

How pet food is made

Introduction

There are several different types, or formats, of manufactured pet food including wet (can, pouch, tray), dry (extruded or baked) and complementary treats. The method of production and the ingredients used varies according to format.

Wet pet food manufacturing

Overview

Wet foods are made by mixing recipe ingredients together and cooking them within the can, tray or pouch. The food in the container then remains sterile for the shelf life of the product or until opened. These products can be in the form of chunks in gravy, sauce or jelly, loaf or mousse.

Ingredient selection

Many of the ingredients used in the manufacture of pet food are described as animal (or fish) derivatives or by-products. These ingredients are the parts of the animal surplus to the requirements of the human food industry. Examples of by-products include liver, kidney, lung and various meat by-product meals. Pet foods may also use ingredients legally defined as meat (muscle meat). These ingredients are also most commonly found within the human food chain. In wet pet foods, by-products arrive at the factory in a fresh or frozen state. They may be chopped and added to the recipe mix directly or finely minced, mixed with dry ingredients such as cereals, formed into ribbons and diced into chunks of various sizes and shapes. Other ingredients are included such as oils and fats,



vitamins, minerals, cereals, pasta, grains, or vegetables. Water is also frequently added as an ingredient to facilitate processing and to give the food its final form and texture.

Ingredient weighing and preparation

Ingredients are carefully selected according to a pet food manufacturer's specific recipe, which is formulated to deliver complete and balanced nutrition for cats and dogs and also to meet other requirements of the product such as the variety, age range or size range. Once the ingredients for a specific recipe are mixed they enter the can, pouch or tray. For some forms of wet food, a mix of water, thickening agents and flavours may be added to form a gravy or jelly during the cooking process.

Sealing and cooking

The can, pouch or tray is then sealed and enters a cooking process. The temperature and length of cooking are carefully controlled in order to prevent spoilage over the shelf life of the product, as well as to optimise the taste and protect the required nutritional content.

Cooling and labelling

After cooking products are cooled. Cans are labelled. Information on tray and pouch products is usually printed upon the packaging itself.

Storage and distribution

Individual containers are packed into boxes or trays and stored in warehouses before being dispatched to customers.



Overview

Dry pet foods are made by mixing dry and wet ingredients together to form a dough. In the extrusion process, the dough is heated under pressure, then pushed through a die machine that cuts the kibbles. Kibble size and shape varies according to the product specification. The kibbles are dried, cooled and spray coated. Some dry foods may also be produced by means other than extrusion, such as baking.

Ingredient selection and sourcing

Many of the ingredients used in the manufacture of pet food are described as animal (or fish) derivatives or by-products. These ingredients are the parts of the animal surplus to the requirements of the human food industry. In dry pet foods, animal derivatives are commonly used in a meal form (such as chicken meal, poultry by-product meal) where meat and animal derivatives are cooked, the fat removed and the remaining material dried to create a dry meal. By-products may also be used in fresh or frozen form. Many of the other ingredients such as cereals, grains, and vegetables used in dry pet foods come in dry form and are milled or ground prior to mixing. A recipe is also likely to include oils and fats, vitamins and minerals required to ensure the product delivers all the essential nutrients.

Ingredient weighing and preparation

Ingredients are carefully selected according to a pet food manufacturer's specific recipe, formulated to deliver complete and balanced nutrition for cats and dogs. Dry ingredients are ground and sieved where required and then mixed.

Cooking and cooling

The dry mix is combined with wet ingredients, water and steam in a preconditioner, which hydrates the powders, creates a dough and starts the cooking process. The dough then enters a machine known as an extruder, which cooks the dough under pressure. At the end of the extruder the dough exits under pressure through a die plate creating ribbons of pre-specified shape that are then sliced into the pre-specified size using a rotary cutter.

After extrusion and cutting the kibbles are air dried in an oven to remove moisture and then cooled. Reducing the moisture content is an important step in maintaining freshness and preventing food spoilage.

When baked, the dough is rolled out and cut into shapes, then baked in an oven (similar to cookies or biscuits).

Kibble coating

After drying and cooling, kibbles often enter a revolving drum where they are evenly coated with a mix of flavours to enhance taste, and preservatives to prevent spoilage through the shelf life of the food. Flavours or other coatings may also be sprayed on baked foods as they exit the oven.



Packaging

Packs are filled according to the declared weight and the packaging is appropriately sealed to prevent contamination.

Storage and distribution

Packages are stored in boxes or wrapped on pallets and stored in warehouses ready for distribution to customers.

Complementary care and treats manufacturing

Treats for cats and dogs come in a variety of forms. In the EU, the majority are termed complementary as they are designed to complement main meal complete and balanced pet foods. In the US, the same products are generally identified as "treats" or "snacks." In either case, they should therefore only make up a small percentage of the daily calorie intake. Feeding recommendations on some pet food manufacturers' products suggest feeding no more than 10% of required daily calories. Here are some of the most common ways to make treats for cats and dogs:

Extrusion

This method involves mixing ingredients to form a dough that is pumped into an extruder. The dough may be a combination of meat and animal derivatives and dry ingredients such as wheat flour or potato starch that when extruded produced strip like treats. Alternatively, ingredients may be based on rice flour and wheat starch that when combined provides a chewy, spongy texture ideal for products that help clean teeth.

Biscuit baking

The primary ingredient in this process is usually wheat flour. Wheat flour is combined with vitamins, flavours, water and preservatives to make a soft dough. The dough is then cut into the required shapes and sizes before baking in an oven.

Injection moulding

Here ingredients are mixed together before being injected into a shaped mould. After cooling the treats are released from the mould. Moulds are usually used to create specific sizes and shapes of chew.

Pet food safety and quality



While each pet food manufacturer will have their own recipes, there are pet food safety standards and regulations that everyone must comply with.

A responsible pet food manufacturer will take safety and quality very seriously and will have their own defined processes and standards that help ensure the safety and quality of their ingredients and products.

These should start with reliable suppliers and cover the whole process through to feeding the cat or dog and are likely to include:

- Selection of reliable suppliers - companies that supply ingredients are regularly inspected by responsible pet food manufacturers to gain “supplier approval”.
- Defined specifications for raw materials and regular inspection and testing against these – may also require a certificate of analysis from the supplier.
- A clearly defined specification for the product that includes nutritional profile, colour, texture, digestibility and palatability and technical parameters such as moisture content. Routine testing of product against specifications.
- Visual inspection of milling process.
- Precise measuring of raw material quantities ensuring accuracy versus recipe.
- Carefully controlled cooking temperatures and times.
- Regular sampling and testing of finished products.
- Recording of recipe ingredients through batch records, and of finished product pallets and their destinations to ensure traceability.
- Established microbial testing routine for both finished product and manufacturing facilities.
- Regular checking of packaging integrity, which may include continuous monitoring through cameras.
- Metal detectors and even x-ray machines to locate foreign bodies within finished product.
- Verification of nutritional adequacy via chemical analysis of raw materials and/or finished products and/or feeding studies using approved Association of American Feed Control Officials (AAFCO) protocols.

A responsible pet food manufacturer may also choose to implement external audits and voluntary certifications such as ISO 9001:2008 and ISO 14000 through an external accreditation institute (<http://www.iso.org/iso/home.htm>).

For more information about the safety and quality standards that apply to a particular product please contact the pet food manufacturer.