

**Pennsylvania Department of Agriculture
Bureau of Food Safety and Laboratory Services
717-787-4315
www.eatsafepa.com**

GUIDELINES FOR MAPLE SYRUP PROCESSING



Maple syrup which may also be spelled “maple sirop” or “maple sirup” is the liquid derived by concentration and heat treatment of the sap of maple (*Acer* species) trees, or by the solution in water of maple sugar or maple concentrate made from such sap. The solids content of maple syrup may not be less than 66% by weight or more than 68.9% by weight, as measured in Brix units at a temperature of 68°F (room temperature).

The present document provides practicable guidelines for the sanitary production of Maple Syrup processing operations in compliance with the Food Safety Act (3 Pa. C.S.A. §§5721 - 5737). Producers of maple products will also be subject to federal rules within the Code of Federal Regulations (CFR’s) relating to food and good manufacturing practices.

All maple product producers in PA shall be licensed and subject to a \$35.00 Food Processors Registration by the PA Department of Agriculture (PDA).

Prior to issuing a registration and during the initial inspection, the Food Sanitarian will be looking for the following at your facility:

Physical Structure of Facility: Floors, walls and ceilings shall be kept in good repair and adequately cleaned. Every practicable precaution shall be taken to exclude birds, insects, rodents and other vermin and animals from the premises of the operations.

The grounds outside the maple syrup production building shall be kept clean and free of unnecessary clutter or equipment that could harbor pests.

Equipment and Utensils: Equipment and utensils shall be adequate for their intended use. Equipment shall be designed to prevent food contamination and shall be made of durable, non-porous and easily cleanable material. Evaporator pans, buckets, tanks, and other food processing equipment shall not be made with solder containing lead in any quantity. Equipment for food-contact should not be constructed of wood, copper, or galvanized metals. Utensils and equipment shall be kept in a clean, sanitary condition at all times and shall be maintained in good repair and free from rust so as not to pose a risk of product contamination.

Rodent Control: Effective measures shall be taken to exclude pests from the processing areas. The use of insecticides, rodenticides and other pest control measures shall be permitted only under such precautions and restrictions as will prevent the contamination

of the product, and as legally applied, under the PA Pesticide Control Act, by a certified Pest Control Operator, if applicable.

Hygienic Practices: Toilet facilities shall be provided and conveniently located near the processing facility. All personnel shall wash hands after each visit to the toilet facility. Personnel shall not use tobacco in the facility or while in contact with food or equipment. Employees shall be free of communicable diseases and wear clean outer garments that will not contribute to the contamination of the product.

Ventilation: All openings shall be properly screened. Provisions shall be made for condensate removal during evaporation process. The evaporator fire shall be vented to prevent smoke and ashes from contaminating the syrup.

Lighting: All facilities shall have sufficient light to permit efficient and effective operations. All lights located over exposed food, food areas used in any step of preparation, and in storage areas for food packaging containers shall be shatter-proof, shielded, or otherwise protected to prevent food adulteration in case of breakage.

Sanitation: An effective cleaning schedule shall be implemented at all times to maintain the integrity of the products. All utensils and product contact surfaces of equipment used in processing or handling the product shall be cleaned prior to use and following any interruption during which utensils and contact surfaces may have become contaminated.

Pipeline tubing is a food contact surface and thus is subject to cleaning to remove any remaining sap and the mass of bacteria and yeast that build up during off-season. Sap tubing system cleaning should be done as soon as possible after the end of the season. Several methods of cleaning have been scientifically studied and one or combination may be utilized:

1. *Chemical Cleaning Methods:*

- a. Tubing system can be cleaned with an approved food-grade sanitizer solution (e.g. sodium hypochlorite) and rinsed with clear potable water prior to the next season of sap collection and or following any interruption during which the tube may have become contaminated.
- b. Processors may use the food-grade hydrogen peroxide instead of chlorine solution to avoid the off-flavor issue in the sap caused by the remnant residue of chlorine. Hydrogen peroxide breaks down without leaving any residue and is also reported, by maple syrup producers, not to attract rodents.

Household and industrial cleansers should not be used to clean tubing. Even food- grade isopropyl alcohol is not currently permitted for cleaning maple tubing in the U.S.

All chemical sanitizers and/or cleaners used in sap collection tubing systems, or in food processing operations in general, must be conformant with the FDA 21 CFR Part 178 _ Indirect Food Additives: Adjuvants, Production Aids, and Sanitizers.

2. *Non-Chemical Cleaning Methods:*

Alternative non-chemical cleaning methods can also be used such as:

- a. *Pressurized air/water*, a mixture that is pumped through the sap collection tubing which creates frictional turbulence that can effectively remove the biofilm, yeast and other sap residues.
- b. *Dry cleaning* by running vacuum pumps while pulling taps, thus drying the tubing. Processors using this method shall discard the first run of the next season sap to rinse and remove contaminants from the system. Processors that drain the tubing system by gravity should inspect the droplines for adequate drainage and insure no stagnant sap is trapped which could support the buildup of biofilms and yeast.

Other cleaning methods, not covered in this document, may be used if reviewed by the department and found to be effective in reducing contaminants.

After cleaning mainlines, taps or open ends of the pipe should be capped or sealed to reduce the risk of nest-building insects or rodents contaminating and plugging the pipe during the off-season.

Water Supply: The water supply shall be ample for all operations (e.g. processing, cleaning, etc.) and shall be obtained from a potable public or private supply. Private water supplies must be tested annually each maple syrup season.

Note: Water drawn from the evaporator and immediately used in equipment cleaning/sanitizing is exempt from water testing. This water may not be stored for any length of time and used as potable water without adequate testing.

PDA water testing Protocol for Maple Syrup processors (not regulated by DEP):

- Initial testing for Coliform (1 sample) and Nitrate/Nitrite (1sample)
- Continual testing for Coliform- annually
- Continual testing for Nitrate/Nitrite (*using a combined MCL)
 - If initial test is ≤ 5 ppm – no additional testing needed.
 - If initial test is >5 ppm but ≤ 10 ppm – annual testing until results are ≤ 5 ppm.
 - If initial test is >10 ppm - quarterly testing
 - ✓ Once test results show 4 quarters in a row ≤ 10 ppm – reduce to annual.
 - ✓ If any other quarter results are >10 ppm – Sanitarian should determine the consumption usage of the water. Further action to be determined by Harrisburg office upon discussion with Supervisor.
 - If initial or subsequent tests >10 ppm – Sanitarian should determine the consumption usage of the water. Further action to be determined by Harrisburg office upon discussion with Supervisor.

Additives: All ingredients from which the food is fabricated shall be safe and suitable.

Optional ingredients that may be used in Maple Syrup are:

- Salt
- Chemical Preservatives
- De-foaming agents

De-foaming agents are used as processing aid during manufacture. Such de-foaming agents, when used properly, being in insignificant quantities and having no functional or technical effect in the finished maple syrup, do not typically need to be declared on the product Label in the Ingredients List.

An **exception** for agents containing a "Major Food Allergen" as defined in the Food Allergen Labeling & Consumer Protection Act (FALCPA) of 2004 would require those agents be declared on the product Label.

Processors must keep and provide, upon request, documentation showing that the De-foaming agent used in production is free of food Allergens. (e.g. manufacturer specification sheet, product MSDS, etc.)

Maple Syrup By-Products: Candy, creams, sugars, and flavored maple syrup products shall be handled according to good manufacturing practices, i.e., proper labeling, adequate packaging, sanitation, potable water, storage, etc.

Storage Facilities: Shall be maintained clean and dry. All syrup and by-products that are not bottled or canned shall be adequately protected and covered to prevent contamination and/or adulteration. Products shall be stored off the floor and away from walls.

Bottling/Packaging:

Maple Syrup shall be bottled hot at a temperature not less than 185°F.

If packaging for maple syrup is to be reused, it must be washed and sanitized. Closures shall not be reused.

Retail containers shall be single service and properly cleaned before filling; it should not be assumed that new containers are clean when received from the distributor/ manufacturer.

Labeling: All information on the label must be truthful and not misleading. Prepackaged syrup shall be labeled to show:

- a. Statement of Identity – the common or usual name of the food product
- b. Name and address of Manufacturer/distributor.
- c. Net Contents by volume.
- d. Ingredients, when using optional ingredients/additives as stated above.

Note: If nutrient content claims (i.e. low fat, salt free, etc.) or health claims (i.e. may reduce heart disease) are made, the product label must bear the Nutrition Facts Panel.

For more information, contact:

Pennsylvania Department of Agriculture
Bureau of Food Safety and Laboratory Services
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Harrisburg PA 17110
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FDA Registration:

The FDA Food Safety Modernization Act (FSMA) enacted on January 4, 2011, amended section 415 of the Federal Food, Drug, and Cosmetic Act (FD&C Act), in relevant part, to require that facilities engaged in manufacturing, processing, packing, or holding food for consumption in the United States register their facilities with FDA.

Maple syrup producers are required to register their facility with FDA if they manufacture maple syrup from sap collected from trees they tap or from sap purchased from others. FDA Registration is also required if the facility makes other maple products for human consumption and / or sells maple syrup or maple syrup products to consumers from the sugarhouse, farm or other outlets.

For more information contact FDA at 1-800-216-7331 or 301-575-0156 or visit their website at <http://www.fda.gov/Food/GuidanceRegulation/FoodFacilityRegistration/default.htm>

FSMA Preventive Controls Rule:

Maple Syrup processing firms that fall under the categories of *small or very small* businesses AND the syrup production is done On-Farm, may be exempt from the FSMA PC Rule because maple syrup processing operations are considered low-risk.

All other Maple Syrup producers that do not meet the business size criteria AND/OR syrup production is done OFF-farm, are required to establish and implement a comprehensive Hazard Analysis and Risk-Based Preventive Controls (**HARPC**) plan.

For more information about FSMA, visit the FDA website at www.fda.gov/fsma

REFERENCES

- [PA Food Safety Act \(3 Pa. C.S.A. §§5721 - 5737\).](#)
- [FDA 21 CFR Part 110 – Current Good Manufacturing Practice \(cGMPs\)](#)
- [Click here to find the Code of Federal Regulations related to FSMA’s new Preventive Controls for Human Food Final Rule \(21 CFR 117-- cGMPs, Hazards Analysis, and Risk-Based Preventive Controls for Human Food\).](#)
- [21 CFR PART 168 -- SWEETENERS AND TABLE SIRUPS](#)
- [Food Allergen Labeling And Consumer Protection Act of 2004 Questions and Answers](#)
- [FDA 21CFR Part 178-Indirect Food Additives: Adjuvants, Production Aids, and Sanitizers.](#)
- [U.S. Grade Standards for Maple Syrup \(pdf\)](#)
- [FSMA Preventive Controls for Human Food Rule - PDA Fact Sheet](#)
- www.EatSafePa.com