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CONTU 01

(1 OF 2) COMPIL ... ISSUANCES..COOKED MEAT\POUL PROD TEMP.

PART 1 OF 2

COMPILATION OF ISSUANCES ON  
COOKED MEAT AND POULTRY PRODUCT TEMPERATURES

I. PURPOSE

This directive provides a compilation of issuances that show cooking temperatures for meat and poultry products. It also provides FSIS employees with a quick reference tool for determining compliance of cooked temperatures in various products.

II. [RESERVED]

III. [RESERVED]

IV. REFERENCES

MPI Regulations, Sections 317.8, 318.17, 318.23, 319.15, 319.25,  
381.150  
FSIS Directive 6810.2  
FSIS Directive 7370.1  
Standards and Labeling Policy Book

V. PRODUCTS FOR WHICH A HEAT PROCESS IS REQUIRED BY REGULATION  
IN ORDER TO ENSURE THE SAFETY OF THE FINISHED PRODUCT.

The following list summarizes those products that are in the MPI Regulations which require a minimum internal cooking temperature to ensure their safety, provided that good manufacturing practices are followed by the establishment throughout the remaining process. FSIS recognizes that processors need variability in attaining finished product characteristics, as is the case with rare roast beef. For this reason, FSIS has provided industry with the opportunity to process certain products at various temperatures for specified periods of time while maintaining the equivalent level of product safety.

A. Cooked beef and roast beef, including sectioned and formed roasts and chunked and formed roasts, and cooked corned beef shall be prepared by one of the time and temperature combinations in the following table. The stated temperature is

the minimum which shall be produced and maintained in all parts of each piece of meat for at least the stated time. (MPI Regulations, Section 318.17 (a))

1. Table for Time/Temperature Combination for Cooked Beef, Roast Beef, and Cooked Corned Beef

Minimum internal temperature		Minimum processing time in minutes after minimum temperature is reached
Degrees Fahrenheit	Degrees Centigrade	
130	54.4	121
131	55.0	97
132	55.6	77
133	56.1	62
134	56.7	47
135	57.2	37
136	57.8	32
137	58.4	24
138	58.9	19
139	59.5	15
140	60.0	12
141	60.6	10
142	61.1	8
143	61.7	6
144	62.2	5
145	62.8	Instantly

2. Humidity Requirements

Certain pathogens may survive a dry heat process, therefore, moisture (humidity) has to be injected into the process to assure a sufficient kill-step is attained. Cooked beef, including sectioned and formed roasts and chunked and formed roasts, and cooked corned beef shall be moist cooked throughout the process. The moist cooking may be accomplished by the following: (MPI Regulations, Section 318.17 (b))

a. Placing the meat in a sealed, moisture impermeable bag, removing the excess air, and cooking,

b. Completely immersing the meat, unbagged, in water throughout the entire cooking process.

c. Using a sealed oven or steam injection to raise the relative humidity above 90 percent throughout the cooking process.

In addition, roast beef or corned beef to be roasted shall be cooked by one of the following methods: (MPI Regulations, Section 318.17 (c))

a. Heating roasts of 10 pounds or more in an oven maintained at 250 degrees F. (121 degrees C.) or higher throughout the process.

b. Heating roasts of any size to a minimum internal temperature of 145 degrees F. (62.8 degrees C.) in an oven maintained at any temperature if the relative humidity of the oven is maintained either by continuously introducing steam for 50 percent of the cooking time or by use of a sealed oven for over 50 percent of the cooking time, or if the relative humidity of the oven is maintained at 90 percent or above for at least 25 percent of the total cooking time, but in no case less than 1 hour.

c. Heating roasts of any size in an oven maintained at any temperature that will satisfy the internal temperature and time requirements (Reference Paragraph V.A.1. above) if the relative humidity of the oven is maintained at 90 percent or above for at least 25 percent of the total cooking time, but in no case less than 1 hour. The relative humidity may be achieved by use of steam injection or by sealed ovens capable of producing and maintaining the required relative humidity.

B. Fully Cooked Patties (MPI Regulations, Section 318.23 (b)(1)(i))

Official establishments which manufacture fully cooked patties shall utilize one of the heat-processing procedures in the following table:

PERMITTED HEAT-PROCESSING TEMPERATURE/TIME  
COMBINATIONS FOR FULLY-COOKED PATTIES

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Minimum internal temperature at the center of each patty	Minimum holding time after maximum temperature is reached
Degrees 	Time

Fahren- heit	or Centi- grade	(Minutes)	or (Seconds)
151.....	66.1.....	0.68	41
152.....	66.7.....	.54	32
153.....	67.2.....	.43	26
154.....	67.8.....	.34	20
155.....	68.3.....	.27	16
156.....	68.9.....	.22	13
157 (and up)	69.4 (and up). ....	.17	10

C. Partially-Cooked Patties (MPI Regulations, Section 318.23 (b)(1)(ii))

Official establishments which manufacture partially-cooked patties shall raise the internal temperature at the center of each patty to minimum internal temperature of 140 degrees F. Partially-cooked patties shall bear the labeling statement "Partially-Cooked: For Safety Cook Until Well Done (Internal Meat Temperature 160 degrees F.)."

D. Char-marked Patties (MPI Regulations, Section 318.23 (b)(1)(iii))

Official establishments which manufacture char-marked patties (if marked by a heat source) may raise the temperature at the center of each patty, but not above 70 degrees F., when the char-marks are applied to the patty. Char-marked patties shall bear the labeling statement "Uncooked, Char-marked: For Safety, Cook Until Well Done (Internal Meat Temperature 160 degrees F.)."

E. Poultry Breakfast Strips (MPI Regulations, Section 381.150 (a))

Poultry breakfast strips are cured and smoked products which require special handling during distribution and additional cooking before consumption. These products shall be heated to an internal temperature of 140 degrees F. Poultry breakfast strips shall bear the labeling statement "Partially Cooked: For Safety, Cook Until Well Done." Detailed cooking instructions shall be provided on the immediate container of the products.

F. Cooked Uncured Poultry (MPI Regulations, Section 381.150 (b))

All poultry rolls and other poultry products that are heat processed in any manner shall reach an internal temperature of at least 160 degrees F. prior to being removed from the cooking

medium. Product to which heat will be applied incidental to a subsequent processing procedure may be removed from the media for such processing, provided it is immediately fully cooked to the required 160 degrees F. internal temperature.

G. Cooked Cured and Smoked Poultry (MPI Regulations, Section 381.150 (b))

Cured and smoked poultry rolls and other cured and smoked poultry products shall reach an internal temperature of at least 155 degrees F. prior to being removed from the cooking medium.

VI. PRODUCTS FOR WHICH A HEAT PROCESS IS NOT REQUIRED BY REGULATIONS BUT MUST MEET SAFETY STANDARDS.

In June 1993, FSIS formed a Standing Committee on Pathogen Control in Processing. The purpose of the Committee is to ensure consistency in Agency decision making related to processed products. In addition, the Committee must assure that decisions are scientifically based and documented. Since the Committee began, the following policy interpretations have been provided concerning the production of the products referenced in Paragraph VI.A. and B.

A. Cooked Uncured Comminuted Meat Products Other Than Patties. Examples: Meatballs, Meatloaves, Pizza Toppings and Similar Products

Processors of these types of products should strive to meet the same times and temperatures as specified in MPI Regulations, Section 318.23 (b)(1) for fully cooked meat patties (Reference Table in Paragraph V.A.1.) or the equivalent pathogen reduction process. Products not labeled "cooked" or "precooked" would be required to be labeled with the new mandatory safe handling statements for raw and partially cooked meat and poultry products (MPI Regulations, Section 317.2 (1)).

B. Cooked Uncured or Cured Large Muscle Products. Examples: Cured Hams, Shoulders, Picnics, Loins, Leg of Lamb, etc.

1. The heat treatments as specified in MPI Regulations, Section 318.10, are not considered sufficient for a pathogen reduction step. Thus, these products are not considered ready-to-eat. To be exempt from MPI Regulations, Section 317.2 (1), regarding safe food handling for raw and partially cooked products, these types of products should be heat processed

according to the following provisions:

a. Meet the heat processing (cooking) temperatures specified in MPI Regulations, Section 318.17(a), Table for Time/Temperature Combination for Cooked Beef, Roast Beef and Cooked Corned Beef or the equivalent pathogen reduction process. (Reference Table in Paragraph V.A.1.)

b. Meet the humidity requirements as specified in MPI Regulations, Sections 318.17(b) and (c).

VII. TEMPERATURES REQUIRED TO ACHIEVE CERTAIN FINISHED PRODUCT CHARACTERISTICS.

The following list summarizes those regulations, directives, notices, and labeling policies that make reference to internal product temperatures. In the citations that follow, the stated temperatures are recommended not necessarily for safety purposes but for achieving certain quality attributes; i.e., color, texture, flavor, and appearance.

A. FSIS Directive 6810.2, Amend. 1, dated 3-13-86, "Marking Carcasses and Product (Meat)"

Paragraph V.B.3., titled "Product Marking," notes that FSIS allows terms such as "Ready-to-Eat," "Cooked," "Fully Cooked," "Thoroughly Cooked," or "Ready-to-Serve" to be marked on heated and smoked products provided the product shows cooked characteristics; i.e., partial meat separation from bone, easy tissue separation, and cooked color, texture, and flavor. The directive proceeds to note that "this usually requires a minimum internal temperature of 148 degrees F."; i.e., this is the temperature recommended to achieve the cooked characteristics stated above.

B. MPI Regulation, Section 317.8 (b)(10) - False or Misleading Labeling Generally; Specific Prohibitions and Requirements for Labels and Containers

This part of the regulations addresses temperature requirements for achieving "Baked" characteristics in certain products. Baked loaves shall be heated to a temperature of at least 160 degrees F. and baked pork cuts shall be heated to an internal temperature of at least 170 degrees F.

C. Standards and Labeling Policy Book

The entries in the Policy Book are arranged in alphabetical order. The following list highlights those entries which make reference to cooked temperatures.

1. Completely Cooked - This term has been approved for use on labels identifying ham commodities reaching an internal temperature of 158-162 degrees F. during processing. This heat results in a product that is relatively dry, quite pliable with the tissues separating readily, and the fat is rendered to a marked extent.

2. Duck, Salted - This product should reach an internal temperature of 155 degrees F.

3. Ham, Cooked - Product cooked in conventional manner which, if labeled "Completely Cooked," should reach an internal temperature of 158 degrees F.

4. Headcheese - Headcheese in natural casings should be brought to an internal temperature of at least 150 degrees F. For cooking temperature exception, see MPI Manual, Part 18.24 (b).

5. Jellied Chicken Loaf - Product is made of seasoned chopped chicken and cooked to at least 160 degrees F. and mixed with gelatin.

6. Loaf, Canned, Perishable - Canned perishable products in the loaf category must be cooked to a minimum internal temperature of at least 150 degrees F.

7. Meat Loaf, Canned (Perishable) - Canned perishable products in the loaf category must be cooked to an internal temperature of at least 150 degrees F.

8. Mortadella - Poultry - If product is canned, the moisture/protein ratio must not exceed 3.85:1, the internal temperature must have reached 160 degrees F. and the product labeled "Perishable, Keep Under Refrigeration" or similar wording.

9. Pinkelwurst (GR) - The product is cooked in water to an internal temperature of more than 152 degrees F.

10. Poultry, "Fully-Cooked," "Ready-To-Eat," "Baked" or "Roasted" - Temperature Requirements - These products must reach their respective required temperatures (uncured = 160 degrees F.; cured and smoked = 155 degrees F.) in order to qualify for labeling as "fully-cooked," "ready-to-eat," "baked" or "roasted."

11. Rendered Beef Fat Tissue Solids - The solid phase of ground beef fat that has been processed by a high temperature

(180 degrees F.) continuous wet rendering system.

12. Roasted - The term "roasted" may be used to describe products that have been subjected to cooking methods that result in a roasted appearance.

13. Smoked Beef Round - This product consists of beef rounds which are soaked for approximately one-half hour in a solution consisting of water and salt with a concentration of 20 percent salinometer reading. After removal from the solution, they are stuffed into plain casings to secure a round shape, placed in the smokehouse, and smoked and heated until they reach an internal temperature that meets the requirements of MPI Regulations, Section 318.17.

14. Ukrainian Sausage - A dry sausage made from lean pork and/or veal chunks, containing large amounts of garlic which dominates the flavor. It is cooked and smoked at high temperatures (around 180 - 185 degrees F.) for 4-5 hours and then air dried. The water activity of the finished product shall not exceed 0.92 or a moisture/protein ratio 2.0:1 or less.

#### VIII. MISCELLANEOUS PRODUCT TEMPERATURES

The following list summarizes various meat products for which certain temperatures (not necessarily cooking temperatures) are required by regulation or other policy memoranda.

##### A. Certain Sausages and Meat Food Products Containing Pork. (MPI Regulations, Section 318.10)

Certain sausage products and meat food products containing pork (MPI Regulations, Section 318.10 (b)) that are neither cooked nor understood by the public to require cooking prior to consuming must be treated by one of the methods prescribed in MPI Regulations, Section 318.10 (c), either by heating, refrigerating, or curing to destroy any possible live trichinae. For purposes of this directive, the method of heat treatment will only be discussed. All parts of the pork muscle tissue shall be heated according to one of the time and temperature combinations in the following table:

#### MINIMUM INTERNAL TEMPERATURE

Degrees Fahrenheit	Degrees Centigrade	MINIMUM TIME
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120	49.0	21 hours
122	50.0	9.5 hours
124	51.1	4.5 hours
126	52.	2 hours
128	53.4	1 hour
130	54.5	30 minutes
132	55.6	15 minutes
134	56.7	6 minutes
136	57.8	3 minutes
138	58.9	2 minutes
140	60.0	1 minute
142	61.1	1 minute
144	62.2	Instant

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B. Partially Defatted Beef Fatty Tissue and Partially Defatted Pork Fatty Tissue; Partially Defatted Chopped Beef and Partially Defatted Chopped Pork. (MPI Regulations, Sections 319.15 (e), 319.29, and MPI Manual, Part 18.55 (a))

All preceding items are byproducts derived from the low temperature rendering (not exceeding 120 degrees F.) of fresh beef/pork fatty tissue, exclusive of skin for pork fatty tissue only.

IX. FURTHER GUIDANCE

For questions, please contact the next level of supervisor.

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