

# Sap to Syrup at Canadian Organic Maple



## Steps in the Process



In early spring, while the nights are still frosty and the days are warm, sap begins to flow through the trunks and branches of the sugar maple trees. This is the time when the sugary at Canadian Organic Maple comes alive!

These are the steps followed at this sugary to collect the sap and produce delicious Canadian Organic Maple Syrup:

1. Small holes (about the size of a pencil eraser) are drilled into the trunks of sugar maple trees where **taps** or **spiles** are then inserted. All 140,000 of these taps are connected by a network of tubing.



2. Flexible, blue tubing (5/16 inch) connects each tap to large (2 inch) transfer lines. These lines run through this 750 hectare sugarbush and carry thousands of liters of sap into the **sugarhouse**. The sap is clear and does not taste much like sugar because, at this point, it is about 98% water and only 2% sugar. The measurement of this sugar percentage is degrees Brix ( $^{\circ}\text{Bx}$ ). The degrees Brix varies; it is 2.5-2.7% through most of the season while lower at the beginning and end of the season.



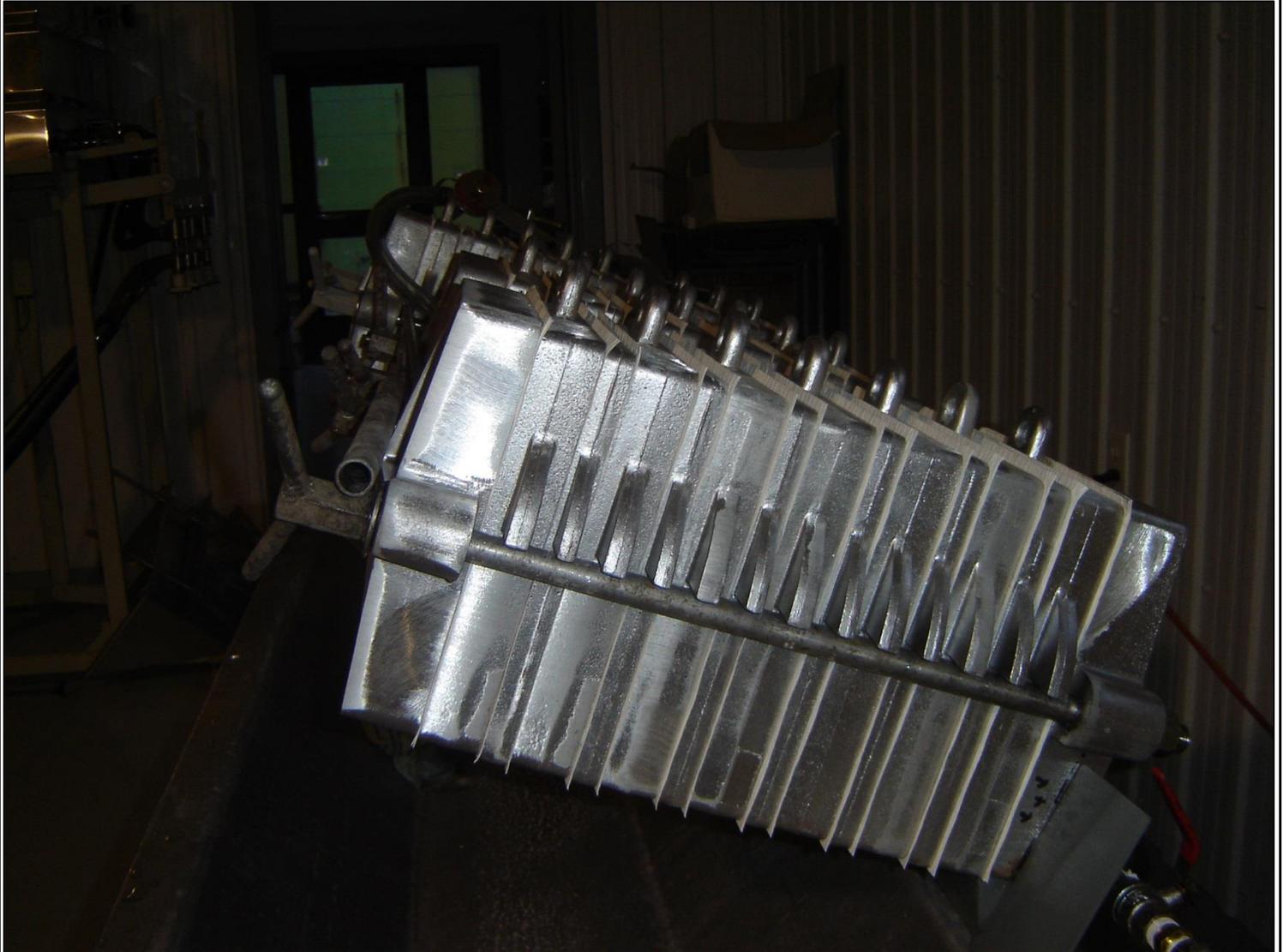
3. The sap is stored in huge tanks inside the sugarhouse while waiting to be processed. Since the sap is mostly water, a **reverse osmosis machine** is used to remove some of that water. In this machine, turbines force the sap through membranes with varying levels of pressure which separates most of the water from the sugar. The separated water is called **filtrate** and the concentrated sap is now called **concentrate**. Leaving the reverse osmosis machine, the concentrate is 16 degrees Brix. We are closer to syrup but there is still water to be removed.



4. The **evaporator** is used to remove this remaining excess water. The evaporator is filled with 1000 L of concentrate where the sap is heated to its boiling temperature. There is a lot of heat below the evaporator and a lot of steam above it. To ensure the concentrate is evenly heated, it is circulated through channels, called **flutes**. The remaining excess water evaporates as steam and the concentrate gradually turns into thick, sweet, brown syrup at a temperature of 103 degrees Celsius (217 degrees F).



5. When the maple syrup is removed from the evaporator, it contains suspended solids commonly called **niter** or **sugar sand**. The composition of this niter includes calcium and magnesium salts of malic acid which can cause the syrup to appear cloudy or dark in color and to have a gritty feel. The amount of niter varies from year to year and from bush to bush. At this point in the process, **plate filter presses** are used. Pressure forces the syrup through the plates of the filter press and when it comes out the other side, the maple syrup is clear.



6. The rich, delicious syrup is then packaged for transport and sent to consumers both locally and around the world. Some of the syrup is poured into **bottles** which you would see in grocery stores. The rest of the syrup can be used for sugar, maple spread, and candies. Every spring, all grades of syrup are produced, each with a special use. The very best syrup is put into bottles under the brand, **Canadian Organic Maple**.

