DOMINION & GRIMM

TRADITION SINCE 1881

MAPLE SYRUP TECHNICAL GUIDE

QUICK DATA:

1 imp. gallon of maple sap / taps (average)

1 Imp. gal. = 4.54 L

1 US gal. = 3.78 L

1 Imp. gal. = 1.2009 US gal.

40 L of maple sap at 2.16°Brix = 1 L of maple syrup at 66°Brix

Slope of a tubing network: Gravity = min. 5% / Vacuum = min. 2%

1.13 foot of water column = 1 in Hg

28.25 foot of water column = 25 in Hg

DOMINION & GRIMM MAPLE SYRUP TECHNICAL GUIDE

VERSION 1.2

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Dear producers,

Here is a little tool that we have created to help you with your maple syrup production. You will find various technical information relating to your installation in the forest, up to your bottling or barreling.

Do not hesitate to consult your nearest Dominion & Grimm advisor for any needs. We will be happy to assist you.

Happy sugaring season,

The Dominion & Grimm team

THE FOREST

To ensure the sustainability of our forest, we should recommend an uneven-aged forest. The balanced structure will allow better resilience over time. This allows the trees to rotate and there are always younger ones in the understory ready to take over if the larger ones become ill or are swept away by a weather phenomenon. In one hectare, it is recommended to keep 10 to 15% of companion species.

Images from: Natural Resources Canada, Canadian Forest Service
(White Pine, Sugar Maple and White Spruce)

A pure maple grove, a stand composed of 100% maples, does not exist in its natural state. It is important to know that when maple leaves decompose, they make the soil acidic. It is therefore important to conserve companion species such as yellow birches and ash trees. If you wish to install a network of tubing, it is wise to plan forestry development work before installation or when changing the tubing at the end of its useful life. A job well done will also be more pleasant when travelling in the forest. Never forget that the branches littering the ground will be additional obstacles during the installation of the tubing, tapping, maintenance tours (leaks) and untapping. Although these branches are buried under a cover of snow, this is not always guaranteed.

THE TUBING

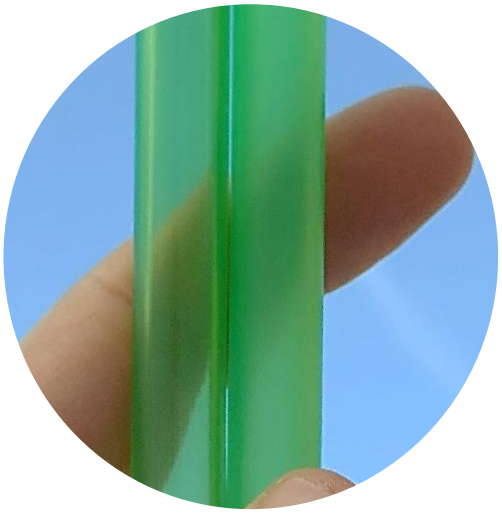
CLEAN, AIRTIGHT, GRAVITY: 3 principles for an efficient tubing network.

GRAVITY TUBING:

For a gravity installation, if you are one day thinking of installing a small pump, the 5/16 tubing is recommended. If the slope is sufficient, at least 5%, and no pump will be installed, the 3/16 tubing is by far the one to consider. For optimal performance on 3/16 tubing, you must have a minimum of 25 taps per line. If you opt for a 5/16 gravity feed, 30 to 35 taps would be preferable to generate a sufficient volume of water to create a strong water column (vacuum).

TUBING COLOUR:

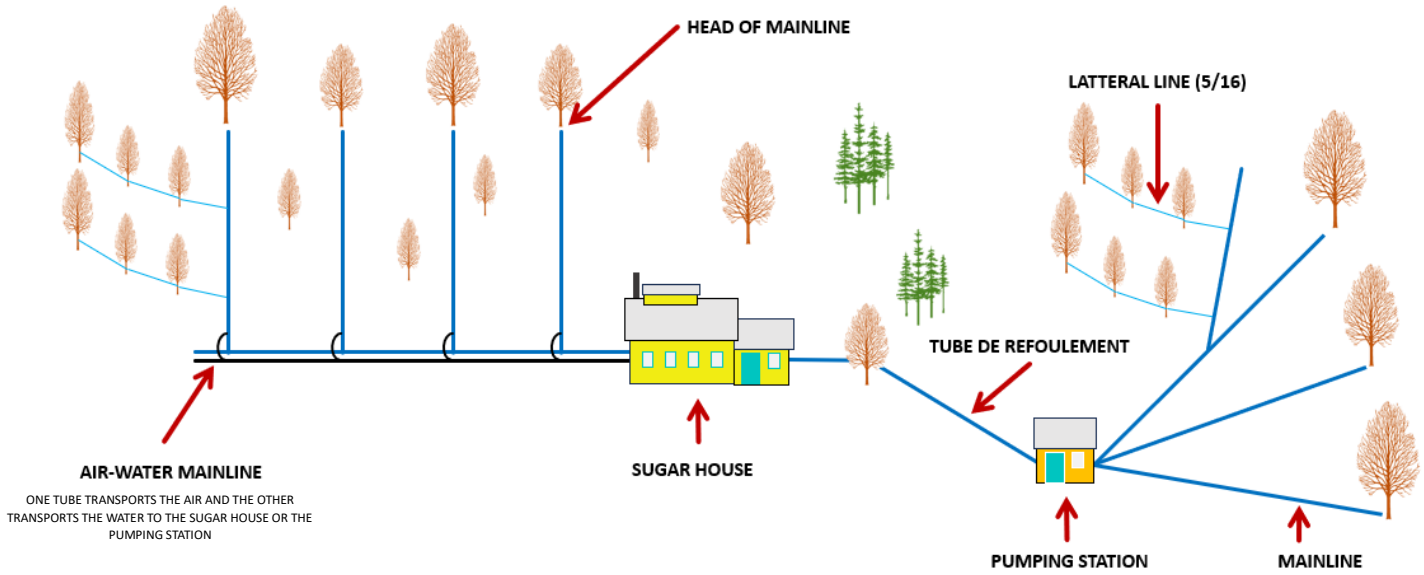
Why choose blue, green, or gray? That is a question of choice. The first thing that matters is not the colour of the tube, but its quality. Tubing made with the purest resin will be clean. It will not have a shady-looking wall. This will be relevant when carrying out a “leak” tour. The darker the tubing, the hotter the water will be. However, some colder sugar bush will be installed in the dark tube. If you respect the principle of gravity, little water should remain in your lines and freeze overnight. Colours can also be used for different markings. For example, green can be used to mark the last drop of a lateral line or to connect vacuum monitoring sensors at the head of the mainlines.



The tube on the left is made of a purer resin than the one on the right. We can see the finger better through the walls. Air and water bubbles will therefore be more visible.

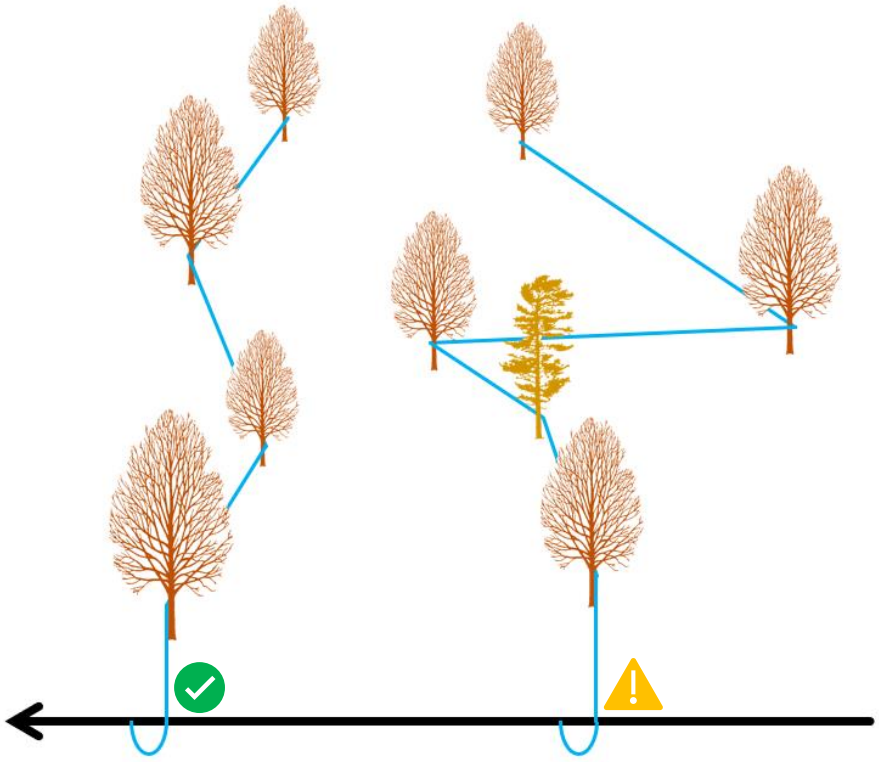
TUBING NETWORK

ANATOMY OF A VACUUM PIPING NETWORK (MIN. SLOPE ABOUT 2%):



INSTALLING LATERAL LINES OR GRAVITATIONAL LINES

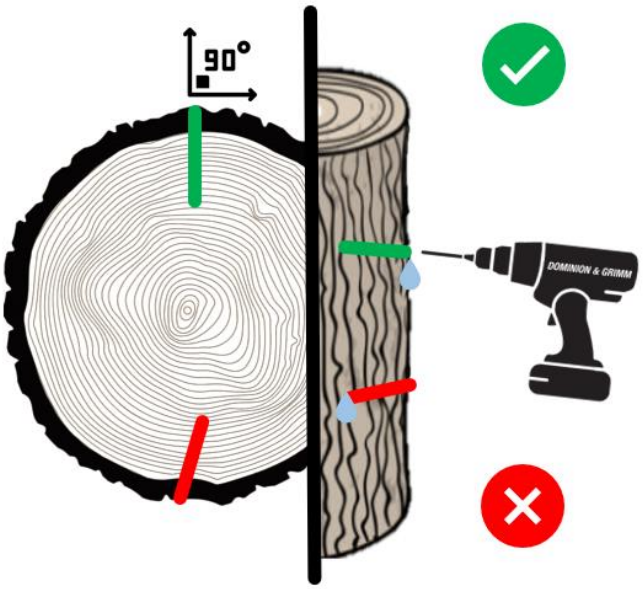
In order to have good performance from our tubing network, it is wise not to use trees that are not maples. It's also important not to make too many zigzags between the trees, as the sharp curves can create restriction in the flow of water. No forest is perfect, we must settle as optimally as possible in the conditions available to us.



TAPPING

When to tap? The best is 10 to 15 days before the start of the first sap flow, depending on the type of harvest and the harvest location. With buckets, it's preferable to wait until the day before the first continuous sap flow to prevent the hole from drying out.

How to tap? Install your drill perpendicularly with a slight downward slope of approximately 5°. Drill a hole with a depth of approximately 1" to 1.5" as round as possible to facilitate sealing with the spout.



⚠ **Be careful not to overheat the hole which will affect the flow of sap.**

How to know if the spout is well taped? Pay attention to the noise, when the spout has penetrated the tree sufficiently, the last sound will be duller than the previous ones.

Ex.: ''Tac – Tac – Tac'' followed by a ''Toc''

When to get your taps out? As soon as possible after the season. When untapping a month after the end of the sugaring season, the internal wound is up to 20% larger. The longer you wait, the slower the healing.

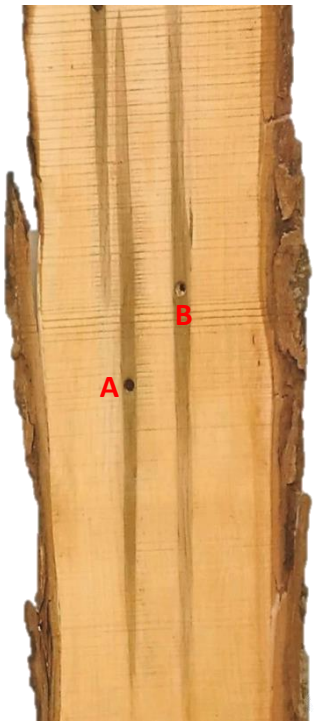
⚠ **Be careful not to lift the bark when untapping. To do this, apply a slight rotating force to the spout.**

NUMBER OF TAPS ACCORDING TO THE DIAMETER OF THE MAPLE TREE

NUMBER OF TAPS	DIAMETER IN CM	DIAMETER IN INCHES
0	- of 20 cm	- of 8''
1	From 20 to 40 cm	From 8 to 16''
2	From 40 to 60 cm and more	From 16 to 24'' and more
3 and more	Not recommended	Not recommended

Compartmentalization:

Compartmentalization is a chemical barrier specific to hardwoods to prevent the attack of microorganisms following an injury (tap hole – A). The barrier will block the circulation of water and air. This area is waterproof but will not leak air. Any compartmentalized area is coloured (brown - B) like the heart of the tree.



Factors that influence compartmentalization:

- Two compartmentalized areas that touch each other will merge and make 1 larger area.

- The cleanliness of the spout

- Disinfectant products used to clean the spout and the tubing

- The depth of the hole

- The date of tapping (the earlier you tap, the larger the area will be)

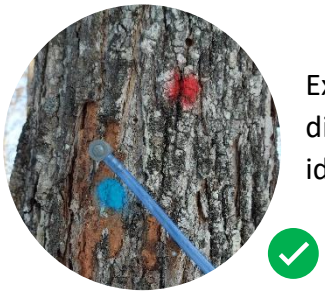
- The date of untapping (as soon as possible after the last pours)

- The size of the spouts. **19/64 and 5/16**: compartmentalization approximately 2 cm wide and 20 cm at the top and bottom of the hole. **1/4 spout**: compartmentalization approximately 1.5 cm wide and 15 cm at the top and bottom of the hole.

Where to put the taps on a tree:

It is important to properly arrange the taps on the trunk and identify them for future years.

Example of poorly taped maple. The bottom tap is too close to the old tap. It should have been positioned further to the right.



Example of a maple which respects a good distance between the holes and which are well identified to locate them in subsequent years.

DIAMETER OF THE TAPPING HOLE:

The larger the diameter of the cut, the more vessels we cut in the tree, therefore the more water we will obtain. However, the larger the hole, the more difficult the hole is to be sealed. According to various studies, the ¼ spout is easier to seal. The more watertight the network, the more water we harvest. The loss of performance with a ¼ torch versus the gain in sealing and reduction of injury in the tree gives it a marked advantage. The ¼ should be considered in maple groves with low growth or tapped for years. However, they tend to deform more quickly than spouts with a diameter of 5/16 inch. With buckets, the 5/16 spout is preferred over the 7/16 for the health of the trees.

COLOURS OF THE SPOUTS :

Black: Absorbs heat, thaws faster, greater risk of bacteria development.

White: Reflect the rays, heats up less, thaws less quickly in cold maple groves.

Blue: Master key. They forgive heat and hot years.

Transparent: Warmer than whites, but less than blacks. They act like a greenhouse.

Disposable: Inexpensive, no UV protection, can therefore break after 1 to 2 years of use.

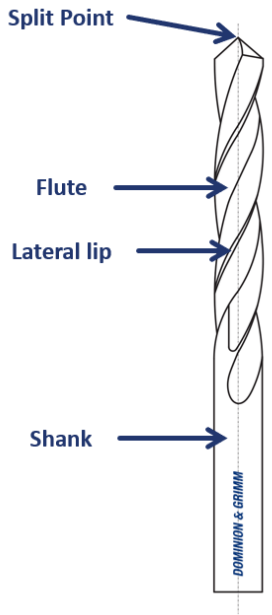
CHARACTERISTICS OF A GOOD TAPPING BIT:

Precise split point: The clearance on the tip of the bit allows precise penetration without distortion of the hole, ensuring clean and precise results.

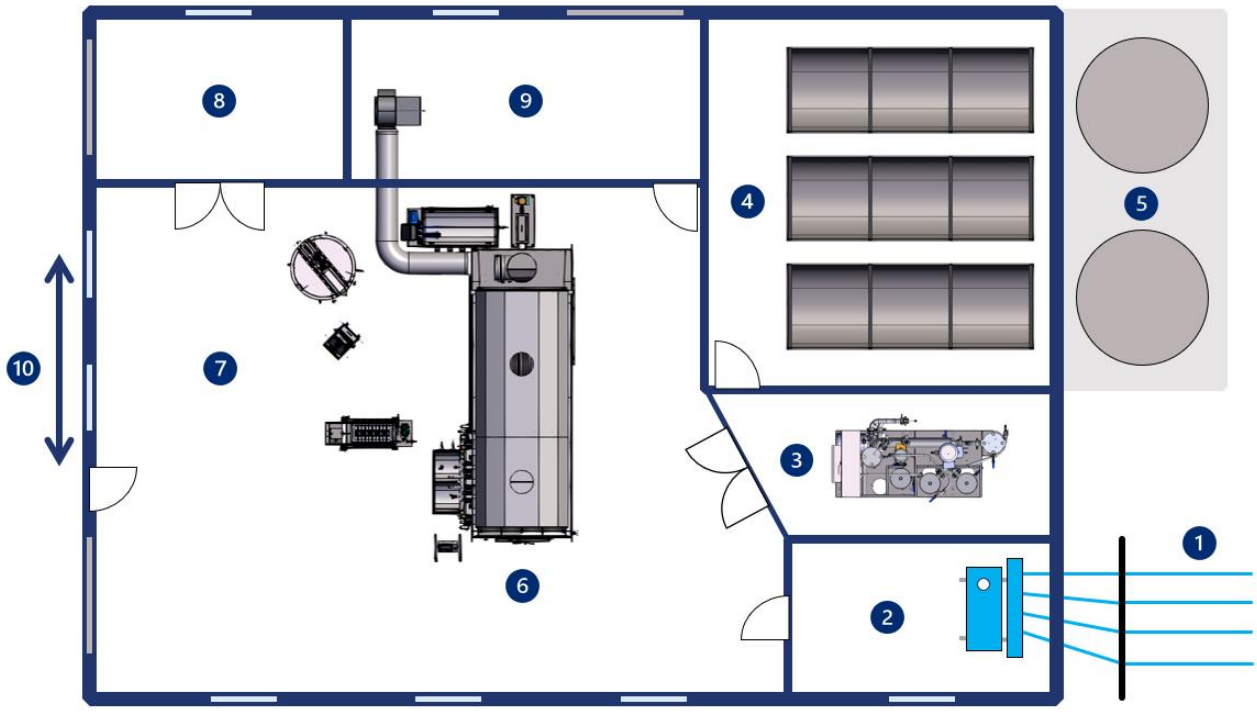
Full-Length Deep Flute: The full-length deep flute allows for efficient accumulation of wood chips, reducing friction and enabling entry to the desired depth in a single operation.

To ensure increased durability, avoid sharpening the kerf bit more than twice. This ensures consistent performance and extends the useful life of the tool. Also make sure the **side lips** of the bit are sharp. Sharpened side lips ensure precise cutting, improving crop quality.

⚠ About 800 taps by sharpening are recommended.



TIPS FOR A GOOD SUGAR HOUSE



1. Arrival of the tubes. Attach the pin to a solid structure independent of the cabin. If lightning strikes one of the pins, this will prevent the cabin from burning down if lightning strikes the wire supporting the tubes.

2. Release room. Always keep the slope of the tubes in mind. It is sometimes wise to lower the floor level and have a semi-basement to maximize the slope of the tubing network. With underground tubes, the station below ground level makes sense.

3. Osmosis room. This place should be insulated and maintain an ambient temperature above freezing point to preserve the osmosis from freezing. A door of adequate size to allow osmosis to pass through is recommended.

4. Tanks of maple sap, concentrate and filtrate. It is wise to have a reserve in case of large flows.

5. Silos and concrete base. An interesting option for large companies instead of having a building to cover sap tanks.

6. Optimal clearance around the evaporator for moving, working, and fueling it (if using wood).

7. Work area and barrel placement.

8. Storage area for barrels or other.

9. Mechanical room. Can be used to store wood, pellets, the engine unit of an Ecovap, serve as an electrical room or even for storage of all-terrain vehicles used in the sugar bush. It's best to keep the engines outside the evaporator room or the tank room to prevent exhaust gases from contaminating the food product that maple syrup is.

10. Direction of the roof slopes to avoid accumulation in front of the main doors or between the building and the silos. Certainly, the snow could cool the silos, but it will create pressure on the wall and the silos which could lead to breakage and displacement.

RELEASER MAINTENANCE

Your releaser is the transition point between the vacuum environment and the outside. Its proper functioning is essential. Although electric releases are low maintenance, it is important that they do not freeze and that they are kept clean. Regarding mechanical releases, a few details need to be checked during the season.

To ensure optimal operation of your releaser, you must level it.

Make sure the vacuum inlet is straight. Ideally, use a flexible hose, there must be no tension on the hose and on the release mechanism for proper operation.

Upon installation, lubricate the O'rings of the vacuum inlet adapter with the appropriate food grade grease.

⚠ **Be careful not to break them during installation.**

During the season, wash the rubbing plate and stem well with water hot enough to remove sugar buildup.

⚠ **Do not add grease or oil on moving parts.**

⚠ **Boiling water could damage the Teflon plate.**

At the end of spring, it is important after washing the tubing, to clean the releaser thoroughly and remove the cover to eliminate the vapors from the washing products. This avoids damaging the equipment.

WOOD COMBUSTION FOR EVAPORATORS

To burn adequately, the wood must be dry, having dried for approximately 2 years and with a humidity level of approximately 20%. Softwoods such as spruce or fir trees release resins during combustion which promote the formation of creosote in the chimney.

SIGNS THAT WOOD IS TOO DAMP OR INAPPROPRIATE:

- Large amount of smoke and few flames
- Difficulty starting and accelerating combustion
- Abundant creation of creosote
- Short-term combustion
- Very dense, white, and grayish smoke.

CHARACTERISTICS OF VARIOUS SPECIES OF WOOD:

SPECIES	COMBUSTION	IGNITION	SPARK
Maple	Excellent	Poor	Very little
Red Oak	Excellent	Poor	Little
Yellow Birch	Excellent	Poor	Little
Beech	Good	Poor	Little
Ash	Good	Good	Little
White birch	Good	Good	Average
White Pine	Poor	Excellent	Average
Cedar	Poor	Excellent	A lot

CALORIFIC VALUE OF VARIOUS SPECIES OF WOOD:

The denser the wood, the more efficient it is. The calorific value is calculated in millions of BTU per cord of wood 4 feet high by 4 feet wide by 8 feet long.

SPECIE	MAPLE	RED OAK	YELLOW BIRCH	BEECH	ASH	WHITE BIRCH	WHITE PINE	CEDAR
CALORIFIC VALUE IN MBTU	29.0	27.3	26.2	27.8	25.0	23.4	17.1	16.2

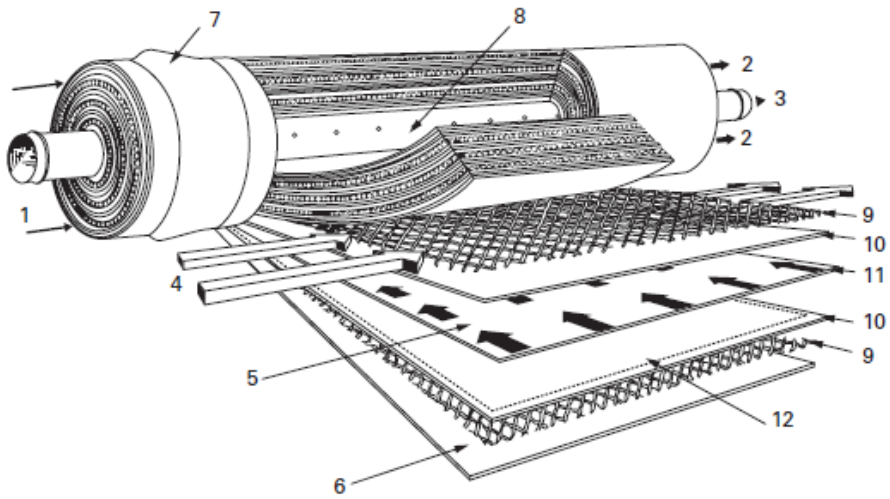
OSMOSIS

PRINCIPLE OF THE REVERSE OSMOSIS IN THE MAPLE SUGARING INDUSTRY:

Reverse osmosis is a filtration process that involves forcing water through a semipermeable membrane by subjecting it to a pressure greater than the osmotic pressure, so that it flows in the opposite direction of the natural process of osmosis. Pure water passes through the membrane, which has the effect of increasing the concentration in the remaining solution.

Sap from maple trees is a solution that contains mainly water (96% to 98%), sugar (2% to 3%) and a small number of mineral salts, proteins and other elements, such as the aroma. By extracting water from the sap, we can increase the sugar level. We then obtain two solutions: on the one hand, a more concentrated sap solution (the concentrate) and, on the other hand, the water removed from the sap (the filtrate).

ANATOMY OF A MEMBRANE AND WATER REMOVED DEPENDING ON THE °BRIX:



1. Water inlet
2. Concentrate outlet
3. Filtrate outlet
4. Direction of water flow
5. Direction of filtrate flow
6. Protective material
7. Seal
8. Perforated central tube
9. Feed channel spacer
10. Membrane.
11. Permeate (filtrate) collection equipment

°BRIX	% OF WATER REMOVED	GALLONS OF MAPLE SAP NEEDED TO MAKE ONE GALLON OF MAPLE SYRUP
2	0%	43.00
8	75%	10.75
10	80%	8.60
15	87%	5.70
20	90%	4.30
25	92%	3.44
30	93.3%	2.86
35	94%	2.45

QUICK START OF AN OSMOSIS

We describe the general steps of the startup procedure below. For instructions specific to your model, please refer to the decal affixed to your device or its user manual. The steps described here apply both to the first use of your concentrator and to all subsequent start-ups at the start of the season.

TO START THE REVERSE OSMOSIS:

1. Check that the filter and strainer are clean.

2. Make sure the device is powered on.

3. Supply the device with non-chlorinated water.

4. Rinse the device with an adequate volume of water depending on the model you have, for a period of 2 to 3 minutes.

5. Run a hot water loop in the wash tank, with non-chlorinated water.

⚠ It is best to use filtrate to clean the membranes. You can also use non-chlorinated spring water or good quality well water.

6. Repeat steps 4 and 5 twice each.

7. You are ready to switch to concentration mode.

⚠ At the start of the season, considering that maple water is of lower quality, it is preferable not to concentrate at a high sugar level and not to exceed a period of more than 6 to 8 hours of consecutive use. This ensures that the membranes are not clogged and that their lifespan is maximized.

8. Follow the procedure for a soap wash.

⚠ To clean the membranes with soap, make sure you have the right product and quantity for your membranes. For more details, contact your representative or directly with the manufacturing plant (see the contact us section at the end of this document for our contact information).

9. Carry out a membrane permeability test and make sure to note and keep the flow rate of the filtrate obtained (see data collection table in the appendix to this document). This flow rate will serve as a reference to evaluate the performance of the membranes during subsequent permeability tests.

⚠ Proceed with desugaring as soon as the sap concentration is complete to recover all the sugar contained in osmosis.

PEP TEST (PURE WATER PERMEABILITY TEST)

Pure water permeability (PEP) tests allow the performance of membranes to be verified. These tests must be carried out before and after cleaning the membranes to be able to compare the results.

OPERATIONS FOR A WELL-DONE PEP:

1. Prepare a basin of filtrate that you will have obtained during the concentration of the solution. A pool of clear, litter-free spring water can also be used.

2. Rinse the device for 10 minutes with filtrate so that only filtrate is inside.

3. Fill the wash basin to half capacity with filtrate.

4. Concentrate filtrate at 200 psi by returning the filtrate and concentrate to the wash basin. To do this, position the valves in the soap wash cycle and adjust the pressure to 200 psi.

5. When the temperature reaches 13°C (55°F), take the filtrate flow reading. This reading indicates the filtration capacity of the membranes per minute. To get the total device capacity per hour, multiply the sum of the readings from all flow meters by 60 (60 equals 60 minutes per hour). Take note of the data on the sheets provided for this purpose at the end of this document.

If the temperature exceeds 13°C (55°F) before you take the filtrate flow reading, take the flow reading at 21°C (70°F) adjusting the pressure to 150 psi.

6. Compare the filtrate flow value to that obtained in the test carried out during the first use.

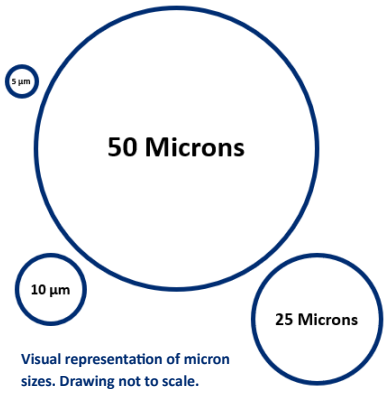
If the test result indicates a decrease in permeability of more than 15% from the initial value, perform a wash.

If your PEP result is still not satisfactory, you can use another soap, an acid or send us your membranes for factory washing.

TROUBLE WITH THE START OF YOUR OSMOSIS:

ALWAYS VALIDATE THE CLEANLINESS OF YOUR PRE-FILTERS. TRY NEW PRE-FILTERS IF YOU HAVE A PROBLEM STARTING THE PRESSURE PUMP. IF THE PROBLEM PERSISTENT, CALL YOUR D&G ADVISOR AFTER TRYING NEW PRE-FILTERS.

FILTRATION



Visual representation of micron sizes. Drawing not to scale.

CONICAL SYRUP FILTERS:

For smaller productions, the use of syrup presses is often poorly suited to the small volume of syrup to be filtered. The plate press will not have enough syrup to heat the plates. The use of syrup filters is then recommended. This is also the traditional method. Different grades are available:

1 micron: Finest weave. Very fine filtration. When the syrup is rougher, "dirty" (ex. at the end of the season), it will be more difficult to use because it will clog more quickly.

5 microns: Fine filtration. "Fits all" filter grade.

18 microns: Felt filters.

+/- 100 microns: paper pre-filters. These will extend the life of the cups between washes.

BUT WHAT IS A MICRON?

A micron is a millionth of a meter. For example, a hair has an average diameter of 70 microns.

RING BAGS FOR MAPLE WATER:

These can be used when water arrives at the cabin before pouring into the tanks. Available in 25 microns (with laces) or 50 microns (without laces).

Hand-wash the hats in warm water. Never use soap or any other type of detergent. Avoid twisting the filters. This could distort the fibres and reduce their effectiveness. Allow to air dry in a controlled, odour-free environment. Store in a container that prevents soiling during storage.

PAPERS FOR FILTER PRESSES:

Syrup press papers are 20 microns. These papers allow both to collect the powder to be filtered, mixed with the syrup and to filter the syrup.

MAPLE SYRUP AND ITS DERIVATIVES

WATER BOILING POINT: Each day, adjust your thermometers based on the day's atmospheric pressure and boiling point. It is from this value that you add the values below to obtain the various maple products that do not require the addition of other ingredients. Boiling point varies with the atmospheric pressure.

+7°F (4°C): MAPLE SYRUP

⚠ If below 66°Brix, the syrup may ferment. If higher than 68°Brix, the syrup may crystallize.

⚠ Always pack syrup at least 180°F in containers or barrels.

+21°F (11.5°C): MAPLE BUTTER/MAPLE CREAM* Once the temperature is reached, let the product cool until it wants to form a paste. Pour the dough into a machine or mix by hand then pour into containers.

+25.5°F (13.8°C): TAFFY ON SNOW Type some snow into a container and pour in portions of taffy.

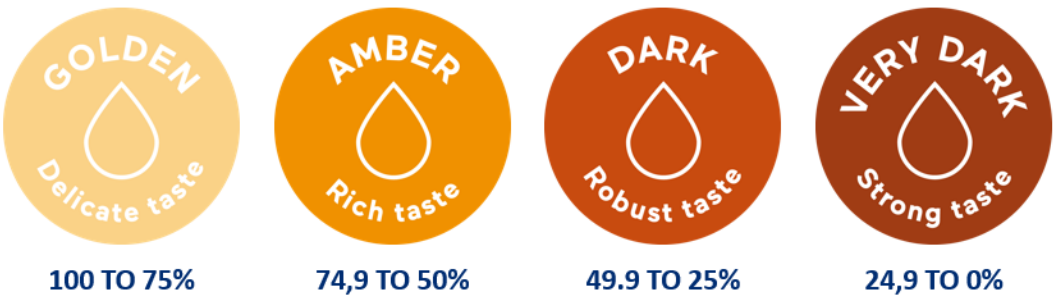
+26°F (14.5°C): MAPLE TAFFY* Cool quickly to 190°F (88°C) or until sugar crystals form on the sides of the container. Slowly scrape the bottom and sides to bring the crystals back to the centre. Stir slowly until the mass becomes a muddled consistency then quickly while lifting the concentrate. Pour into moulds and unmould after about 60 minutes in a cool place without drafts.

+32°F (18°C): HARD MAPLE SUGAR* Cool quickly to 190°F (88°C) or until sugar crystals form on the sides of the container. Slowly scrape the bottom and sides to bring the crystals back to the centre. Stir slowly until the mass becomes a muddled consistency then quickly while lifting the concentrate. Pour into moulds and unmould after about 60 minutes in a cool place without drafts.

+44°F (24.5°C): MAPLE SUGAR* Stir constantly until flour forms, then sift the product obtained.

* Add 2°F (1°C) per 6 months of aging of the syrup and monitor cooking.

MAPLE SYRUP GRADING



100 TO 75% | 74,9 TO 50% | 49.9 TO 25% | 24,9 TO 0%

HYDROTHERM

The hydrotherm is an instrument that combines the qualities of a hydrometer and a thermometer. This instrument quickly indicates whether the syrup is medium, too light, or too thick, regardless of the temperature of the syrup, as long as it is not below 35°F or above 210°F. it is graduated in 2/10 of a Brix degree, without a number. Neither temperature nor altitude influences it.

PRINCIPLE:

The syrup is ready when the top of the red column is at the same level as the surface of the syrup.

Disregard the meniscus, the higher or lower liquid ring that forms around the stem.

HOW TO USE IT:

As you would do with a hydrometer, you must slowly immerse the hydrotherm in a cup filled with syrup. Please note that if the unit gets wet with cleaning water, the reading may be inaccurate.

The end of the red column, which moves vertically depending on the degree of heat, constantly indicates 65.8°Brix regardless of the temperature of the syrup. For the syrup to be ready, the end of the red column must be at the same level as the surface of the syrup. If it settles higher than the surface, the syrup will be too thick. If it settles lower than the surface, the syrup will be too light.

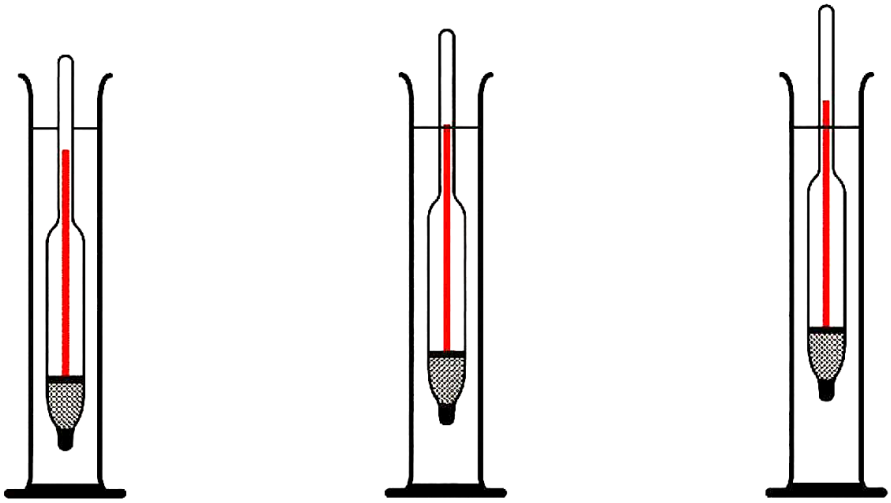
Always keep the hydrotherm in a vertical (upright) position and keep it at room temperature. When the time comes to use it, it is important to reheat it to avoid thermal shocks in the syrup drawn directly from the evaporator outlet. Don't forget to slowly immerse the hydrothermal bath into the cup of hot syrup.

CLEANING:

If calcium malate (sugar stone) forms a thin, hard layer on the device, clean it gently with a small blade. Never use a porous object such as steel wool or sandpaper.

STORAGE: When the device is not in use, it is recommended to place it upright.

If the red liquid separates inside the tube, it is best to change the device. Attempting to recalibrate it could result in incorrect readings during subsequent operations.



TOO THIN **SYRUP ON POINT** **TOO THICK**

CHART FOR MAPLE SYRUP HYDROMETER 20°C

Maple syrup temperature		Brix adjustment	
°F	°C		
32	0	REMOVE	-1.69 °B
41	**5**		**-1.27 °B**
50	10		-0.84 °B
59	**15**		**-0.42 °B**
68	20	VALUE SEEN ON THE HYDROMETER	
77	25	ADD	+0.42 °B
86	**30**		**+0.84 °B**
95	35		+1.27 °B
104	**40**		**+1.69 °B**
113	45		+2.11 °B
122	**50**		**+2.50 °B**
131	55		+2.96 °B
140	**60**		**+3.38 °B**
149	65		+3.80 °B
158	**70**		**+4.23 °B**
167	75		+4.65 °B
176	**80**		**+5.07 °B**
185	85		+5.50 °B
194	**90**		**+5.92 °B**
203	95		+6.34 °B
212	**100**		**+7.00 °B**

Information gathered from the seminar:
L'utilisation et la calibration des instruments de mesure utilisés en acériculture by Centre ACER (25 octobre 2023)

How to use the chart:

- Valid that your hydrometer was set by the manufacturer at 20°C (68°F).
- Pour maple syrup into a cup and note its temperature.
- Insert gently the hydrometer into the cup and let it stabilize itself for 2-3 minutes.
- According to the temperature noted, correct the value observed with the numbers in the right collum of the chart.

For example: If you have a reading of 59°*Brix in a syrup at 212°F, you need to add 7°Brix. That means your syrup is at 66°Brix.*

You now know the density of your maple syrup according to its current temperature.

CHART FOR MAPLE SYRUP HYDROMETER 60°F

Maple syrup temperature		Brix adjustment	
°F	°C		
40	4.4	REMOVE	-1.00 °B
50	**10.0**		**-0.50 °B**
60	15.5	**SET POINT**	0.00 °B
70	21.1	ADD	+0.50 °B
80	**26.6**		**+1.00 °B**
90	32.2		+1.50 °B
100	**37.7**		**+2.00 °B**
110	43.3		+2.50 °B
120	**48.8**		**+3.00 °B**
130	54.4		+3.50 °B
140	**60.0**		**+4.00 °B**
149	65.0		+4.50 °B
158	**70.0**		**+5.00 °B**
167	75.0		+5.50 °B
176	**80.0**		**+6.00 °B**
185	85.0		+6.50 °B
193	**89.4**		**+7.00 °B**
202	94.4		+7.50 °B
209	**98.3**		**+8.00 °B**

Information gathered from the seminar:
L'utilisation et la calibration des instruments de mesure utilisés en acériculture by Centre ACER (25 octobre 2023)

How to use the chart:

- Valid that your hydrometer was set by the manufacturer at 60°F.
- Pour maple syrup into a cup and note its temperature.
- Insert gently the hydrometer into the cup and let it stabilize itself for 2-3 minutes.
- According to the temperature noted, correct the value observed with the numbers in the right collum of the chart.

For example: If you have a reading of 59°*Brix in a syrup at 209°F, you need to add 8°Brix. That means your syrup is at 67°Brix.*

You now know the density of your maple syrup according to its current temperature.

TECHNICAL DATA: D&G SYRUP FILTER PRESSES

SIZE OF A SUITABLE SYRUP PRESS ACCORDING TO THE NUMBER OF TAPS:

7 inches 3 frame press: 0 to 500 taps

7 inches 7 frame press: 500 to 3000 taps

10 inches 7 frame press: 2000 to 8000 taps

10 inches 10 frame press: 4000 to 12000 taps

15 inches 7 frame press: 10,000 to 20,000 taps

15 inches 10 frame press: 10,000 to 25,000 taps

20 inches 7 frame press: 20,000 taps and more

20 inches 10 frame press: 25,000 taps and more

VOLUME OF FILTERING POWDER (CALCINED DIATOMACEOUS EARTH) REQUIRED PER GALLON OF SYRUP:

2 litres or 2000g for 34 gallons of syrup so approximately 60g per gallon of syrup.

WHEN TO CHANGE FILTER PAPER AND CLEAN THE PRESS:

It is impossible to have an exact figure because the quantity of minerals in the syrup depends on the quality of the sap, the type of soil and the period during the sugaring season. These data may therefore vary from one Maple Grove to another.

7 inches 3 frame press: 10 to 15 gallons of syrup

7 inches 7 frame press: 45 to 75 gallons of syrup

10 inches 7 frame press: approximately 150 gallons of syrup

10 inches 10 frame press: approximately 200 gallons of syrup

15 inches 7 frame press: approximately 900 gallons of syrup

15 inches 10 frame press: approximately 1300 gallons of syrup

20 inches 7 frame press: approximately 1400 gallons of syrup

20 inches 10 frame press: approximately 1800 gallons of syrup

Take care to handle the press plates gently. Bumps and shocks between the plates could damage or deform them, thus preventing optimal sealed assembly for filtration.

CORRECTION FACTOR TABLE FOR ANY TYPE OF MEMBRANE

FILTRATE T° IN CELCIUS	FILTRATE T° IN FARENHEIT	CORRECTION FACTOR	FILTRATE T° IN CELCIUS	FILTRATE T° IN FARENHEIT	CORRECTION FACTOR
0	32	1.488	13	55	1.00
1	34	1.439	14	57	0.973
2	36	1.391	15	59	0.948
3	37	1.348	16	61	0.923
4	39	1.305	17	63	0.899
5	41	1.266	18	64	0.876
6	43	1.226	19	66	0.855
7	45	1.188	20	68	0.833
8	46	1.155	21	70	0.814
9	48	1.120	22	72	0.794
10	50	1.088	23	73	0.776
11	52	1.057	24	75	0.758
12	54	1.028	25	77	0.741

DATA FROM THE FORMATION IN "PRODUCTION ACÉRICOLE" AT CFA ST-ANSELME 2018-2019

PH TEST

PH strips allow simple and effective analysis. For analysis, dip the strip into the wash basin containing the soap. Leave to soak for 5 seconds and then compare the color of the strip with the scale. If your result differs from the recommendation, adjust your soap by either increasing or decreasing the quantity.

More soap increases the PH (basicity) / Less soap decreases the PH (acidity)

Recommendations:

Powder Soap: PH of 11

Liquid Soap: PH of 9

NAME: _____

Year: _____

Date	Previous operation	Calculation of pure water permeability (PEP)									Wash and rinse data			
		Time of operation		Volume for the PEP (litres)	Time to fill volume A (seconds)	Filtra flow A/B x 60 (litres/min)	Filtra temperature at the membrane outlet (°C or °F)	Correction factor (See correction factor table for all types of membranes)	PEP (C x E)	Current PEP efficiency divided by starting PEP (%)	Concentration of the washing solution (pH or ml)	Temperature of the washing solution (°C or °F)	Time of the wash or the rinse (min)	Volume of water to make the operation (Imp. gal.)
		Time	Combine	A	B	C	D	E	F	G				

REVERSE OSMOSIS LOG **NAME: _____**

Date	SUGAR RATE IN TESTING (°BRIX)		FILTRATE AND CONCENTRATE FLOW ON FLOW METERS (GPM)									Debit GPH*	Osmosis temperature (°F)	Pressure (PSI)
			Filtrate								Concentrate			
	Maple Sap	Concentrate	1	2	3	4	5	6	7	8				

* Filtrate outflow + concentrate outflow x 60 (60min / h)

Device concentration performance readings should be taken each day you use your concentrator. These readings are essential to ensure effective maintenance of your membranes and to immediately detect a problem during the operation of your device.

MAPLE SYRUP PRODUCTION LOG

YEAR : _____

NAME : _____

DATE	# PRODUCT/LOT	GRADE	DENSITY	PACKING TEMPERATURE	NUMBER OF BOTLES / BARELS	PACKED BY

NOTES:

SEASONAL CHECK LIST

	DESCRIPTION	NOTES		QUANTITY TO ORDER
IN THE FOREST	TAPPING BIT	DIAMETER :		
	PAINT OR CHALK	COULOUR :		
	SURVEYOR TAPE	COULOUR :		
DEFOAMER	KASCHER DEFOAMER (POWDER)	☐ 200G	☐ 2.5KG	
	LIQUIDE KASHER DEFOAMER 1L	☐ 1L	☐ 4L	
	SUNFLOWER BIO DEFOAMER 4L			
OSMOSIS	CARTRIDGES **2X10** PURTREX 5 MICRONS			
	CARTRIDGES **2X20** PURTREX	☐ 5 MICRONS	☐ 10 MICRONS	
	PEARL ALCALINE 4L			
	NETT CAUSTIC S. PEARL BIO	☐ 2 KG	☐ 20 KG	
	ACID-OSMO 2 KG			
FILTER PRESSES	DICALITE FILTER AID	☐ 10LB	☐ 50LB	
	WHITE PAPERS (400 / BOX)	☐ 7''	☐ 10''	
	WHITE PAPERS (250 / BOX)	☐ 15''	☐ 20''	
VACUUM PUMP	REGULAR VACUUM PUMP OIL	☐ 3.7 L	☐ 18.9 L	
	FLOOD VACUUM PUMP OIL 18.9L			
	RADIATOR OIL 18.9L			
CLEANING	ISOPROPYL ALCHOL 70% (4 L / 18.9 L / BARIL)	SIZE :		
	DENATURED ALCOHOL (2-J) 4 LITRES			
	12% CHLORINE DESINFECTANT 20L			
EVAPORATOR	MYSTER PAN 4L 20L			
	SUPER CLEAN 4L 20L			
	LIQUID PAN CLEANER			
	FINOX (FOR UNDER THE PANS)			
PACKAGING	SYRUP CAN	MODEL:		
	BOX (4, 8 OR 24 CANS)	☐ WHITE	☐ BROWN	
	PLASTIC JUGS	SIZE:		
	MAPLE BUTTER CONTAINER	☐ 250g	☐ 500g	
	MAPLE TAFFY CONTAINER	☐ 250g	☐ 500g	

DOMINION & GRIMM

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