

Processed Meat Products

Quick Facts



Shelf Stable Requirements

1. pH of 4.6 or less regardless of a_w
2. a_w of 0.85 or less regardless of pH
3. pH of 5.3 or less AND a_w of 0.90 or less.
 - Shelf Stable products may be displayed without refrigeration

Fermented - Dry

- Does not require refrigeration - **is shelf stable**.
- Uses an acceptable starter culture as listed in CFIA Manual of Procedures; Chapter 4- Annex G.
- pH 5.3 or lower + a_w .90 or lower.
- Minimum 2.5% salt.
- Complies with degree hours.
- Minimum of 100 ppm Nitrite/nitrate, not to exceed 200 ppm.
- Is RTE.

Fermented - Semi Dry

- Must be refrigerated.
- Uses an acceptable starter culture as listed in CFIA Manual of Procedures; Chapter 4- Annex G.
- pH 5.3 or lower.
- a_w above .90.
- Minimum 2.5% salt.
- Complies with degree hours.
- Minimum of 100 ppm nitrite/nitrate, not to exceed 200 ppm.
- Is RTE

Air Dried/Dehydrated

- Beef products must undergo a heat treatment to control *E.coli* 0157:H7 prior to drying process.
- Pork products must undergo trichinosis control measures.
- Is dependent on lowering of a_w
- Uncooked air dried products produced as RTE, must meet shelf stable requirements as detailed for Fermented-Dry products.

- The temperature in the drying chamber/room shall be uniform and controlled to prevent any fluctuation that could impact on the safety of the final product

Beef as an Ingredient

- Any processed RTE product containing beef or processed in a facility that also processed beef, must be subjected to a heat treatment step to control *E.coli* 0157:H7. Heating to an internal temperature of 71°C for 15 seconds or other treatment to achieve a 5D reduction is necessary. This is a CFIA requirement and is not negotiable.

Cooked Sausage (RTE)

- Ready To Eat.
- Has been heat treated (cooked) or otherwise processed to meet ready to eat requirements.
- RTE can be achieved through cooking, curing, fermentation, drying or a combination of any/all.
- Nitrite/nitrate content minimum 100 ppm and does not to exceed 200 ppm.
- If cooked, fully cooked to 71°C for 15 seconds or acceptable lower temperature and longer time combination.
- If cooked, complies to Rapid Cooling Criteria
- Does not require further treatment other than thawing or warming before eating.
- May or may not require refrigeration depending if it is processed to shelf stable requirements.

Cold Smoked Sausage (NRTE)

- Not Ready To Eat.
- May have received a heat treatment but not fully cooked process step. If heat treated, but not fully cooked, it must still comply with cooling regulations. See CFIA MOP Chapter 4.5
- Required to be fully cooked before eating.
- Must be refrigerated.
- "If any meat product is not a ready-to-eat meat product but has the appearance of or could be mistaken for a ready-to-eat meat product, the meat product shall bear the following information on its label:
 - the words "must be cooked", "raw product", "uncooked" or any equivalent words or word as part of the common name of the product to indicate that the product requires cooking before consumption; and
 - comprehensive cooking instructions such as an internal temperature-time relationship that, if followed, will result in a ready-to-eat meat product."
- Nitrite/nitrate content minimum 100 ppm and does not to exceed 200 ppm.
- Minimum 2.5% salt.
- Requires refrigeration.
- Complies to Rapid Cooling Criteria

Bacon

- Nitrite/nitrate content between 100 and 120 ppm.
- Typically not fully cooked.
- Is NRTE
- Requires refrigeration.

Ham

- Nitrite/nitrate content minimum 100 ppm and not to exceed 200 ppm.
- Requires refrigeration.
- Can be RTE or NRTE
- Complies with a cooling requirement – CFIA MOP Chapter 4.5

Drying Room

- Sausage drying rooms should be equipped with a fan, and with facilities for dehumidification and chilling or warming the air, if necessary, as well as humidity and temperature control instruments.

Degree Hours

Degree hours = time (in hours) x degrees C in excess of 15.6°C (using the highest temperature of the product, in the drying room, over the entire length of time it takes for the pH to reach 5.3).

The corresponding degree-hours limit/maximum (less than 33°C) is 665 degree-hours.

The corresponding degree/hour limit/maximum (between 33°C and 37°C) is 555 degree-hours.

The corresponding degree/hour limit/maximum (temperature over 37°C) is 500 degree-hours.

Calculations must be made for each amount of time that a temperature is within the above listed temperature ranges and each sum must be added together to achieve the **total** degree hours calculation.

Temperatures for degree hour calculations should be taken at the products surface. If this is not possible, fermentation room temperatures may be used.

Cooling Requirements

Cooling must be continuous and begins immediately after the heating cycle is completed.

Unless otherwise noted, temperature limits refer to the internal temperature of a product.

Rapid Cooling Criteria

- During cooling, product's **maximum internal temperature** shall not remain between 54°C and 27°C for more than 2.0 hours nor from 54°C to 4°C for more than 7 hours.
- As an option, products consisting of a piece of intact (excluding tenderized) muscle such as roast beef, moist cooked beef, turkey breast or pork loin, may be cooled to 4°C within 7.5 hours from the initiation of the cooling process while taking no more than two hours for the 50°C to 20°C temperature zone.

Slow Cooling Criteria

These generic requirements for slow cooling are applicable for a meat product that is formulated:

- with a water activity (a_w) of above 0.92, no less than 120 ppm of sodium nitrite (or its equivalent in KNO_2) **and** a salt concentration* of 3.5% in the finished product or more; **OR**
- with a water activity (a_w) above 0.92, no less than 40 ppm of sodium nitrite (or its equivalent in KNO_2) **and** a salt concentration* of 6% or more in the finished product; **OR**
- with a water activity (a_w) that is less than or equal to 0.92 at the beginning of the cooling process, with or without nitrite (such as dried products); **OR**
- with a water activity (a_w) of above 0.92, no less than 180 ppm of sodium nitrite (or its equivalent in KNO_2) **and** a salt concentration* of 2.3% in the finished product or more.

*Note

Brine concentration in the finished product =

$[\% \text{ salt} \div (\% \text{ salt} + \% \text{ moisture in end product})] \times 100$

Example: If 2.8% of salt in the formulation and the end product has a moisture level of 72%, the brine concentration is:

$[(2.8/100) \div \{(2.8/100) + (72/100)\}] \times 100 =$

$[0.028 \div (0.028 + 0.72)] \times 100 =$

$2.8 \div 0.748 =$

3.74%

Requirement for slow cooling

Please note that condition 1 and one of the two options in condition 2 must be met:

Condition 1.

The internal temperature does not remain between 49°C and 4°C for more than 20 hours; **AND**

Condition 2.

The cooling process:

- Causes a continuous drop in product's temperature; **OR**
- Controls the product's surface temperature so that it does not stay between 49°C and 20°C for more than 2 hours.

N.B.! Therefore to qualify to use slow cooling, any given product must possess particular a_w and salt concentration before being considered as able to be cooled at a slower rate. In addition, the processor must also be able to determine the moisture content of the end product.

Slow cooled product must cool to 4°C internal temperature in no more than 20 hours

a_w - The measurement of the availability of water for biological reactions. It determines the ability of microorganisms to grow.

pH - A measure of acidity and alkalinity.

RTE - Ready To Eat

NRTE - Non Ready To Eat