allow more syrup to flow into the trough. The goal here is to have a small continuous flow of fresh hot syrup from the pig into the trough, while at the same time the stirring coil is crystallizing the syrup, but is still allowing liquid crystallized syrup to flow out from the trough into the molds. An extra set of hands is helpful at this stage when this equipment is being used for the first time. Try to balance the flow of liquid into the trough with the flow out into the molds keeping the syrup being stirred only a quarter inch to one half inch deep. This will reduce the chances of having the sugar harden into a solid mass in the trough. If the syrup crystallizes in the trough valve and stops the flow, a small knife can be used to reach into the valve and clear out the clog. Be careful of the turning coil. Misting the trough with a fine spray of warm water can also cure a temporary clogging from sugar that has hardened there. Usually very little is needed. After a little experience it will be possible to make perfect candy in a continuous operation.

Drying Candies

Remove and Dry Candies

Candies may be removed from the molds after 30 minutes to one hour. Do this over a coarse wire rack that allows sugar that has run beyond the mold to be removed and collected for other uses. The candies should be placed on wire racks that allow for good air circulation. Candies need to completely cool and air dry for 24 hours before packaging or crystal coating.

Crystal Coating

Crystal Coating Molded Sugar Candy

Over time individual pieces of maple sugar have a tendency to dry out. Coating them with a moisture-impervious shell made from crystalline sucrose can delay this. To make the crystal coating syrup, heat low invert sugar maple syrup to 9.5° to 11° F (5° to 6° C) above the boiling point of water. This syrup should have a Brix value of 70° to 73° at a temperature of 68°F (20° C). One gallon (4.4 liters) of standard-density syrup (66o Brix) will make seven pints (3.8 liters) of crystal coating syrup (70o to 73o Brix). The invert sugar level in syrup used to make the crystal coating syrup should be between 0% and 1% with the lower the level the better.

» Glucose Meter Readings

Reading	1 - 10 invert
mg/dL	invert %
20	0.4
30	0.6
40	0.8
50	1
60	1.2
70	1.4
80	1.6
90	1.8
100	2

*The light gray indicates values for **usable** syrup for crystal coating*

*The darker gray indicates value for **ideal** syrup for crystal coating*



Avoid Humid Days

Molded sugar should not be crystal coated on humid or rainy days, unless the work can be done in a humidity-controlled room, because pieces will not dry properly. If the crystal coating is not thoroughly dried, the coating will dissolve when it is packaged.

Cool Coating Syrup

Set the hot, heavy syrup aside to cool where it will not be jarred or shaken or transfer it immediately to pans that will be used to treat the maple sugar. To retard surface crystallization (caused by rapid cooling of the surface), the syrup can be covered with a piece of damp cheesecloth or paper (preferably the same kind used as a syrup pre-filter, because it has a high wet strength). The cloth or paper must be in contact with the entire surface of the syrup. If crystals form, they attach to this cover and can be removed along with the covering. The sugar crystals can be recovered by rinsing the cover in hot water, or the cover can be allowed to dry for a few days and the sugar crystals will peel off easily. The concern with the crystals forming on the surface is that they will stick to sugar pieces as they are being added or removed from the syrup soak. This will give them an unacceptable appearance. Some producers have success without covering the coating solution.

Soak Candies

The sugar pieces to be coated should be dry (24 hours old). Place the pieces loosely in a mesh basket or other container that will allow them to be completely submerged in the coating solution. The covering is removed from the cool (70° to 80° F or 21° to 27° C) crystallizing syrup soak solution, and any crystals not removed with the cover are skimmed off. Submerge the sugar pieces completely in the coating solution; place a fresh cover directly on, and in contact with, the entire surface of the coating solution. Leave the candies in the coating soak at a temperature of 65° to 80° F (18° to 27° C) for 6 to 12 hours or overnight. Most of the crystal coating forms on the molded sugar pieces during the first few hours. Therefore, the time the sugar pieces are left in the crystallizing syrup beyond a six-hour period is not critical. If your molded pieces are soft or you are having trouble with the pieces dissolving, use the lower soak temperature.

Brix Values

The most important factor related to crystal coating is the Brix value of the coating solution; if it is too high, coarse crystals will result. Sugar precipitates out of the thick syrup and is deposited and grows on the surface of the maple sugar pieces. The ideal density of the coating syrup is determined by trial and error; Brix value between 70-73 is a place to begin.

Remove Candies

Remove the paper or cloth cover when sufficient sugar coating has been deposited on the candy and lift the wire baskets of coated sugar out of the soak solution and support them above the trays of soak solution until the candy pieces have drained. The outside of the candy should feel like fine sandpaper when it is sufficiently coated. A single batch of sugar coating solution can be used about three times, before it gets too low in density to sufficiently coat the candy pieces. The used solution can be boiled again to make maple cream. It is suggested that different approaches be tried to determine what will work best for each individual situation.

After the syrup has drained off, this usually requires about one half hour, dry the candy pieces by manually removing all remaining drops of syrup. Failure to do this results in areas having a glazed (non-crystalline) surface that is not a water barrier thus permitting the sugar to dry out during storage. The dried areas will appear as unattractive white spots on the candy.



Remove Excess Syrup

Drying

There are two ways of removing excess crystallizing syrup: Either spread the sugar pieces out in a single layer on a clean sheet of paper and turn each piece over at intervals of one to two hours or wipe each piece of sugar with a clean, slightly damp sponge or cloth to remove any moist areas. Some producers have developed ways of turning large batches at a time using top and bottom holders where the pieces are trapped briefly between two layers and the batch turned over and then the new top removed. This kind of system can save substantial labor. Then place the sugar pieces on screen trays to dry. Set the trays in racks to complete the air-drying process at room temperature. This usually requires from four to seven days, but the process can be hastened by using a fan and/or a dehumidifier. After drying, the candies are ready for packaging.

Shelf Life

Shelf Life

Crystal coated maple candies have a relatively long shelf life of several months, and they tend not to absorb moisture or dry out. Sugar that is not crystal coated may either absorb moisture or dry out, depending on the humidity of the room in which it is stored. In a dry environment it will lose moisture. The dried-out areas will appear as white spots and will become stone-like in hardness. If the humidity is high, the sugar will absorb moisture and moist areas or droplets of water will appear on the surface. The droplets become dilute sugar solutions and are good sites for mold growth. The humidity of the packaging room and the candy storage area should be kept relatively low. Use a dehumidifier or air conditioner when the situation warrants.

Packaging

Packaging

The packages for molded maple sugar candies have two functions: (1) to make the sugar as attractive as possible and (2) to keep them in good condition. Boxes, individual wrappings and paper candy cups can be purchased from a confectioner's supply house or a maple equipment supplier. The net weight of the sugar pieces must be stated on the outside of the package. Consult local health officials or food production authorities for specific regulations about package requirements.

The best type of wrapper for the outside of the sugar package should not be 100% moisture proof but should allow the sugar to breathe slightly and not totally dry out. Consider that the emulsion applied to cellophane to make it heat seal with a hot iron also makes the cellophane moisture proof. Some packers of maple confections obtain longer storage by puncturing the moisture-proof wrapper with some pinholes to permit limited air exchange between the inside and outside of the package. Humidity and temperature will affect length of storage time. A cool storage temperature with 50-60% humidity works the best.

