

# 1. Quality

Market participants link a wide variety of attributes to the term “quality of cooked ham”. Consumers, for instance, attach particular value to sensory quality features. Food surveillance authorities, on the other hand, are more interested in how quality meets food law requirements. Producers, in turn, are strongly interested in commercial quality. The task of cooked ham producers is to satisfy the quality expectations of the various groups of individuals. That is why the concept of quality cannot be described in just a few words, but instead requires more in-depth consideration.

## 1.1 Sensory quality

With cooked ham, consumers attach particular value to appearance, colour and colour maintenance, integrity, odour and taste, as well as to freshness. These are the essential sensory quality features for them.

Consumers decide whether or not to buy on the basis of the optical impression given by the cooked ham behind the shop counter or inside the packaging. A fresh appearance, a slicing profile free from cavities or pores and a pinkish-red colour motivate consumers to purchase. At home, these consumers expect that the individual slices will hold together well and not fall apart when used as sandwich filling. Expectations vary widely as regards consistency. Alongside other attributes, customers favour a very firm to very tender consistency. Consumer expectations regarding taste are also very individual, ranging from strong to mild, from smoked to unsmoked. Many prefer a fresh, clear meat taste. The pinkish-red colour and the fresh, clear meat taste have to be retained for a long time when the ham is stored in domestic refrigerators.

During recent years food storage times in domestic refrigerators have become longer due to changes in shopping habits. This circumstance

must be taken into account specifically when assessing sensory quality – for cooked ham too.

Sensory quality features cannot – or only inadequately – be measured with objective methods. The chapter “Sensory testing” describes processes that offer a very good basis for assessing the sensory quality of cooked hams.

## 1.2 Quality to meet food law requirements

A wide variety of laws, regulations and directives regulate the food markets in the individual countries of Europe and hence the market for cooked ham too. Accordingly, the specific food law requirements in the individual countries must always be taken into account.

European Union (EU) Regulations must be observed in all EU Member States. In addition to these the Member States can issue specific rules for the special products of their regions. In Germany, alongside the general provisions grouped under the umbrella of the Law on Food and Feed, food-specific laws, regulations and guidelines can be found. A few of these laws and guidelines are explored in more detail below.

- Guidelines for meat and meat products
- Meat Regulation
- Regulation on Additives

The law governing food is not static, but instead is subject to constant change. That is why producers of meat products constantly need to update their knowledge of food law matters. With the following explanations, the author aims to provide an overview of key contents of the rules and guidelines applying within the European Union as well as those specific to Germany. A detailed consideration of all requirements would extend beyond the scope of this book.

## Guidelines for meat and meat products

The guidelines for meat and meat products have their legal basis in Articles 15 and 16 of the German Food and Feed Law (LFGB) of 15 August 1974. They describe the production, condition and other features of foods that are significant for the marketability of foods. In a preface to the *Deutsches Lebensmittelbuch* (German food guidelines), Walter Zipfel expressly establishes that the guidelines are not a legal norm. They are considered as an expert comment on the generally accepted standards concerning the composition and condition of foods.

The guidelines for meat and meat products are subdivided into two parts:

Part I General Terms and Assessment Criteria

Part II Special Assessment Criteria for Individual Products

In Part II, Special Assessment Criteria for Individual Products, meat processors will find important notes on the designation, the cut and various boundary values for cooked hams.

## Designation

The guidelines for meat and meat products provide information about the designation of cooked hams under Sections 2.31, 2.41, 2.41.1., 2.15 and 2.17.

**Guideline 2.31:** *Unless otherwise stated in the Guidelines, in the case of designations without reference to the animal species (ham ...) these are parts of the pig; for the rest, reference is made to the animal species (cooked beef ham ...).*

For the processor this means that he can use the designation “cooked ham” for cooked ham produced from pork without any further description. If the meat comes from another animal species (e.g. cattle or turkey) the designation would have to read “cooked *beef* ham” or “cooked *turkey* ham”.

If the meat originates from the pork leg, no additional information is needed within the designation. For cooked hams made in this way the designation is “cooked ham”. This is described in Guideline 2.341.1:

**Guideline 2.341.1:** *Unless otherwise stated in the Guidelines, in the case of designations without any reference to a specific part of an animal, these are parts of the hind extremity (hind leg ham, leg).*

However, if the meat comes from the shoulder, according to Guideline 2.341.2 this must be mentioned in the designation. Accordingly, the designation for this type of cooked ham is “shoulder ham”.

**Guideline 2.341.2:** *Ham from the forward extremity is termed Vorder-schinken (shoulder ham).*

### Cut

If the processor leaves the individual pieces of the leg (topside, silver-side, rump, thick flank) in their natural connection and only removes bones, adhering fat and any sinews or ligaments (e.g. on the silverside towards the thick flank) and joins these together to form a cooked ham, Guideline 2.341 is crucial for the designation and the boundary values.

**Guideline 2.341:** *The designation ham is only used for cooked cured products of elevated quality, even in compound words. Ham that has not been dressed contains at least 85 % connective tissue protein-free meat protein (BEFFE) in the meat protein in the parts freed from rind and any jelly components present and the fatty tissue resting on them.*

If the processor dresses the hind leg ham into its individual sub-pieces topside, silverside, thick flank and rump and joins these together to form a cooked ham, the statements in Guideline 2.341.6, Para. 1 are to be observed. Such cut pieces can be freed very well of adhering sinews and tendons mechanically with the aid of a membrane skinning machine (see Chapter 3 “Cut”).

**Guideline 2.341.6, Paragraph 1:** *Muscles and muscle groups that have been detached and would have been marketed as ham in their isolated condition can be joined together to form larger hams without any special indication.*

Accordingly, the producer can select meat for cooked ham from the individual ham parts topside, silverside, rump and thick flank and cut them as necessary. With this cut it is not necessary to provide any additional information in the designation.

However, if he divides the individual pieces of the leg into smaller units and joins these together again to form larger hams, Paragraph 2 of Guideline 2.341.6 and Guideline 2.19 (formed meat) are crucial for the designation and the boundary values:

**Guideline 2.341.6, Paragraph 2:** *Products that are made in whole or in part from muscle pieces smaller than those stated in Paragraph 1 or formed meat (2.19) are sufficiently identified in connection with the designation (e.g. formed meat ham, joined together from ham parts).*

**Guideline 2.19:** *Formed meat products are made from meat pieces after mechanical preliminary treatment to release muscle protein at the surface with simultaneous loosening of the structure (e.g. massaging or tumbling), also with the use of common salt or nitrite salt. They are joined together to form a larger unit (piece product). They retain their new form through heating or freezing treatment. The tissue bonding of the meat pieces used is essentially retained. Formed meat products show (...) the same composition as products made from integral meat which they replicate.*

*No minced, cut or otherwise chopped meat is used in production.*

*To avoid confusion between formed meat products and comparable products made from integral meat, the word “formed meat” prefixes the designation and indicates in direct connection with the designation and in the same type size that meat pieces are joined together (e.g. formed meat ham, joined together from ham pieces ...).*

The designation “Formed meat cooked ham joined together from ham pieces” is correct for cooked hams made using such a cut.

### Geographic designations

Regional products are becoming increasingly important as they can stand out in the market. Their names contain a geographic designation of provenance indicating the respective region from which they come. This name is part of the designation. Guideline No. 2.15 contains statutory rules for this. The possibility of using regional geographic designations for cooked hams is explained below taking “Original Delkenheimer Ländchesdom Ham” as an example.

There is a region that is known as “Ländchen” (“*little land*”) lying to the east of Wiesbaden in Germany. It consists of a number of small villages with a rural character and figures in many historical descriptions. One of these villages is Delkenheim. The village residents and historians call the Protestant church there “Ländchesdom” (“*little land cathedral*”). A local butcher decided to use this traditional and unique name. For some time now he has been producing an “Original Delkenheimer Ländchesdom Ham”. This creation gives him an individual profile and allows him to market a regional speciality. Exactly what distinguishes the “Original Delkenheimer Ländchesdom Ham” from “normal” cooked ham? It is produced with a stock made of eleven different seasonings, cooked in its own juice (see Section 7.2, “Forming in shrink bag”) and mildly smoked with beech wood. As it is produced in Delkenheim, the additional designation “Original Delkenheimer” is legitimate. Craft-trade butchers especially can use geographic designations as trade names for a distinctive high quality meat product.

**Guideline 2.15:** *Geographic designations are generally genuine statements of provenance. In some cases, as far as these are expressly stated in the Guidelines, they may, however, only be indications of a certain composition and mode of production. They are then frequently not used in the allotted area. In conjunction with the words “Original” or “Genuine”, geographic designations always indicate the provenance. Meat products with geographic designations that are not stated separately in the guide-*

*lines generally lie above but under no circumstances below the requirements laid down in these Guidelines for corresponding products without a geographic designation; for the rest, attention is drawn to the deviation in accordance with Article 17 Paragraph 1 No. 2 of the Food and Feed Law.*

## **Analysis values**

Sampling and sample volumes for chemical analyses of cooked hams are described in footnote 16 of the Guidelines for meat and meat products. The sample should originate from different parts of the cooked ham and weigh at least 400 g.

Prior to the chemical analysis, the cooked cured products must be prepared as described under Guideline 2.321.

**Guideline 2.321:** *Cooked cured products from pigs freed from bones, rind and any jelly components as well as fatty tissue resting on them contain a minimum of 19% meat protein in the fat-free component. Cooked cured products from beef cattle and calves contain at least 18.5% meat protein in the fat-free component<sup>16)</sup>.*

## **Meat protein in the fat-free component**

Furthermore, the minimum content of meat protein in the fat-free component is stated under Guideline 2.321. In the case of cooked cured products from pigs this is at least 19% and for cooked cured products from beef cattle and calves at least 18.5%.

## **Meat protein free of connective tissue protein (BEFFE) in the meat protein**

In the case of cooked ham produced from ham pieces left connected, the share of connective tissue protein-free meat protein in the meat protein

**Footnote 16:** *Samples are taken from different places as far as possible and should have a total weight of at least 400 g.*

is at least 85.0%. If individual non-reduced or reduced ham pieces are used, the share of connective tissue protein-free meat protein in the meat protein is at least 90.0%.

To provide an overview, the points “Cut”, “Designation” and “Boundary values” are shown alongside each other in Figure 1 to allow a comparison.

The guidelines for meat and meat products are crucial for the designation, the cut and the boundary values for meat protein in the fat-free component and for the connective tissue protein-free meat protein in the meat protein. Other boundary values, such as, for example, the foreign water content, are not regulated in the Guidelines for meat and meat products.

<b>Cut</b>	<b>Designation</b>	<b>Meat protein in the fat-free component</b>	<b>Connective tissue protein- free meat protein in the meat protein</b>
Leg cuts, connected	Cooked ham	min. 19.0 %	min. 85.0 %
Leg cuts, individual	Cooked ham	min. 19.0 %	min. 90.0 %
Leg cuts, reduced	Formed meat cooked ham, joined together from ham pieces	min. 19.0 %	min. 90.0 %
Shoulder ham cuts	Shoulder ham	min. 19.0 %	min. 85.0 %

*Fig. 1: Cuts, designations and boundary values for cooked ham made from pork*

## **Meat Regulation**

The Meat Regulation essentially regulates the foreign ingredients allowed for meat products. These are not additives. The use of additives is regulated by the Regulation on Additives. The foreign ingredients are ingredients without an E number and in the case of additives they are ingredients with E numbers. Each additive is an ingredient, but not every ingredient is an additive.

The following section contains a few remarks about the systematics of the Meat Regulation. A more in-depth consideration of the Meat Regulation lies well beyond the scope of this book.

Article 4 of the Meat Regulation prohibits the use of many foreign ingredients in meat products. Annex 2 (under Article 4 Paragraph 2) lists special foreign ingredients that the processor of the meat products stated therein may use. If these meat products are sold loose over the counter to consumers, these foreign ingredients need not be labelled separately.

However, the situation is quite different for the use of foreign ingredients listed in Annex 3 to Article 5 Paragraph 1. These may only be added to the meat products stated in this annex if the foreign ingredients are labelled when the product is sold loose over the counter to the consumer.

The Meat Regulation only allows very few foreign ingredients for cooked hams. In operational practice the following foreign ingredients are sometimes used:

### **Without labelling, for sale of loose product to consumers:**

- Lactic sugar
- Starch-sugaring products
- Seasonings and seasoning extracts
- Spices

- Plant protein
- Starch

**With labelling, for sale of loose product to consumers:**

- Edible gelatine

The use of various processing additives is described in Chapter 5 “Processing additives for cooked ham”.

**Regulation on Additives**

The Regulation on Additives governs the use of additives for technological purposes in foods. Basically the following principle applies:

**Anything that is not admitted is prohibited.**

The Regulation on Additives lists all additives that may be used for foods. The additives that may be used for cooked hams are listed here too. Furthermore, the Regulation on Additives defines different technological purposes for which additives can be used. These are listed in Annex 7 (under Article 5 Paragraph 1), where definitions of various terms such as conservation agent, antioxidant, stabiliser etc. can be found. Altogether 25 different technological purposes are described there.

Prior to processing an additive the following questions must always be clarified:

- Is the additive admitted under the Regulation on Additives?
- For what foods is it admitted?
- For what technological purpose is it used?
- What maximum dose must be observed?
- What labelling is stipulated?