

rules for the use of certain food ingredients (e.g., food additives and color additives) and sources of radiation that may render meat or poultry products adulterated or misbranded.

Subpart C—Food Ingredients and Sources of Radiation

§ 424.21 Use of food ingredients and sources of radiation.

(a)(1) *General.* No meat or poultry product shall bear or contain any food ingredient that would render it adulterated or misbranded, or which is not approved in this part, part 318 or part 319 of this chapter, or by the Administrator in specific cases.

(2)(i) Poultry products and poultry broth used in the processing of poultry products shall have been processed in the United States only in an official establishment or imported from a foreign country determined to be eligible to export such products to the United States under § 381.196(b), and have been inspected and passed in accordance with the regulations. Detached ova and offal shall not be used in the processing of any poultry products, except that poultry feet may be processed for use as human food in a manner approved by the Administrator in specific cases and detached ova may be used in the processing of poultry products if the processor demonstrates that such ova comply with the requirements of the Federal Food, Drug, and Cosmetic Act.

(ii) Liquid, frozen, and dried egg products used in the processing of any poultry product shall have been prepared under inspection and be so marked in accordance with the Egg Products Inspection Act.

(3) Carcasses, parts thereof, and products of cattle, sheep, swine, goats, or equines may be used in the processing of poultry products only if they were prepared in the United States in an official meat packing establishment or imported from a foreign country determined to be eligible to export such products to the United States under § 327.2(b), were inspected and passed in accordance with the Federal Meat Inspection Act and the regulations under such Act (subchapter A of this chapter), and are so marked.

(b)(1) *Food ingredients and sources of radiation.* Food ingredients and sources of radiation listed or approved for use in the production of meat or poultry products in 21 CFR chapter I, subchapter A or subchapter B, shall be listed for such use under this chapter, subject to declaration requirements in parts 316 and 317, or subparts M and N, of part 381 of this chapter, unless precluded from such use or further restricted in parts 318 or 319, or subparts O and P, of part 381 of this chapter, or unless such use otherwise results in the adulteration or misbranding of meat or poultry products. Food ingredients and sources of radiation listed or approved for use in the production of meat or poultry products in 21 CFR Chapter I, subchapter A or subchapter B, may be listed or approved for such use under this chapter by the Administrator in § 424.21, subject to declaration requirements in parts 316 and 317, or subparts M and N, of part 381 of this chapter.

(2) No food ingredients or sources of radiation may be used in the preparation of any meat or poultry product, for any purpose, unless the use is listed or approved in 21 CFR chapter I as a direct food additive (21 CFR part 172), a secondary direct food additive (21 CFR part 173), indirect food additive (21 CFR parts 174–178), radiation source (21 CFR part 179), an interim-listed direct food additive (21 CFR part 180), a prior-sanctioned substance (21 CFR part 181), a Generally Recognized As Safe (GRAS) substance (21 CFR parts 182 or 184), or by a regulation in this chapter. Part 319 of this chapter also specifies other food ingredients that are acceptable in preparing specified products.

(3) No food ingredient, the intended use of which is to impart color in any meat or poultry product, shall be used unless such use is approved in 21 CFR chapter I as a color additive (21 CFR Parts 73, 74, 81, and 82) or in a regulation in this chapter.

(4) Petitions to amend 21 CFR chapter I to provide for uses of food additives, or other substances or sources of radiation necessary in the preparation of meat or poultry products, or food ingredients used to impart color to product, should be sent to the Food and Drug Administration, in accordance

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with the provisions of 21 CFR parts 71 or 171, as appropriate.

(5) Inquiries concerning the regulatory status under the Federal Food, Drug, and Cosmetic Act of any articles intended for use as components of, or in contact with, meat or poultry products, may be addressed to the Food and Drug Administration, Center for Food Safety and Applied Nutrition, 200 C Street, SW, Washington, DC 20204, or the Department of Agriculture, Food Safety and Inspection Service, Office of Policy, Program Development and Evaluation, Washington, DC 20250-3700.

(6) Inquiries concerning the use in specific meat or poultry products of substances that are not affirmed by the Food and Drug Administration as Generally Recognized as Safe (GRAS) or otherwise listed in 21 CFR part 182 or part 184, or of food or color additives listed in 21 CFR regulations for general use in foods or for use in meat, or poultry products, generally, including mixtures of such substances or additives, should be addressed to the Department

of Agriculture, Food Safety and Inspection Service, Office of Policy, Program Development and Evaluation, Washington, DC 20250-3700.

(c) The food ingredients specified in the following chart are approved for use in the preparation of meat products, provided they are used for the purposes indicated, within the limit of the amounts stated, and under other conditions specified in this part and Part 317 of this chapter. Part 319 of this chapter specifies other food ingredients that are acceptable in preparing specified meat products. This chart also contains food ingredients that are acceptable for use in poultry products, provided they are used for the purpose indicated, within the limits of the amounts stated and under other conditions specified in this part. No meat or poultry product shall bear or contain any food ingredient that would render it adulterated or misbranded, or which is not approved in this part, or by the Administrator in specific cases.

Class of substance	Substance	Purpose	Products	Amount
Acidifiers	Acetic acid	To adjust acidity	Various meat and poultry products ² .	Sufficient for purpose. ³
	Citric acid .....	.....do .....	.....do	Do.
	Glucono delta-lactone.	.....do .....	.....do	Do.
	Lactic acid .....	.....do .....	.....do	Do.
	Phosphoric acid .....	.....do .....	.....do	Do.
	Tartaric acid .....	.....do .....	.....do	Do.
Anti-coagulants	Citric acid	To prevent clotting ..	Fresh blood of livestock ..	0.2 percent with or without water. When water is used to make a solution of citric acid added to the blood of livestock, not more than 2 parts of water to 1 part of citric acid shall be used.
	Sodium citrate .....	.....do .....	.....do	Not to exceed 0.5 percent based on the ingoing weight of the product. When water is used to make a solution of sodium citrate added to livestock blood, not more than 2 parts of water to 1 part of sodium citrate shall be used.
Antifoaming agent	Methyl polysilicone	To retard foaming ...	Soups (meat and poultry) ...	10 ppm.
		.....do	Rendered fats (meat and poultry).	Do.
		.....do	Curing pickle (meat and poultry).	50 ppm.
Antimicrobial Agents	Potassium lactate ...	To inhibit microbial growth.	Various meat and poultry products, except infant formulas and infant food.	4.8% by weight of total formulation.
	Sodium diacetatedodo	0.25% by weight of total formulation.
	Sodium lactatedodo	4.8% by weight of total formulation.

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Class of substance	Substance	Purpose	Products	Amount
Antioxidants and oxygen interceptors.	Trisodium phosphate.	To reduce microbial levels.	Raw, chilled poultry carcasses.	8 to 12 percent; solution to be maintained at 45 °F. to 55 °F. and applied by spraying or dipping carcasses for up to 15 seconds when used in accordance with 21 CFR 182.1778.
	Ascorbyl palmitate ..	To retard rancidity ..	Margarine or oleomargarine	0.02 percent (by wt. of finished product) individually or in combination with other antioxidants approved for use in margarine.
	Ascorbyl stearate. BHA (butylated hydroxyanisole).			
	.....do	Dry sausage	0.003 based on total weight	0.006 percent in combination with other antioxidants for use in meat.
	.....do	Rendered animal fat or a combination of such fat and vegetable fat.	0.01 percent	0.02 percent in combination with other anti-oxidants for use in meat.
	.....do	Fresh pork, sausage, brown and serve sausages, fresh Italian sausage products, pregrilled beef patties, fresh sausage made from beef or beef and pork, cooked or raw pizza topping and cooked or raw meatballs.	0.01 percent based on fat content.	0.02 percent in combination with other anti-oxidants for use in meat, based on fat content.
	.....do	Dried meats	0.01 percent based on total weight.	0.01 percent in combination with other anti-oxidants for use in meat.
	.....do	Margarine or oleomargarine.	0.02 percent (by wt. of the finished product) individually or in combination with other antioxidants approved for use in margarine..	
	.....do	Various poultry products.	0.01 percent based on fat content (0.02 percent in combination with any other antioxidant for use in poultry) based on fat content..	
	BHT (butylated hydroxytoluene).	.....do	Dry sausage	0.003 percent based on total weight 0.006 percent in combination with other anti-oxidants for use in meat.
.....do	Rendered animal fat or a combination of such fat and vegetable fat.	0.01 percent	0.02 percent in combination with other anti-oxidants for use in meat.	

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do	Fresh pork, sausage, brown and serve sausages, fresh Italian sausage products, pregrilled beef patties, fresh sausage made from beef or beef and pork, cooked or raw pizza topping and cooked or raw meatballs.	0.01 percent based on fat content.	0.02 percent in combination with other anti-oxidants for use in meat, based on fat content.
	.....do	Dried meats	0.01 percent based on total weight.	0.01 percent in combination with other anti-oxidants for use in meat.
	.....do	Margarine or oleomargarine.	0.02 percent (by wt. of the finished product) individually or in combination with other antioxidants approved for use in margarine..	
	.....do	Various poultry products.	0.01 percent based on fat content (0.02 percent in combination with any other antioxidant for use in poultry) based on fat content..	
	Dodecyl gallate .....	.....do	Margarine or oleomargarine	0.02 percent (by wt. of the finished product) individually or in combination with other antioxidants approved for use in margarine.
	Glycine .....	.....do	Rendered animal fat or a combination of such fat and vegetable fat.	0.01 percent 0.02 percent in combination with other anti-oxidants for use in meat.
	Octyl gallate .....	.....do	Margarine or oleomargarine	0.02 percent (by wt. of the finished product) individually or in combination with other antioxidants approved for use in margarine.
	Propyl gallate .....	.....do	Dry sausage	0.003 percent based on total weight 0.006 percent in combination with other anti-oxidants for use in meat.
	.....do	Rendered animal fat or a combination of such fat and vegetable fat.	0.01 percent	0.02 percent in combination with other anti-oxidants for use in meat.
	.....do	Fresh pork, sausage, brown and serve sausages, fresh Italian sausage products, pregrilled beef patties, fresh sausage made from beef or beef and pork, cooked or raw pizza topping and cooked or raw meatballs.	0.01 percent based on fat content.	0.02 percent in combination with other anti-oxidants for use in meat, based on fat content.
	.....do	Dried meats	0.01 percent based on total weight.	0.01 percent in combination with other anti-oxidants for use in meat.

Class of substance	Substance	Purpose	Products	Amount
	.....do	Margarine or oleo-margarine.	0.02 percent (by wt. of the finished product) individually or in combination with other antioxidants approved for use in margarine..	
	.....do	Various poultry products.	0.01 percent based on fat content (0.02 percent in combination with any other antioxidant for use in poultry, except TBHQ, based on fat content)..	
	Resin guaiac .....	.....do	Rendered animal fat or a combination of such fat and vegetable fat 0.01 percent.	0.02 percent in combination with other antioxidants for use in meat.
	TBHQ (tertiary butylhydroquinone).	.....do	Dry sausage 0.003 percent based on weight.	0.006 percent in combination only with BHA and/or BHT.
	.....do	Rendered animal fat or a combination of such fat and vegetable fat.	0.01 percent	0.02 percent in combination only with BHA or BHT.
	.....do	Fresh pork, sausage, brown and serve sausages, fresh Italian sausage products, pregrilled beef patties, fresh sausage made from beef or beef and pork, cooked or raw pizza topping and cooked or raw meatballs.	0.01 percent based on fat content.	0.02 percent in combination only with BHA and/or BHT, based on fat content.
	.....do	Dried meats	0.01 percent based on total weight.	0.01 percent in combination only with BHA and/or BHT.
		.....do	Margarine or oleo-margarine.	0.02 percent alone or in combination only with BHA and/or BHT, based on oil or fat content.
		.....do	Various poultry products	0.01 percent based on fat content (0.02 percent in combination only with BHA and/or BHT, based on fat content).
	Tocopherols .....	.....do	Rendered animal fat or a combination of such fat and vegetable fat.	0.03 percent. A 30 percent concentration of tocopherols in vegetable oils shall be used when added as an antioxidant to products designated as "lard" or "rendered pork fat."
	do	Dry sausage, semidry sausage, dried meats, uncooked or cooked fresh sausage made with beef and/or pork, uncooked or cooked Italian sausage products, uncooked or cooked meatballs, uncooked or cooked meat pizza toppings, brown and serve sausages, pregrilled beef patties, and restructured meats.	Not to exceed 0.03 percent based on fat content. Not used in combination with other antioxidants.

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Class of substance	Substance	Purpose	Products	Amount
Artificial Sweeteners Binders and Extenders.do		Various poultry products	0.03 percent based on fat content (0.02 percent in combination with any other antioxidant for use in poultry, except TBHQ, based on fat content).
	Saccharin	To sweeten product	Bacon	0.01 percent.
	Agar-agar	To stabilize and thicken.	Thermally processed canned and jellied meat food products.	0.25 percent of finished product.
	Algin	To extend and stabilize product.	Breading mix; sauces (meat only) and various poultry products.	Sufficient for purpose in accordance with 21 CFR 172.5.
	A mixture of sodium alginate, calcium carbonate and calcium lactate/lactic acid (or glucono delta lactone).	To bind meat pieces	Restructured meat food products.	Sodium alginate not to exceed 1.0 percent; calcium carbonate not to exceed 0.2 percent; and lactic acid/calcium lactate (or glucono delta-lactone) not to exceed 0.3 percent of product formulation. Added mixture may not exceed 1.5 percent of product at formulation. Mixture ingredients must be added dry.
	A mixture of sodium alginate, calcium carbonate, lactic acid, and calcium lactate.	To bind poultry pieces.	Ground and formed raw or cooked poultry pieces.	Sodium alginate not more than 0.8 percent, calcium carbonate not more than 0.15 percent; lactic acid and calcium lactate, in combination, not more than 0.6 percent of product formulation. Added mixture may not exceed 1.55 percent of product at formulation. The mixture must be added in dry form.
	Bread	To bind and extend product.	Bockwurst	3.5 percent individually or collectively with other binders for use in meat.
	.....do		Chili con carne, chili con carne with beans.	8 percent individually or collectively with other binders for use in meat.
	.....do		Spaghetti with meat balls and sauce, spaghetti with meat and sauce and similar products.	12 percent individually or collectively with other binders for use in meat.
	Carboxymethyl cellulose (cellulose gum).	To extend and stabilize product.	Baked pies (meat only) and various poultry products.	Sufficient for purpose in accordance with 21 CFR 172.5.
Carrageenan	To extend and stabilize product.	Breading mix; sauces (meat only) and various poultry products.	Sufficient for purpose in accordance with 21 CFR 172.5.	
	To prevent purging of brine solution.	Cured pork products as provided in 9 CFR 319.104(d).	Not to exceed 1.5 percent of product formulation; permitted in combination only with soy protein concentrate, combination not to exceed 1.5 percent of product formulation; in accordance with 21 CFR 172.620, 172.623, and 172.626.	

Class of substance	Substance	Purpose	Products	Amount
	Carrageenan, Locust bean gum, and Xanthan gum blend.	.....do .....	.....do	In combination, not to exceed 0.5 percent of formulation; not permitted in combination with other binders approved for use in cured pork products; in accordance with 21 CFR 172.620, 172.623, 172.626, 184.1343, and 172.695.
	Cereal	To bind and extend product.	Sausages as provided in 9 CFR Part 319, bockwurst.	3.5 percent individually or collectively with other binders for use in meat.
	.....do .....	.....do	Chili con carne, chili con carne with beans.	8 percent individually or collectively with other binders for use in meat.
	Dried milk .....	.....do	Sausages as provided for in 9 CFR Part 319.	3.5 percent individually or collectively with other binders for use in meat
	Dried skim milk, calcium reduced.	.....do	Sausages as provided in 9 CFR 9 CFR Part 319.	Do.
	.....do .....	.....do	Chili con carne, chili con carne with beans.	8 percent individually or collectively with other binders for use in meat.
	Enzyme (rennet) treated with calcium reduced dried skim milk and calcium lactate.	.....do	Sausages as provided for in 9 CFR Part 319.	3.5 percent total finished product (calcium lactate required at rate of 10 percent of binder.)
	.....do .....	.....do	Imitation sausages; nonspecific loaves; soups, stews (meat only) and various poultry products.	Sufficient for purpose in accordance with 21 CFR 172.5 (calcium lactate required at a rate of 10 percent of binder).
	Enzyme (rennet) treated with sodium caseinate and calcium lactate.	.....do	Imitation sausages; nonspecific loaves; soups, stews (meat only) and various poultry products.	Sufficient for purpose in accordance with 21 CFR 172.5 (calcium lactate required at a rate of 25 percent of binder).
	Food starch modified.	To prevent purging of brine solution.	Cured pork products as provided for in 9 CFR 319.104(d).	Not to exceed 2 percent of product formulation in "Ham Water Added" and "Ham with Natural Juices" products; not to exceed 3.5 percent of product formulation in "Ham and Water Product—X percent of Weight is Added Ingredients" products; permitted in combination only with soy protein concentrate, with combination of modified food starch at 3 percent of product formulation and soy protein concentrate at 0.5 percent of product formulation; in accordance with 21 CFR 172.892.
	Gelatin	To bind and extend product.	Various poultry products	Sufficient for purpose in accordance with 21 CFR 172.5.
	Gums, vegetable .....	.....do	Egg roll (meat only) and various poultry products.	Sufficient for purpose in accordance with 21 CFR 172.5.
	Isolated soy proteindo	Sausage as provided for in 9 CFR Part 319, bockwurst.	2 percent.

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	do	Imitation sausages; nonspecific loaves; soups; stews (meat only) and various poultry products.	Sufficient for purpose in accordance with 21 CFR 172.5.
		.....do	Chili con carne, chili con carne with beans.	8 percent individually or collectively with other binders for use in meat.
		.....do	Spaghetti with meatballs and sauce, spaghetti with meat and sauce and similar products.	12 percent individually or collectively with other binders and extenders for use in meat.
		To prevent purging of brine solution.	Cured pork products as provided for in 9 CFR 319.104(d).	Not to exceed 2 percent of product formulation, not permitted in combination with other binders approved for use in cured pork products.
	Methyl cellulose	To extend and stabilize product (also carrier).	Meat and vegetable patties; various poultry products.	0.15 percent.
	Sodium caseinate ...	To bind and extend product.	Imitation sausages, nonspecific loaves, soups, stews (meat only).	Sufficient for purpose in accordance with 21 CFR 182.1748 and 21 CFR 172.5.
		.....do	Sausages as provided for in 9 CFR Part 319.	2 percent in accordance with 21 CFR 182.1748.
		.....do	Chili con carne, chili con carne with beans.	8 percent individually or collectively with other binders and extenders for use in meat in accordance with 21 CFR 182.1748.
		.....do	Spaghetti with meatballs and sauce, spaghetti with meat and sauce and similar products.	12 percent individually or collectively with other binders and extenders for use in meat in accordance with 21 CFR 182.1748.
		To prevent purging of brine solution.	Cured pork products as provided for in 9 CFR 319.104(d).	Not to exceed 2 percent of product formulation; not permitted in combination with other binders approved for use in cured pork products, in accordance with 21 CFR 182.1748.
		To bind and extend product.	Various poultry products	3 percent in cooked product, 2 percent in raw product, in accordance with 21 CFR 172.5 and 182.1748.
	Soy flour .....	.....do	Sausages as provided for in 9 CFR Part 319, bockwurst.	3.5 percent individually or collectively with other binders and extenders for use in meat.
		.....do	Chili con carne, chili con carne with beans.	8 percent individually or collectively with other binders and extenders for use in meat.
		.....do	Spaghetti with meatballs and sauce, spaghetti with meat and sauce and similar products.	12 percent individually or collectively with other binders and extenders for use in meat.
	Soy protein concentrate.	.....do	Sausage as provided for in 9 CFR Part 319, bockwurst.	3.5 percent individually or collectively with other binders and extenders for use in meat.
		.....do	Chili con carne, chili con carne with beans.	8 percent individually or collectively with other binders and extenders for use in meat.
	do	Spaghetti with meatballs and sauce, spaghetti with meat and sauce and similar products.	12 percent individually or collectively with other binders and extenders for use in meat.

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Class of substance	Substance	Purpose	Products	Amount
		To prevent purging of brine solution.	Cured pork products as provided for in 9 CFR 319.104(d).	Not to exceed 3.5 percent of product formulation; permitted in combination only with modified food starch, with combination of modified food starch at 3 percent of product formulation and soy protein concentrate at 0.5 percent of product formulation; in combination only with carrageenan, combination not to exceed 1.5 percent of product formulation.
	Starchy vegetable flour.	To bind and extend product.	Sausage as provided for in 9 CFR Part 319, bockwurst.	3.5 percent individually or collectively with other binders and extenders for use in meat.
		.....do	Chili con carne, chili con carne with beans.	8 percent individually or collectively with other binders and extenders for use in meat.
	Tapioca dextrin .....	.....do	Sausage as provided for in 9 CFR Part 319, bockwurst.	3.5 percent individually or collectively with other binders and extenders for use in meat, in accordance with 21 CFR 184.1277.
		.....do	Chili con carne, chili con carne with beans.	8 percent individually or collectively with other binders and extenders for use in meat, in accordance with 21 CFR 184.1277.
		.....do	Spaghetti with meatballs and sauce, spaghetti with meat and sauce and similar products.	12 percent individually or collectively with other binders and extenders for use in meat, in accordance with 21 CFR 184.1277.
		.....do	Various poultry products	Sufficient for purpose in accordance with 21 CFR 184.1277.
	Vegetable starch .....	.....do	Sausage as provided for in 9 CFR Part 319, bockwurst.	3.5 percent individually or collectively with other binders and extenders for use in meat.
		.....do	Chili con carne, chili con carne with beans.	8 percent individually or collectively with other binders and extenders for use in meat.
	Wheat gluten	To bind and extend product.	Sausage as provided for in 9 CFR Part 319, bockwurst.	3.5 percent individually or collectively with other binders and extenders for use in meat, in accordance with 21 CFR 184.1322.
		.....do	Chili con carne, chili con carne with beans.	8 percent individually or collectively with other binders and extenders for use in meat, in accordance with 21 CFR 184.1322.
		.....do	Spaghetti with meatballs and sauce, spaghetti with meat and sauce and similar products.	12 percent individually or collectively with other binders and extenders for use in meat, in accordance with 21 CFR 184.1322.
	do	Various poultry products	Sufficient for purpose in accordance with 21 CFR 184.1322.

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Class of substance	Substance	Purpose	Products	Amount
	Whey, Dry or dried	To bind or thicken ..	Sausage as provided for in 9 CFR Part 319, bockwurst.	3.5 percent individually or collectively with other binders and extenders for use in meat.
		.....do	Imitation sausages, nonspecific loaves, soups, stews (meat only).	8 percent individually or collectively with other binders and extenders for use in meat.
		.....do	Chili con carne, chili con carne with beans, pork or beef with barbecue sauce.	8 percent individually or collectively with other binders and extenders for use in meat.
		.....do	Various poultry products	Sufficient for purpose in accordance with 21 CFR 184.1322.
	Whey, Reduced lactose.	To bind or thicken ..	Sausage as provided for in 9 CFR Part 319, bockwurst.	3.5 percent individually or collectively with other binders and extenders for use in meat.
		.....do	Imitation sausages, nonspecific loaves, soups, stews (meat only).	Sufficient for purpose in accordance with 21 CFR 172.5.
		.....do	Chili con carne, chili con carne with beans, pork or beef with barbecue sauce.	8 percent individually or collectively with other binders and extenders for use in meat.
		.....do	Sausage as provided for in 9 CFR Part 319, bockwurst.	3.5 percent individually or collectively with other binders and extenders for use in meat.
	Whey, Reduced minerals.	.....do	Imitation sausages, nonspecific loaves, soups, stews (meat only).	Sufficient for purpose in accordance with 21 CFR 172.5.
		.....do	Chili con carne, chili con carne with beans, pork or beef with barbecue sauce.	8 percent individually or collectively with other binders and extenders for use in meat.
		.....do	Sausage as provided in 9 CFR Part 319, bockwurst.	3.5 percent individually or collectively with other binders and extenders for use in meat, in accordance with 21 CFR 184.1979c.
	Whey protein concentrate.	.....do	Imitation sausages, nonspecific loaves, soups, stews.	Sufficient for purpose in accordance with 21 CFR 184.1979c.
		.....do	Chili con carne, chili con carne with beans, pork or beef with barbecue sauce.	8 percent individually or collectively with other binders and extenders for use in meat, in accordance with 21 CFR 184.1979c.
		To bind meat pieces	Restructured meat food products, whole muscle meat cuts.	3.5 percent individually or collectively with other binders and extenders for use in meat, in accordance with 21 CFR 184.1979c.
		.....do	Meat sauces, gravies or sauces and meats, canned or frozen and/or refrigerated meat salads, canned or frozen meat stews, canned chili or chili with beans, pizza topping mixes and batter or breading mixes.	Sufficient for purpose in accordance with 21 CFR 172.5.
	Xanthan gum	To maintain: uniform viscosity; suspension of particulate matter, emulsion stability; freeze-thaw stability.	Various poultry products, except uncooked products or sausages or other products with a moisture limitation established by Subpart P of Part 381.	Sufficient for purpose
	do		

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Class of substance	Substance	Purpose	Products	Amount
Bleaching Agent	Hydrogen peroxide	To remove color	Tripe (substance must be removed from product by rinsing with clear water).	Sufficient for purpose.
Catalysts (substances must be eliminated during process).	Nickel	To accelerate chemical reaction.	Rendered animal fats or a combination of such fats and vegetable fats.	Do.
	Sodium amide	Rearrangement of fatty acid radicals.	.....do	Do.
Chilling Media	Sodium methoxide ..	.....do .....	.....do.	700 lbs. to 10,000 gallons of water.
	Salt (NaCl)	To aid in chilling	Raw poultry products	
Coloring Agents (artificial).	Coal tar dyes (FD&C certified). Color additives listed in 21 CFR Part 74, Subpart A of Part 82, Subpart B (operator must furnish evidence to inspector in charge that color additive has been certified for use in connection with foods by the Food and Drug Administration).	To color products ... To color casings or rendered fats; marking and branding product.	Various poultry products	Sufficient for purpose.
	Titanium oxide	To whiten	Canned ham salad spread and creamed-type canned meat products. Poultry salads and poultry spreads.	0.5 percent.
Coloring Agents (natural).	Alkanet, annatto, carotene, cochineal, green chlorophyll, saffron and tumeric.	To color casings or rendered fats; marking and branding product.	Sausage casings, oleomargarine, shortening, marking or branding ink on product (meat only).	Sufficient for purpose (may be mixed with approved artificial dyes or harmless inert material such as common salt and sugar).
Curing accelerators (must be used only in combination with curing agents).	Annatto, carotene ...	To color products ...	Various poultry products	Sufficient for purpose.
	Ascorbic acid	To accelerate color fixing or preserve color during storage.	Cured pork and beef cuts, cured poultry, cured comminuted poultry and meat food products.	75 oz to 100 gal pickle at 10 percent pump level; ¾ oz to 100 lb meat, meat byproduct or poultry product: 10 percent solution to surfaces of cured meat cuts or poultry products prior to packaging. (The use of such solution shall not result in the addition of a significant amount of moisture to the product).
	Citric acid or sodium citrate.	To accelerate color fixing or preserve color during storage.	Cured pork and beef cuts, cured comminuted meat food product, cured comminuted poultry or poultry products.	May be used in cured meat products or in 10 percent solution used to spray surfaces of cured meat cuts prior to packaging to replace up to 50 percent of the ascorbic acid, erythorbic acid, sodium ascorbate, or sodium erythorbate that is used. May be used in cured poultry products to replace 50 percent of the ascorbic acid or sodium ascorbate that is used.

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	Erythorbic acid	To accelerate color fixing or preserve color during storage.	Cured pork and beef cuts, cured poultry, cured comminuted poultry and meat food products.	75 oz to 100 gal pickle at 10 percent pump level; ¾ oz to 100 lb meat, meat byproduct or poultry product; 10 percent solution to surfaces of cured meat cuts or poultry products prior to packaging. (The use of such solution shall not result in the addition of a significant amount of moisture to the product).
	Fumaric acid .....	.....do	Cured, comminuted meat, poultry or meat and poultry products.	0.065 percent (or 1 oz to 100 lb) of the weight of the meat, poultry or the meat or poultry byproducts before processing.
	Glucono delta lactone.	.....do	Cured, comminuted meat or meat food product.	8 oz to each 100 lb of meat or meat byproduct.
		.....do	Genoa salami	16 oz to 100 lb of meat (1.0 percent).
	Sodium acid pyrophosphate.	.....do	Frankfurters, wieners, vienna, bologna, garlic bologna, knockwurst and similar products.	Not to exceed alone or in combination with other curing accelerators for use in meat the following: 8 oz in 100 lb of meat, or meat and meat byproducts, content of the formula; nor 0.5 percent in the finished product.
	Sodium ascorbate ..	To accelerate color fixing or preserve color during storage.	Cured pork and beef cuts, cured comminuted meat food product, cured comminuted poultry or poultry products.	87.5 oz to 100 gal pickle at 10 percent pump level; 7/8 oz to 100 lb meat, meat byproduct or poultry product; 10 percent solution to surfaces of cured meat cuts or poultry products prior to packaging. (The use of such solution shall not result in the addition of a significant amount of moisture to the product).
	Sodium erythorbate	To accelerate color fixing or preserve color during storage.	Cured pork and beef cuts, cured comminuted meat food products, cured comminuted poultry or poultry products.	87.5 oz to 100 gal pickle at 10 percent pump level; 7/8 oz to 100 lb meat, meat byproduct or poultry product; 10 percent solution to surfaces of cured meat cuts or poultry products prior to packaging. (The use of such solution shall not result in the addition of a significant amount of moisture to the product.)
Curing Agents	Sodium or potassium nitrate.	Source of nitrite	Cured meat products other than bacon. Nitrates may not be used in baby, junior, and toddler foods. Cured, comminuted poultry or poultry products.	7 lb to 100 gal pickle; 3½ oz to 100 lb meat or poultry product (dry cure); 2¾ oz to 100 lb chopped meat or poultry.

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Class of substance	Substance	Purpose	Products	Amount
Denuding Agents (may be used in combination. Must be removed from tripe by rinsing with potable water.).	Sodium or potassium nitrite (supplies of sodium nitrite and potassium nitrite and mixtures containing them must be kept under the care of a responsible employee of the establishment. The specific nitrite content of such supplies must be known and clearly marked accordingly).	To fix color	Cured meat and poultry products. Nitrites may not be used in baby, junior, or toddler foods.	2 lb to 100 gal pickle at 10 percent pump level; 1 oz to 100 lb meat or poultry product (dry cure); ¼ oz to 100 lb chopped meat, meat byproduct or poultry product. The use of nitrites, nitrates or combination shall not result in more than 200 ppm of nitrite, calculated as sodium nitrite in finished product, except that nitrites may be used in bacon only in accordance with paragraph (b) of this section.
	Lime (calcium oxide, calcium hydroxide).	To denude mucous membranes.	Tripe	Sufficient for purpose.
	Sodium carbonate ..	.....do .....	.....do	Do.
	Sodium citrate .....	.....do .....	.....do	Do.
	Sodium gluconate ...	.....do .....	.....do	Do.
	Sodium hydroxide ...	.....do .....	.....do	Do.
	Sodium persulfate ..	.....do .....	.....do	Do.
Emulsifying Agents ..	Sodium silicates (ortho, meta, and sesqui).	.....do .....	.....do	Do.
	Trisodium phosphate.	.....do .....	.....do	Do.
	Acetylated monoglycerides.	To emulsify product	Shortening and various poultry products.	Sufficient for purpose.
	Diacetyl tartaric acid esters of mono- and diglycerides.	.....do .....	.....do	Do.
	Glycerol-lacto stearate, oleate, or palmitate.	.....do .....	.....do	Do.
	Lecithin	To emulsify product (also as an antioxidant).	Oleomargarine, shortening, various meat and poultry products.	0.5 percent in oleomargarine, use in other products—sufficient amount for emulsification.
	Mono and diglycerides (glycerol palmitate, etc.).	To emulsify product	Rendered animal fat or a combination of such fat with vegetable fat; oleomargarine.	Sufficient for purpose in lard and shortening; 0.5 percent in oleomargarine.
Mono and diglycerides of fatty acids esterified with any of the following acids: acetic, acetyl tartaric, citric, lactic, tartaric, and their sodium and calcium salts; the sodium sulfoacetate derivatives of these mono and diglycerides.dodo	Various poultry products	Sufficient for purpose.
dodo	Margarine or oleomargarine	0.5 percent.

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Class of substance	Substance	Purpose	Products	Amount	
	Polyglycerol esters of fatty acids (polyglycerol esters of fatty acids are restricted to those up to and including the decaglycerol esters and otherwise meeting the requirements of § 172.854(a) of the Food Additive Regulations).do	Rendered animal fat or a combination of such fat with vegetable fat when use is not precluded by standards of identity of composition; oleomargarine.	Sufficient for purpose for rendered animal fat or combination with vegetable fat; 0.5 percent for oleomargarine.	
	Polysorbate 60 (polyoxyethylene (20) sorbitan monostearate).	.....do	Shortening for use in non-standardized baked goods, baking mixes, icings, fillings, and toppings and in the frying of foods (meat only). Rendered poultry fat or a combination of such fat with vegetable fat.	1 percent when used alone. If used with polysorbate 80 the combined total shall not exceed 1 percent.
	Polysorbate 80 (polyoxyethylene (20) sorbitan monooleate).	.....do	Shortening for use in non-standardized baked goods, baking mixes, icings, fillings, and toppings and in the frying of foods (meat only). Various poultry products.	1 percent when used alone. If used with polysorbate 60 the combined total shall not exceed 1 percent.
	1,2-propylene glycol esters of fatty acids.	.....do	Margarine or oleomargarine	2.0 percent.
	Propylene glycol mono and diesters of fats and fatty acids.	.....do	Rendered animal or poultry fat or a combination of such fat with vegetable fat.	Sufficient for purpose.
	Stearyl-2-lactylic acid.	.....do	Shortening to be used for cake icings and fillings (meat only).	3.0 percent.
	Stearyl monoglyceridyl citrate.	.....do	Shortening	Sufficient for purpose
	Film Forming Agents	A mixture consisting of water, sodium alginate, calcium chloride, sodium carboxymethyl-cellulose, and corn syrup solids.	To reduce cooler shrinkage and help protect surface.	Freshly dressed meat carcasses. Such carcasses must bear a statement "Protected with a film of water, corn syrup solids, sodium alginate, calcium chloride and sodium carboxymethyl-cellulose.".	Formulation may not exceed 1.5 percent of hot carcass weight when applied. Chilled weight may not exceed hot weight.
		Flavoring Agents; Protectors and Developers.	Artificial smoke flavoring.	To flavor product	Various (meat and poultry) ²	Sufficient for purpose.
	Autolyzed yeast extract.	dodo	Do.
Benzoic acid (sodium, potassium and calcium salts).	To retard flavor reversion.		Margarine or oleomargarine	0.1 percent individually, or if used in combination with other flavoring agents for use in meat or with sorbic acid and its salts, 0.2 percent (expressed as the acids in the wt. of the finished foods).	
Calcium lactate	To protect flavor		Cooked semi-dry and dry products including sausage, imitation sausage, and nonspecific meat food sticks.	0.6 percent in product formulation.	
Citric aciddo		Various poultry products	Sufficient for purpose.	
		Flavoring	Chili con carne	Do.	

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Class of substance	Substance	Purpose	Products	Amount
	Corn syrup solids; corn syrup; glucose syrup.	To flavor product	Various poultry products, sausage, hamburger, meat loaf, luncheon meat, chopped or pressed ham.	Do.
	Dextrose .....	.....do	Sausage, ham and cured products.	Do.
	Diacetyl .....	.....do	Oleomargarine	Do.
	Disodium guanylate	.....do	Various meat and poultry products. ²	Do.
	Disodium inosinate	.....do .....	.....do	Do.
	Harmless bacteria starters of the acidophilus type, lactic acid starter or culture of <i>Pediococcus cerevisiae</i> .	To develop flavor	Dry sausage, pork roll, thuringer, lebanon Bologna, cervelat, and salami.	0.5 percent.
	Harmless lactic acid producing bacteria.	To prevent the growth of <i>Clostridium botulinum</i> .	Bacon	Sufficient for purpose.
	Hydrolyzed plant protein.	To flavor product	Various meat and poultry products. ²	Do.
	Isopropyl citrate	To protect flavor	Oleomargarine	0.02 percent.
	Malt syrup	To flavor product	Cured meat products	2.5 percent.
	Milk protein hydrolysate.	.....do	Various poultry products	Sufficient for purpose.
	Monoammonium glutamate.	.....do	Various meat and poultry products. ²	Do.
	Monosodium glutamate.	.....do .....	.....do	Do.
	Potassium lactate ...	.....do	Various meat and meat food products, poultry and poultry food products, except infant formula and infant food. ²	Not to exceed 2 percent of formulation; in accordance with 21 CFR 184.1639.
	Smoke flavoring	To flavor product	Various meat and poultry products.	Sufficient for purpose.
	Sodium acetate	To flavor products ..	Various meat and poultry products.	Not to exceed 0.25% of formulate in accordance with 21 CFR 184.1721.
	Sodium diacetate ....	.....do .....	.....do	Not to exceed 0.25% of formulate in accordance with 21 CFR 184.1754.
	Sodium lactate .....	.....do	Various meat and meat food products, poultry and poultry food products, except infant formula and infant food. ²	Not to exceed 2 percent of formulation in accordance with 21 CFR 184.1768.
	Sodium sulfoacetate derivative of mono and diglycerids.	.....do	Various meat and poultry products. ²	0.5 percent.
	Sodium tripolyphosphate.	To help protect flavor.	"Fresh Beef," ² "Beef for further cooking," "Cooked Beef," Beef Patties, Meat Loaves, Meat Toppings, and similar products derived from pork, lamb, veal, mutton, and goat meat which are cooked or frozen after processing.	0.5 percent of total product.
	Sodium tripolyphosphate and sodium mixtures, metaphosphate, insoluble; and sodium polyphosphates, glassy.dodo	Do.

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Class of substance	Substance	Purpose	Products	Amount
Gases	Sorbitol	To flavor, to facilitate the removal of casings from product, and to reduce caramelization and charring.	Cooked sausage labeled frankfurter, frank, furter, wiener, and knockwurst; cured pork and pork products, as provided for in 9 CFR Part 319.	Not to exceed 2 percent of the weight of the formula excluding the formula weight of water or ice, when used in accordance with 21 CFR 184.1835.
	Starter distillate	To help protect flavor.	Oleomargarine	Sufficient for purpose.
	Stearyl citrate	.....do	.....do	0.15 percent.
	Sugars (sucrose and dextrose).	To flavor product	Various meat and poultry products.	Sufficient for purpose.
	Carbon dioxide liquid.	Contact freezing	Various poultry products	Do.
	Carbon dioxide solid (dry ice).	To cool product	Chopping of meat, packing of product.	Sufficient for purpose.
		To cool product or facilitate chopping or packaging.	Various poultry products	Do.
Hog Scald Agents (must be removed by subsequent cleaning operations).	Nitrogen	To exclude oxygen from sealed containers.	Various meat and poultry products.	Do.
	Nitrogen, liquid	Contact freezant	.....do	Do.
	Caustic soda	To remove hair	Hog carcasses	Sufficient for purpose.
	Dicotyl sodium sulfosuccinate.	.....do	.....do	Do.
	Dimethylpolysiloxane.	.....do	.....do	Do.
	Disodium-calcium ethylenediaminetetraacetate.	.....do	.....do	Do.
	Disodium phosphate	.....do	.....do	Do.
	Ethylenediaminetetraacetic acid (sodium salts).	.....do	.....do	Do.
	Lime (calcium oxide, calcium hydroxide).	.....do	.....do	Do.
	Potassium hydroxide.	.....do	.....do	Do.
	Propylene glycol	.....do	.....do	Do.
	Soap (prepared by the reaction of calcium, potassium, or sodium with rosin or fatty acids of natural fats and oils).	.....do	.....do	Do.
	Sodium acid pyrophosphate.	.....do	.....do	Do.
	Sodium carbonate	.....do	.....do	Do.
	Sodium dodecylbenzene sulfonate.	.....do	.....do	Do.
	Sodium gluconate	.....do	.....do	Do.
	Sodium hexametaphosphate.	.....do	.....do	Do.
Sodium lauryl sulfate.	.....do	.....do	Do.	
Sodium mono and dimethylnaphthalene sulfonate (molecular weight 245–260).dodo	Do.	

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Class of substance	Substance	Purpose	Products	Amount
	Sodium n-alkylbenzene sulfonate (alkyl group predominantly C12 and C13 and not less than 95 percent C10 and C16).dodo	Do.
	Sodium pyrophosphate.	.....do .....	.....do	Do.
	Sodium silicates (ortho, meta, and sesqui).	.....do .....	.....do	Do.
	Sodium sulfate .....	.....do .....	.....do	Do.
	Sodium tripolyphosphate.	.....do .....	.....do	Do.
	Sucrose .....	.....do .....	.....do	Do.
	Triethanolamine dodecylbenzene sulfonate.	.....do .....	.....do	Do.
	Trisodium phosphate.	.....do .....	.....do	Do.
Miscellaneous	Adipic acid	To acidify	Margarine or oleomargarine	Sufficient for purpose.
	Ascorbic acid, erythorbic acid, citric acid, sodium ascorbate and sodium citrate, singly or in combination.	To delay discoloration.	Fresh beef cuts, fresh lamb cuts, and fresh pork cuts.	Not to exceed, singly or in combination, 500 ppm or 1.8 mg/sq inch of product surface of ascorbic acid (in accordance with 21 CFR 182.3013), erythorbic acid (in accordance with 21 CFR 182.3041), or sodium ascorbate (in accordance with 21 CFR 182.3731); and/or not to exceed, singly or in combination, 250 ppm or 0.9 mg/sq inch of product surface of citric acid (in accordance with 21 CFR 182.6033), or sodium citrate (in accordance with 21 CFR 182.6751).
	Calcium disodium, EDTA (calcium disodium ethylenediaminetetraacetate).	To preserve product and to protect flavor.	Margarine or oleomargarine	75 ppm by weight of the finished oleomargarine or margarine.
	Calcium propionate	To retard mold growth.	Pizza crust	0.32 percent alone or in combination based on weight of the flour brace used.
		.....do	Fresh pie dough (poultry only).	0.3 percent of calcium propionate or sodium propionate alone, or in combination, based on weight of flour used.
	Citric acid	To preserve cured color during storage.	Cured pork cuts	Not to exceed 30 percent in water solution used to spray surfaces of cured cuts, prior to packaging, in accordance with 21 CFR 184.1033. (The use of such solution shall not result in the addition of a significant amount of moisture to the product and shall be applied only once to product).
	Citric acid (sodium and potassium salts).	To acidify	Margarine and oleomargarine.	Sufficient for purpose.
	d- and dl-alpha-tocopherol.	To inhibit nitrosamine formation.	Pump-cured bacon	500 ppm; by injection or surface application.

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Class of substance	Substance	Purpose	Products	Amount
	Dipotassium phosphate.	To decrease the amount of cooked out juices.	Meat food products except where otherwise prohibited by the meat inspection regulations and poultry food products except where otherwise prohibited by the poultry products inspection regulations..	For meat food products, 5 percent of phosphate in pickle at 10 percent pump level; 0.5 percent of phosphate in meat food product (only clear solution may be injected into meat food product). For poultry food products, 0.5 percent of total product.
	Disodium phosphate	.....do .....	.....do	Do.
	Glycerine	Humectant	Shelf stable meat snacks ...	Not to exceed 2 percent of the formulation weight of the product in accordance with 21 CFR 182.1320.
	Hydrochloric acid	To acidify	Margarine or oleomargarine	Sufficient for purpose.
	Lactic acid (sodium and potassium salts).	.....do .....	.....do	Do.
	L-Tartaric acid (sodium and potassium salts).	.....do .....	.....do	Do.
	Monopotassium phosphate.	To decrease the amount of cooked out juices.	Meat food products except where otherwise prohibited by the meat inspection regulations and poultry food products except where otherwise prohibited by the poultry products inspection regulations..	For meat food products, 5 percent of phosphate in pickle at 10 percent pump level; 0.5 percent of phosphate in meat food product (only clear solution may be injected into meat food product). For poultry products, 0.5 percent of total product.
	Monosodium phosphate.	.....do .....	.....do	Do.
	Phosphoric acid	To acidify	Margarine or oleomargarine	Sufficient for purpose.
	Potassium bicarbonate.	To alkalyze	Margarine or oleomargarine	Sufficient for purpose.
	Potassium carbonate.	.....do .....	.....do	Do.
	Potassium pyrophosphate.	To decrease the amount of cooked out juices.	Meat food products except where otherwise prohibited by the meat inspection regulations and poultry food products except where otherwise prohibited by the poultry products inspection regulations..	5 percent of phosphate in pickle at 10 percent pump level; 0.5 percent of phosphate in meat food product (only clear solution may be injected into meat food product). For poultry food products, 0.5 percent of total product.
	Potassium sorbate ..	To retard mold growth.	Dry sausage	10 percent in water solution may be applied to casings after stuffing or casings may be dipped in solution prior to stuffing.
	Potassium triphosphate.	To decrease the amount of cooked out juices.	Meat food products except where otherwise prohibited by the meat inspection regulations and poultry food products except where otherwise prohibited by the poultry products inspection regulations.	5 percent of phosphate in pickle at 10 percent pump level; 0.5 percent of phosphate in meat food product (only clear solution may be injected into meat food product). For poultry food products, 0.5 percent of total product.
	Propyl paraben (propyl p-hydroxybenzoate).	To retard mold growth.	Dry sausage	3.5 percent in water solution may be applied to casings after stuffing or casings may be dipped in solution prior to stuffing.
	Silicon dioxide	Processing aid/dispersant.	Tocopherol containing bacon curing mixes.	At level not to exceed 4.0 percent in the dry mix.

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Class of substance	Substance	Purpose	Products	Amount
	Sodium acid pyrophosphate.	To decrease the amount of cooked out juices.	Meat food products except where other prohibited by the meat inspection regulations and poultry food products except where otherwise prohibited by the poultry products inspection regulations..	For meat food products, 5 percent of phosphate in pickle at 10 percent pump level; 0.5 percent of phosphate in meat food product (only clear solution may be injected into meat food product). For poultry products, 0.5 percent of total product.
	Sodium bicarbonate	To neutralize excess acidity, cleaning vegetables.	Rendered fats, soups, curing pickle (meat and poultry).	Sufficient for purpose.
	Sodium carbonate ..	To alkalyze	Margarine or oleomargarine	Do.
	Sodium citrate buffered with citric acid to a pH of 5.6.	To inhibit the growth of micro-organisms and retain product flavor during storage.	Cured and uncured, processed whole muscle meat and poultry food products, e.g., ham, chicken breasts.	Not to exceed 1.3 percent of the formulation weight of the product in accordance with 21 CFR 184.1751.
	Sodium hydroxide ...	To alkalyze	Margarine or oleomargarine	Sufficient for purpose.
		To decrease the amount of cooked out juices.	Poultry food products containing phosphates.	May be used only in combination with phosphate in a ratio not to exceed one part sodium hydroxide to four parts phosphate.
		.....do	Meat food products containing phosphates.	May be used only in combination with phosphates in a ratio not to exceed one part sodium hydroxide to four parts phosphate; the combination shall not exceed 5 percent in pickle at 10 percent pump level; 0.5 percent in product.
	Sodium metaphosphate, insoluble.	.....do	Meat food products except where other prohibited by the meat inspection regulations, and poultry food products except where otherwise prohibited by the poultry products inspection regulations.	For meat food products, 5 percent of phosphate in pickle at 10 percent pump level; 0.5 percent of phosphate in meat food product (only clear solution may be injected into meat food product). For poultry products, 0.5 percent of total product.
	Sodium polyphosphate, glassy.	.....do .....	.....do	Do.
	Sodium propionate	To retard mold growth.	Pizza crust	0.32 percent alone or in combination based on weight of the flour brace used.
		.....do	Fresh pie dough (poultry only).	0.3 percent of calcium propionate or sodium propionate alone, or in combination, based on weight of flour used.
	Sodium pyrophosphate.	To decrease the amount of cooked out juices.	Meat food products except where otherwise prohibited by the meat inspection regulations and poultry food products except where otherwise prohibited by the poultry products inspection regulations.	For meat food products, 5 percent of phosphate in pickle at 10 percent pump level; 0.5 percent of phosphate in meat food product (only clear solution may be injected into meat food product). For poultry products, 0.5 percent of total product.
	Sodium tripolyphosphate.dodo	Do.

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Class of substance	Substance	Purpose	Products	Amount
Poultry scald agents (must be removed by subsequent cleaning operations).	Sorbic acid (sodium, potassium, and calcium salts).	To preserve product and to retard mold growth.	Margarine or oleomargarine	0.1 percent individually, or if used in combination or with benzoic acid or its salts, 0.2 percent (expressed as the acids in the wt. of the finished foods).
	Tricalcium phosphate.	To preserve product color during dehydration process.	Mechanically deboned chicken to be dehydrated.	Not to exceed 2 percent of the weight of the mechanically deboned chicken prior to dehydration, in accordance with 21 CFR 182.1217.
	Alpha-hydro-omega-hydroxy-poly (oxyethylene) poly (oxypropylene) (minimum 15 moles) poly (oxyethylene) block copolymer (poloxamer).	To remove feathers	Poultry carcasses	Not to exceed 0.05 percent by weight in scald water.
	Dimethylpolysiloxane.	.....do .....	.....do	Sufficient for purpose.
	Diocetyl sodium sulfosuccinate.	.....do .....	.....do	Do.
	Dipotassium phosphate.	.....do .....	.....do	Do.
	Ethylenediaminetetra-acetic acid (sodium salts).	.....do .....	.....do	Do.
	Lime (calcium oxide, calcium hydroxide).	.....do .....	.....do	Do.
	Polyoxyethylene (20) sorbitan monooleate.	.....do .....	.....do	Not to exceed 0.0175 percent in scald water.
	Potassium hydroxide.	.....do .....	.....do	Sufficient for purpose.
	Propylene glycol .....	.....do .....	.....do	Do.
	Sodium acid phosphate.	.....do .....	.....do	Do.
	Sodium acid pyrophosphate.	.....do .....	.....do	Do.
	Sodium bicarbonate	.....do .....	.....do	Do.
	Sodium carbonate ..	.....do .....	.....do	Do.
	Sodium dodecylbenzenesulfonate.	.....do .....	.....do	Do.
	Sodium-2-ethylhexyl sulfate.	.....do .....	.....do	Do.
	Sodium hexametaphosphate.	.....do .....	.....do	Do.
	Sodium hydroxide ...	.....do .....	.....do	Do.
	Sodium lauryl sulfate.	.....do .....	.....do	Do.
Sodium phosphate (mono-, di-, tribasic).	.....do .....	.....do	Do.	
Sodium pyrophosphate.	.....do .....	.....do	Do.	
Sodium sesquicarbonate.	.....do .....	.....do	Do.	
Sodium sulfatedodo	Do.	
Sodium tripolyphosphate.dodo	Do.	
Tetrasodium pyrophosphate.dodo	Do.	

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Class of substance	Substance	Purpose	Products	Amount
Proteolytic Enzymes	Aspergillus flavus oryzae group.	To soften tissue	Raw poultry muscle tissue of hen, cock, mature turkey, mature duck, mature goose, and mature guinea, and raw meat cuts.	Solutions consisting of water and approved proteolytic enzyme applied or injected into raw meat or poultry tissue shall not result in a gain of more than 3 percent above the weight of the untreated product.
	Aspergillus oryzae ..	.....do .....	.....do	Do.
	Bromelin .....	.....do .....	.....do	Do.
	Ficin .....	.....do .....	.....do	Do.
	Papain .....	.....do .....	.....do	Do.
Refining Agents (must be eliminated during process of manufacturing).	Acetic acid	To separate fatty acids and glycerol.	Rendered fats (meat only) ..	Sufficient for purpose.
	Bicarbonate of soda .....	.....do .....	.....do	Do.
	Carbon (purified charcoal).	To aid in refining of animal fats.	.....do	Do.
	Caustic soda (sodium hydroxide).	To refine fats .....	.....do	Do.
	Diatomaceous earth; Fuller's earth.	.....do .....	.....do	Do.
	Sodium carbonate ..	.....do .....	.....do	Do.
	Tannic acid .....	.....do .....	.....do	Do.
Rendering agents	Tricalcium phosphate.	To aid rendering	Animal fats	Do.
	Trisodium phosphate.	.....do .....	.....do	Do.
Synergists (used in combination with antioxidants).	Citric acid	To increase effectiveness of antioxidants.	Any meat product permitted to contain antioxidants as provided for in this part.	Not to exceed 0.01 percent based on fat content.
	.....do .....	.....do	Poultry fats	0.01 percent alone or in combination with antioxidants in poultry fats.
	Malic acid .....	.....do	Lard and shortening	0.01 percent based on total weight in combination with antioxidants for use in meat products only.
	.....do .....	.....do	Poultry fats	0.01 percent alone or in combination with antioxidants in poultry fats.
	Monoglyceride citrate.	.....do	Lard, shortening, fresh pork sausage, dried meats and poultry fats.	0.02 percent.
	Monoisopropyl citrate.	.....do	Lard, shortening, oleomargarine, fresh pork sausage, dried meats.	Do.
	.....do .....	.....do	Poultry fats	0.01 percent poultry fats.
Phosphoric acid .....	.....do	Lard, shortening, and poultry fats.	0.01 percent.	
Tenderizing agents ..	Aspergillus flavus oryzae group.	To soften tissue	Raw poultry muscle tissue of hen, cock, mature turkey, mature duck, mature goose, and mature guinea, and raw meat cuts.	Solutions consisting of water and approved proteolytic enzyme applied or injected into raw meat or poultry tissue shall not result in a gain of more than 3 percent above the weight of the untreated product.
	Aspergillus oryzae ..	.....do .....	.....do	Not more than 3 percent of a 0.8 molar solution.
	Bromelin .....	.....do .....	.....do	Do.
	Calcium chloride .....	.....do .....	.....do	Do.
	Magnesium chloride ..	.....do .....	.....do	Do.

Class of substance	Substance	Purpose	Products	Amount
	Papain	To soften tissue	Raw poultry muscle tissue of hen, cock, mature turkey, mature duck, mature goose, and mature guinea, and raw meat cuts.	Solutions consisting of water and approved proteolytic enzyme applied or injected into raw meat or poultry tissue shall not result in a gain of more than 3 percent above the weight of the untreated product.
	Potassium chloride	.....do .....	.....do	Not more than 3 percent of a 2.0 molar solution.
	Potassium, magnesium or calcium chloride.	.....do .....	.....do	A solution of approved inorganic chlorides injected into or applied to raw meats or poultry cuts shall not result in a gain of more than 3 percent above the weight of the untreated product.

¹ [Reserved]
² Information as to the specific products for which use of this additive is approved may be obtained upon inquiry addressed to the Labeling and Additives Policy Division, Food Safety and Inspection Service, U.S. Department of Agriculture, Washington, DC 20250.
³ Provided that its use is functional and suitable for the product and it is permitted for use at the lowest level necessary to accomplish the desired technical effect as determined in specific cases prior to label approval under part 412 of this chapter.
⁴ Special labeling requirements are prescribed in 381.120 for raw poultry chilled in a medium with more than 70 lbs. of salt to 10,000 gals. of water.

[64 FR 72175, Dec. 23, 1999, as amended at 65 FR 3123, Jan. 20, 2000; 65 FR 34391, May 30, 2000; 78 FR 66839, Nov. 7, 2013; 83 FR 25308, May 31, 2018; 84 FR 65268, Nov. 27, 2019]

§ 424.22 Certain other permitted uses.

(a) Under appropriate declaration as required in parts 316 and 317 of this chapter, the following substances may be added to meat:

(1) *General.* Common salt, approved sugars (sucrose, cane or beet sugar), maple sugar, dextrose, invert sugar, honey, corn syrup solids (corn syrup, glucose syrup and fructose), wood smoke, vinegar, flavorings, spices, sodium nitrate, sodium nitrite, potassium nitrate, potassium nitrite, and other food and color additives specified in the chart in paragraph (c) of this section may be added to meat under conditions, if any, specified in this part or in part 317 of this chapter.

(2) *Artificial flavorings.* Other harmless artificial flavorings may be added to meat, with the approval of the Administrator in specific cases.

(3) *Coloring matter and dyes.* Coloring matter and dyes, other than those specified in a regulation permitting that use in this chapter or in 21 CFR Chapter I, Subchapter A and Subchapter B, may be applied to meat mixed with rendered fat, applied to natural and artificial casings, and applied to such casings enclosing prod-

ucts, if approved by the Administrator in specific cases. When any coloring matter or dye is applied to casings, there shall be no penetration of coloring into the product.

(b) *Use of nitrite and sodium ascorbate or sodium erythorbate (isoascorbate) in bacon—(1) Pumped bacon.* With respect to bacon injected with curing ingredients and massaged bacon, sodium nitrite shall be used at 120 parts per million (ppm) ingoing or an equivalent amount of potassium nitrite shall be used (148 ppm ingoing); and 550 ppm of sodium ascorbate or sodium erythorbate (isoascorbate) shall be used. Sodium ascorbate or sodium erythorbate have a molecular weight of approximately 198. Hydrated forms of these substances shall be adjusted to attain the equivalent of 550 ppm of sodium ascorbate or sodium erythorbate.

(i) The Department shall collect samples of pumped bacon from producing plants and analyze them for the level of nitrosamines by the Thermal Energy Analyzer (TEA). In the event that a TEA analysis indicates that a confirmable level of nitrosamines might be present, additional samples shall be collected and analyzed by gas chromatography. Presumptive positive results