

# INGREDIENTS





## Meat Processing Toolkit



## INGREDIENTS

### Ingredients Used in processing

In this section, we will go over the types of ingredients that could be used to produce goat products. Each type of products uses a different mix of ingredients. All meat used in formulations must be clean, wholesome and properly labeled. Receiving of raw ingredients is an important step in ensuring food safety. If the manufacturing facility received meat, they should inspect all incoming meat to ensure that is not contaminated. Even previously inspected meat should be re-inspected to ensure that it has not become contaminated during transit.

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A number of non-meat ingredients are essential to the making process. These non-meat ingredients stabilize the mixture, in Sausage Processing and add specific characteristics and flavors. These typically include extenders and binders, water, salt, nitrite, nitrate, ascorbates, erythorbates, sugars, antioxidants, along with traditional spices, seasonings and flavorings. In this section, we will look at the effect and use of each of these ingredients.

### Variety Meats

Sausage products provide the manufacturer with an opportunity to utilize various types of meat by-products, also known as variety meats, such as hearts, tongues, livers, tripe, and goat stomachs. The specific amount and type of variety meats used in a product depends on the formula designed by the processor. When is allowed, the use of variety meats, occur in cooked sausage, as long as the name of the product is modified to include the words with by-products or with variety meats, and the particular types of variety meats are included in the ingredients list in the order of predominance in the formulation. Manufacturers also often use specific types of variety meat to impart specific flavors or characteristics to the final product. For example, hearts may be used to help create the dark red color desired for summer sausages.

### Rework

Sometimes a product that has partially or fully completed the production cycle is not sell-able but still wholesome, and can be used for food. For example, the casing of some sausages may split during the cooking or smoking cycle. Manufacturers are allowed to reuse these edible but unsalable products by removing the casing and adding the contents to the grinder to include in another run of the same product. Manufacturers are not allowed to use this rework in a product with a different list of ingredients. Rework has little binding ability since the proteins

are coagulated, so the amounts added are self-limiting, in that it has a detrimental effect on product quality.

### **Binders Extenders**

Binders and extenders have a number of uses in a sausage formulation. Manufacturers use extenders such as dry milk powder, cereal flours, and soy protein as a lower cost method to increase the overall yield of the formulation, to improve binding qualities and slicing characteristics, and to add specific flavor characteristics. A sausage formulation can include up to 3.5% of these substances.

### **Water**

While water is a naturally-occurring component of meat, manufacturers also add water to the formula in specific amounts to improve the consistency of the mixture and to dissolve solid ingredients. It is permitted to the manufacturers of fresh sausages to add water up to 3% of the total product weight, or according to the national legislation. Typically, the amount of naturally occurring water is determined by computing four times the protein content. Any moisture above that amount is considered added water.

### **Salt**

Salt is used to preserve the products, enhance the flavor, and to solubilize the meat proteins in order to improve the binding properties of the sausage making process. Since the advent of refrigeration, the preservative properties are the least important use of salt. A salt concentration of around 17% is necessary for preservation to be effective. The most important use of salt in a sausage product is its ability to solubilize proteins. This enhances the product texture and improves water and fat binding.

### **Curing Agents**

Curing agents such as nitrite and nitrate have traditionally been used in sausage formulations, originally as a contaminant present in salts, and later added intentionally in the form of saltpeter. Nitrites provide bacteriostatic and antioxidant properties, and improve the taste and color of the sausage. Nitrites prevent the outgrowth of bacteria, such as the lethal *Clostridium botulinum* bacterium that causes botulism. Nitrites also inhibit the oxidation of fats in meats, reducing the development of oxidative rancidity. Nitrites produce the desired reactions much faster and are much more commonly used than nitrates. The use of nitrate by large processors is rare, because the process of converting the nitrate into nitrite within the product is much slower and less reliable than addition of nitrite directly.

Since nitrites and nitrates can be toxic to humans, the use of these ingredients in sausage formulations is carefully controlled. They are sometimes referred to as "restricted ingredients." Supplies of sodium nitrite and potassium nitrite and mixtures containing them must be kept securely under the care of a responsible employee of the establishment. The specific nitrite content of such supplies must be known and clearly marked accordingly. The amount of nitrite added to product must be regulated at the formulation step, based on the total amount of meat and meat byproducts. Nitrites dissipate quickly in the finished product, and the parts per million in the finished product does not necessarily reflect the amount that was used in formulation. This makes sampling the finished product for nitrite an impractical control measure.

## Cure Accelerators

Cure accelerators such as ascorbates and erythorbates are used to speed the curing process. They also stabilize the color of the final product.

Ingredient	Maximum amount
Ascorbic acid	3/4 oz. per 100 pounds of meat
Erythorbic acid	3/4 oz. per 100 pounds of meat
Sodium erythorbate	7/8 oz. per 100 pounds of meat
Citric acid	May replace up to 50% of above listed ingredients
Sodium citrate	May replace up to 50% of above listed ingredients
Sodium acid pyrophosphate	Alone or in combination with others may not exceed 8 oz. (0.5%)
Glucosono delta lactone (GDL)	8 oz. per 100 pounds of meat

## Sugar

Sugars are used in different formulations to reduce the flavor intensity of the salt and flavorings, and to provide a food source to enable microbial fermentation, when this procedure is part of the processing. Sugars used in these products include sucrose and dextrose.

## Antioxidants

Antioxidants are approved for use to retard oxidative rancidity and protect flavor. Approved antioxidants include butylated hydroxytoluene (BHT), butylated hydroxyanisole (BHA), propyl gallate, tertiary butylhydroquinone (TBHQ), and tocopherols. These compounds are added to the spice mixtures, based on the actual percentage of fat in the fresh product formulations (typically 0.01% separately, 0.02% in combination)

## Spices, Seasonings and Flavouring

Spices, seasonings, and flavorings are used to add flavor to the products, and also affect the consistency of the ground sausage mixture. The wide range of available spices, seasonings, and flavorings is a primary reason for the variety available in sausages. Spices are defined as any aromatic vegetable substance that is intended to function as contributing flavoring in food instead of contributing to the nutritional substance of the food. The active aromatic or pungent properties of spices that contribute the most to the flavoring effect are mostly present in the volatile oils, resins, or oleoresins of the spice. These properties are present in the whole spice, or in extracts of the active components. The use of spice extracts has some advantages over using whole spices, including providing more control over the intensity of the flavor, less opportunity for microbial contamination, easier storage, and a less conspicuous visual appearance compared with spice particles.

Spice extracts must be labeled as Flavorings in the product ingredients list. Flavorings are substances that are extracted from a food (such as fruits, herbs, roots, meats, seafood, etc.) that are also intended to contribute flavoring instead of nutritional substance. Seasonings is another general term that refers to any substances that are used to impart flavor to the food product. Some examples of common spices and seasonings include allspice, pepper, cardamom, caraway, coriander, cumin, garlic, sage, mustard, nutmeg, paprika, pepper, rosemary, sage, thyme, and turmeric.