March 2021

Virtual Further Processing and Labeling Quick Reference Guide

Labeling

Attachment 1: FSIS Directive 7221.1 Table 1 Required Label Features

Feature	Reference	Location	Applies to
Product Name	9 CFR 317.2(c)(1) or 381.117	Principal display panel	All products
Inspection Legend and Establishment Number*	9 CFR 317.2(c)(5) or 381.123	Principal display panel, or 20% panel of a cylindrical container	All products
Handling Statement (e.g. "Keep Frozen")	9 CFR 317.2(k) or 381.125(a)	Principal display panel	Products requiring special handling to maintain wholesomeness
Net Weight Statement	9 CFR 317.2(h) or 381.121	Principal display panel	Product sold at retail, unless the net weight is applied at retail
Ingredients Statement**	9 CFR 317.2(f) or 381.118	Principal display panel, Information panel, 20% panel of a cylindrical container, or Front riser panel of a frozen food carton	Products with multiple ingredients
Name and Place of Business of the Manufacturer, Packer, or Distributor	9 CFR 317.2(g) or 381.122	Principal display panel, Information panel, 20% panel of a cylindrical container, or Front riser panel of a frozen food carton	All products
Nutrition Facts Panel	by 9 CFR 317.300 or 381.400	Principal display panel or Information panel	Products not exempted by 9 CFR 317.400 or 381.500
Safe Handling Instructions	9 CFR 317.2(l) or 381.125(b)	Anywhere on the immediate container	Products with a not-ready-to-eat meat or poultry component

Net Weights

Determine Package Error

Nominal Gross Weight = *Average Tare Weight + Labeled Weight*

Package Error = *Gross Weight – Nominal Gross Weight*

Fresh (Not Cured) Sausage Allowable Ingredients

	General	Fresh Pork[+]	Whole Hog[+]	Breakfast[+]	Fresh Beef[+]	Italian[+]	Bratwurst[+]	Chorizo[+]
Antioxidants	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Water/Ice	3%	3%	3%	3%	3%	3%	3%	3%
Mechanically Separated Species	20%	20%	20%	20%	20%	20%	Yes	Yes
Fat	No limit	50%	50%	50%	30%	35%	No limit	No Limit
Binders and Extenders	None	None	None	3.5% 2.0%*	None	None	3.5% 2.0%*	3.5% 2.0%*
Paprika	None	None	None	None	None	Yes	None	Yes
By-products	Yes	None	Natural Proportions	Yes	None	Yes	Yes	Yes
Nitrite	No**	No**	No**	No**	No**	No**	No**	No***
Phosphate	No	No	No	No	No	No	No	No
Meat or Meat and Fat Content						85% Minimum		
Reference	§319.140	§319.141	§319.144	§319.143	§319.142	§319.145	§319.140, FSLPB	§319.140, FSLPB

[+]Product with Standard of Identity

*Isolated soy protein and sodium caseinate are limited to 2% of finished product weight due to their high protein content. Other binders and extenders are limited to 3.5%, individually or collectively.

**If curing agents are added, product name would have to include term “Cured” (e.g., “Cured Italian Sausage” or “Cured Bratwurst”).

***When curing agents are added to chorizo, “cured” is *not* required to be part of product name. It cannot be labeled with the term “Fresh.”

Sausage Operations Calculations

Added Water Calculation Steps

Added Water = **3%** of total ingredients in raw sausage (**10%** in finished product for cooked sausage).

Step 1:	lb. total raw batch	[100% batch]
	- lb. added water	[-3% regulatory limit]
	lb. formula weight	[97% (batch) formula weight, less 3% added water]

Step 2: lb. formula wt. ÷ .97 [97% formula] = 100% (batch) formulated wt. [with 3% water]

Step 3:	lb. formulated weight	[100% formulated weight]
	- lb. formula weight	[- 97% formula]
	lb. maximum added water	[3% water regulatory limit]

Antioxidant Mix Calculation Steps for Fresh Sausage

Step 1:	lb. meat and poultry	[each meat and poultry component]
	x % fat content	[each meat and poultry component] *(fat target, product formula)*
	lb. fat added	[each meat and poultry component]
Step 2:	lb. fat	[meat and poultry component A fat content]
	+ lb. fat	[meat and poultry component B, C, D….fat content]
	lb. total added fat	[total meat and poultry component fat content]
Step 3:	% antioxidant A	[percent antioxidant A in mix] *(product label, COA, etc.).*
	+ % antioxidant B	[percent antioxidant B in mix]
	% total antioxidants	[total percent antioxidants in mix]
Step 4:	lb. total added fat	
	x .0001 or .0002	[.01% or .02% rule for antioxidant regulatory limits]
	lb. antioxidant mix	

Step 5: lb. antioxidant mix ÷ percent major antioxidant = lb. maximum antioxidant mix permitted

OR

lb. antioxidant mix ÷ percent combined antioxidants = lb. maximum antioxidant mix permitted

lb. max. antioxidant mix x 16 = oz. max. antioxidant mix permitted [convert lb. to oz.]

Antioxidant Regulatory Limits for Fresh Sausage

- One antioxidant or synergist > 50%, multiply fat content by .01%.
- No antioxidant or synergist > 50%, multiply fat content by .02%.
- One antioxidant or synergist = 50%, multiply fat content by .01% or .02%.

Raw Sausage Binders and Extenders Calculations Steps

Step 1:	lb. batch weight	[100% batch]
	- lb. added water	[- 3% water regulatory limit]
	- lb. binders and extenders	[- 3.5% B&E regulatory limit]
	lb. formula weight	[93.5% formula weight, less water and binder]

Step 2: lb. formula wt. ÷ .935 [93.5% formula] = lb. formulated weight [100% w/3% water, 3.5% B&E]

Step 3:	lb. formulated weight	[100% with 3% water, 3.5% B&E]
	x .03	[3% water regulatory limit]
	lb. maximum added water	[maximum added water permitted]

Step 4:	lb. formula weight	[100% batch with 3% water, 3.5% B&E]
	x .035	[3.5% binders and extenders regulatory limit]
	lb. maximum binders and extenders	[maximum binders and extenders permitted]

Mechanically Separated Species (MSS) Calculation Steps

Step 1:	lb. meat block	[100% batch meat block]
	- lb. added MSS	[- 20% MSS regulatory limit]
	lb. meat components	[80% (batch) meat block, less 20% MSS]

Step 2: lb. meat components ÷ .80 [80% meat block] = lb. formulated meat block [100% batch with 20% MSS]

Step 3:	lb. formulated meat block	[100% MB with 20% MSS]
	x .20	[20% MSS regulatory limit]
	lb. maximum MSS	[maximum MSS permitted]

OR

lb. formulated MB	[100% MB with 20% MSS]
- lb. meat components	[80% meat block, less 20% MSS]
lb. maximum MSS	[maximum MSS permitted]

Regulatory Limits for Additives in Cooked Sausages Based on Projected Finished Weight (PFW)

Binders and Extenders: Cereal, NFDM, CRDSM, etc. *[listed in §424.21(c)]*
- **3.5%** or **2%** maximum, individually or collectively

Phosphates
- **0.5%** or **5000 ppm**

Projected Finished Weight (PFW) Calculation Steps

Step 1:	lb. batch weight	[100% batch]
	- lb. rework	[- rework] *(always remove)*
	- lb. added water	[- 10% water regulatory limit]
	- lb. binders and extenders	[- 3.5% (or 2%) binders, extenders regulatory limit]
	- lb. phosphates	[- 0.5% phosphate regulatory limit]
	lb. formula weight	[86% batch, less rework and target ingredients]

Step 2: lb. formula weight ÷ .86 [86% formula] = lb. projected finished weight

Step 3:	PFW	
	x .035	[3.5% binders and extenders regulatory limit]
	lb. maximum binders and extenders	[maximum binders and extenders permitted]

Step 4:	PFW	
	x 0.005	[0.5% phosphate regulatory limit]
	lb. maximum phosphate	[maximum phosphates permitted]

Mechanically Separated Kind of Poultry Calculation Steps

Step 1:	lb. batch weight	[100% batch]
	- lb. added water	[exclude added water]
	- lb. MSKP	[- 15% MSKP regulatory limit]
	lb. formula weight	[85% formula weight, less water and MSKP]

Step 2: lb. formula wt. ÷ .85 [85% formula] = lb. formulated wt. [100% batch with 15% MSKP]

Step 3:	lb. formulated weight	[100%]
	- lb. formula weight	[85%]
	___ lb. MSKP permitted	[15% MSKP regulatory limit]

NOTE: Per Labeling Policy Memo 005A, cooked sausage product that contains more than 15% poultry in the total ingredients (excluding water) must indicate in the product name the species of livestock and kind(s) of poultry ingredients (e.g., Beef and Turkey Furter, Furter Made from Beef and Turkey).

Fresh Liver Calculation Steps

Step 1:	lb. batch weight	[100% batch]
	- lb. fresh liver	[30% minimum regulatory limit]
	lb. formula weight	[70% formula, less 30% liver]

Step 2, the formula weight is divided by the percent of the remaining formula (i.e., 70%).
This calculates the weight of the batch if it included the minimum regulatory limit of 30% fresh liver.
In Step 3, subtract the formula weight from the calculated weight to determine the minimum amount of fresh liver required for product labeled under §319.182.

Ingoing Curing Agent and Curing Accelerator PPM

$$ppm = \frac{\text{lb. RI} \times 1{,}000{,}000}{\text{lb. meat block}}$$

RI (Restricted Ingredient) = specific curing agent or curing accelerator
Meat block = meat, meat byproducts, poultry, and/or poultry byproducts

Maximum Curing Agent or Curing Accelerator Allowed

$$\text{Max. cure agent} = \left(\frac{\text{lb. of meat block}}{100\text{ lb.}}\right) \times \text{Restricted agent/cure (or cure accelerator)}$$

NOTE: The meat factor can be calculated by dividing the weight of the meat block by 100 lb.

Curing Agent Added to Formula in a Curing Compound or Mix

$$\text{ppm} = \frac{\text{lb. of cure mix} \times \text{\% of cure agent in mix} \times 1{,}000{,}000}{\text{lb. of meat block}}$$

Cure and Cure Accelerator Regulatory Limits

Curing Agents

(1) Nitrite - **.25 oz./100 lb.** of chopped meat, meat byproduct, poultry, and poultry byproduct **(156 ppm)** ingoing

(2) Nitrate - **2.75 oz./100 lb.** of chopped meat, meat byproduct, poultry, and poultry byproduct **(1,718 ppm)** ingoing

Cure Accelerators

(1) Ascorbate/erythorbate - **.875 oz./100 lb.** of chopped meat, meat byproduct, poultry, and poultry byproduct **(547 ppm)** ingoing

(2) Ascorbic acid/erythorbic acid - **.75 oz/100 lb.** of chopped meat, meat byproduct, poultry, and poultry byproduct **(469 ppm)** ingoing

Cured Meat and Poultry Product Operations

PPM Equation

$$ppm = \frac{\text{lb. RI (Restricted Ingredients)} \times \% \text{ Pump} \times 1{,}000{,}000}{\text{lb. Pickle}}$$

Note: If a curing compound is used, multiple wt. of the compound by % of nitrite/nitrate in the compound to determine wt. of the nitrite/nitrate (RI).

Pump, Pick-up, Added Solution or Gain Equation

$$\% \text{ pump, pick-up, gain} = \frac{\text{pumped wt. - green wt.}}{\text{green wt.}} \times 100$$

Percent Yield Equation

$$\% \text{ yield} = \frac{\text{finished wt.}}{\text{green wt.}} \times 100$$

Volume of Rectangular Tank Equation

$$\text{cubic inches} = (\text{length in inches}) \times (\text{width in inches}) \times (\text{height in inches})$$

Note: 1 gallon = 231 cubic inches

Maximum Ingoing Nitrite and Nitrate Limits (in PPM) for Meat and Poultry Products*

	Curing Method			
Curing Agent	Immersion Cured	Massaged or Pumped	Comminuted	Dry Cured
Sodium Nitrite	200	200	156	625
Potassium Nitrite	200	200	156	625
Sodium Nitrate	700	700	1718	2187
Potassium Nitrate	700	700	1718	2187

*Except for bacon

Maximum Ingoing Cure Accelerators (in PPM) for Meat and Poultry Products

Cure Accelerator	Maximum Limit
Ascorbic Acid Erythorbic Acid Sodium Ascorbate Sodium Erythorbate (isoascorbate)	469 ppm* 469 ppm* 547 ppm* 547 ppm*

*Except in bacon

RI Regulatory Limits for Pumped or Massaged Bacon

Establishment's written procedure:

- Must demonstrate 120 ppm ingoing sodium nitrite or 148 ppm potassium nitrite ***AND***
- Must demonstrate 550 ppm of sodium erythorbate or sodium ascorbate

Note: A plus or minus 20% allowance at the time of injecting or massaging.

Meat and Poultry Products with Added Solutions

Pump, Pick-up, Added Solution or Gain Equation for RAW Products

$$\% \text{ pump, pick-up, gain} = \frac{\text{pumped (treated) wt. - green wt.}}{\text{green wt.}} \times 100$$

Pump, Pick-up, Added Solution or Gain Equation for COOKED Products

$$\% \text{ pump, pick-up, gain} = \frac{\text{finished wt. - green wt.}}{\text{finished wt.}} \times 100$$