



Defining Product Quality Attributes

for the Development of
Healthy Food & Drink Products



Interreg
Atlantic Area
European Regional Development Fund



EUROPEAN UNION



CAHFES

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What is Food Quality & Why Is It Important When Developing Products ?

As food and drink producers, we have a duty of care and legal obligation to ensure that the food we place on the market is of a fit quality for consumption.

Furthermore, the reputation of our business, and our brand image, is closely aligned with ensuring that our customers can rely upon the quality of our food or drink being consistent, every single time they buy from us.

Achieving this consistent quality is critical to consumers' inclination to try and continue to buy our products.

However, it is often hard to define what "Food Quality" actually is, as one person's idea of what represents "quality" in a food product can be very different to the next person.



Food Quality – A Subjective Judgement

It is helpful if we look at a dictionary definition of “quality”, as this reveals that the word is used in two main ways and we can relate both meanings to food products

Firstly “Quality” can refer to

- a judgement that has been made on the superiority or inferiority of a food – as in the phrases “high quality” or “poor quality”
- Often this involves a subjective point of view from consumers based on what they enjoy and expect from a particular food item – such views are heavily influenced by personal taste, cultural norms, and previous experiences of similar foods.
- Quality is also often referenced in reviews about food and drink products – such as media reports, social media consumer comments or the formal “Quality Awards” that are held in many regions.



Food Quality – Characteristic Attributes

The Second definition of “Quality” has a different connotation

It is use to denote

- certain **definable characteristic attributes** that are typical of a particular food and which consumers expect to see in that type of food
- for example
 - a quality attribute of a carbonated drink is that it will be fizzy, and levels of carbonation can be measured by pressure testing
 - a quality of milk is that it will be a pale white or cream colour and can be assessed through colour measurement
 - a quality attribute of bakery products is the different textures associated with bread, cake or croissants, which can be tested by compression or cutting and shear tests



Each Definition Is Important



Both definitions of “Quality” have important implications for food and drink producers, but for the purposes of this training module we will concentrate on exploring how defining your products “**quality attributes**” can help you ensure your products are produced consistently.

In fact, proactively defining, managing and monitoring your “**quality attributes**” actually has a direct impact on how consumers judge the “**perceived quality**” of your products.



By ensuring that you understand what traits consumers expect from the type of food you are marketing, and consistently producing your products to deliver this, you will ensure that your customers judge your products to be of a high standard – or “**good quality**” and this is a huge step towards generating customer loyalty and repeat sales.

Setting Quality Attribute Standards

Defining these “Quality Attributes” as part of the development process is very good practice.

You can help remove the subjectivity associated with assessing “Food Quality” by defining a clear set of relevant “Quality Attributes” and setting “Standards” for these.

Then, every time you produce that item in the future, you can conduct assessments based on those criteria.

You can confirm that your product is meeting the standards set and that it is faithful to the way the concept was developed and approved for launch.

If you find that the products you are assessing fail to meet the standards you have set, you are in a strong position to **take corrective action** and prevent the products entering the market and undermining your reputation or damaging your brand image.



Product Quality Attributes Apply To All Tiers

Your products will have been carefully designed to meet the needs and expectations of the target market you have identified.

Many market sectors have food and drink products that are targeted at distinctly different “tiers”.

These are sometimes known as “good, better, best” or “value, standard and premium” or “discount, everyday and top-tier”.

The characteristics of products will vary across these tiers to meet price points and expectations, but within these boundaries every product will have certain standards that it needs to meet to be considered acceptable.

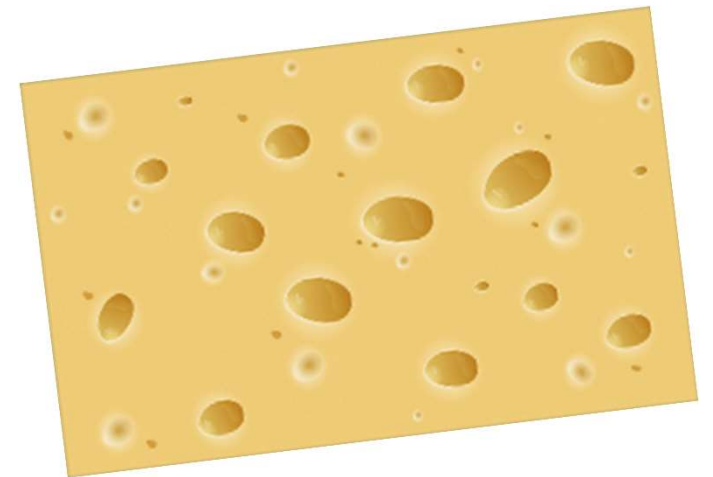


Defining Attributes Helps Objective Assessment

Defining and clearly documenting the significant attributes that are important to your product helps make any future assessments you undertake a much more objective process.

Using **measurable parameters** means that you are not basing a comparison of future products against characteristics that are just based on memory, which may be unreliable.

It helps you to be confident that an assessment is not just based upon opinions or dependant on whether the person reviewing the product likes or dislikes the product.



Defining Attributes Helps Your Development Process



By the very nature of product development, products tend to evolve as the process progresses – for example you may be experimenting with recipe options in response to feedback from customers or to reach a specific selling price.

However it is very important that you reach a point at which the characteristics of the product are **formally agreed**, as you to be clear what exactly you you are aiming for as you progress to scale up trials.



By clearly describing the desired target product characteristics during the development process, you can confirm that the product achieved during your production trials, pre-production and 1st production is **fully representative** of the initial concept.

Sometimes you may not achieve absolute parity between small scale samples and the product from large scale manufacturing, but having measurable attribute standards in place allows you to **recognise any differences** and confirm if the **variances** you are experiencing are acceptable to your business.

Organoleptic Attribute Standards

The specific attributes that are relevant will vary by different types of product.

Many will be organoleptic - that is relating to the human senses.

Sensory and other analytical methods can be combined to assess compliance with standards you have set.

Appearance

This could include aspects such as colour, size, shape, sheen, contrasts between components, presence of visual particulates, position within the packaging, print finish of packaging.



Flavour

This could reference presence, intensity or absence of certain characteristic flavours, saltiness, spiciness or heat, sweetness, sourness or bitterness.



Texture

This could include viscosity, softness or hardness, resistance to bite, crispiness, crunchiness, smoothness or presence of particulates, stickiness, succulence or dryness.



Aroma

This could reference presence or intensity of certain characteristic aromas and the absence of any taints or "off" odours.



What Attributes Are Important ?

When setting your quality attributes, you may find it helpful to revisit the sensory analysis principles that were explained in our [P1-M3 Benchmarking training module](#).

It may not be realistic for you to assess a multitude of quality attributes, so you need to **select** those which have the **biggest impact on your type of product** and those which you know consumers or customers use to judge that product.

This will obviously vary between products – what is important to a pizza may not be relevant to a jar of jam, and the key attributes of a almond milkshake will be different to a loaf of bread.

A useful step is to gather together people familiar with your type of product and brainstorm what is important & relevant to that product.

1. Refer back to your consumer pains & gains research (See the [P1-M1 Consumer Insight training module](#)) as this will tell you what your **customers value and expect** from your type of product
2. Equally, if you know what **key criteria** your important retail or food service customers judge your type of product upon, include these factors
3. Do you have any **customer complaint data** from similar products that highlight areas of concern ? These could indicate important quality attributes.



Practical Steps to Setting Quality Attribute Standards

Building a Common Vocabulary



It can be incredibly helpful to spend time creating a “common vocabulary” that everyone in the team who will be conducting product quality assessments can use to describe attributes.

In this way you are much better able to understand each others views and communicate about your products.

A good way to do this is to gather a range of food or drink products together – use a wide variety, not just your immediate products – and explore them from a sensory point of view as a team.

From this you can suggest and agree the vocabulary that is best suited for your business.

Exploring Texture Vocabulary

If you think of a texture as “crispy” but your colleague uses the word “crunchy” for the same sensory experience, or you would describe a piece of fudge as having a “medium resistance to bite”, but they consider it to be “firm” – then you may end up at cross purposes when assessing against your standards.

For example you could use a marshmallow, piece of fudge, a toffee and a boiled sweet to set the benchmarks for softness to hardness or resistance to bite.

Or you could compare the texture of an apple that of a ripe banana or explore the texture of a water biscuit compared to a chocolate brownie to describe crispness and crunchiness.

Different cuts of chicken, pork and beef could be used to create a “succulence scale” for meat products.

Reviewing different types of honey could be a way to define acceptable graininess and levels of viscosity in sauces for example.



Describing Flavour Attribute Standards



You may wish to list the key flavours that you would expect consumers to be able to discern when they eat your product.

This might be anything from tasting black pepper and brandy in a Peppercorn Sauce, to the acceptable level of bitterness from chicory in a prepared salad, to the intensity of chocolate flavour in a chocolate chip cookie.

Are you able to articulate the order in which tastes are experienced when eating ?



What flavours should the consumer experience first of all, then which will follow in the middle of the eating experience and what flavours will linger in the mouth after consumption ?

Can you describe the “top notes” – usually light, fresh and zesty – then the “middle notes” – the main body of the flavours – and the “base notes” – these tend to be earthy, pungent flavours.

Flavour & Aroma Attribute Standards

With spicy products, many consumers like to be guided as to how “hot” they can expect the product to be.

So it might be useful to cross reference products already on the market when setting your definitions as to how you might label your own products.

Is there a consensus as to what is mild, medium, hot or very hot? Where does your product slot into against this scale?

Which herbs or spices would you like consumers to be able to discern as opposed to those which contribute more generally to the fragrance of the product?

Does your product have certain aromas that are recognisable as “top notes” and “base notes”, or foreground and background odours?

Mild



Medium



Hot



Describing Appearance Attribute Standards

Defining the characteristic appearance of your products has **multiple dimensions** and is an important area to consider because consumer scientists have proven that consumers are **highly influenced by the appearance** of food and frequently judge what they are about to eat by how it looks. Here are some examples of appearance attributes you could consider :-



Targets and Tolerances

Once you have decided upon which attributes you wish to focus your assessments, you can then think about setting a **measurable target** for each parameter.

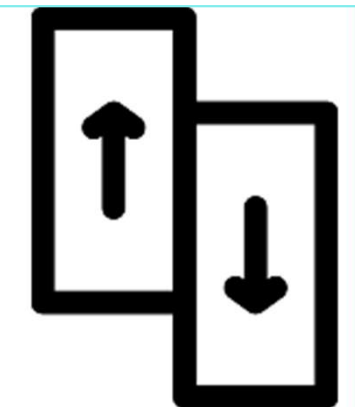
There may be attributes which, due to the nature of your product - for example if it is hand prepared or subject to seasonal influences - **a certain amount of variation is inevitable**.

Even so, you will want to **monitor these variances** to ensure that the standards of products do not “drift” over time.

In these cases it is helpful to agree what is an “**acceptable tolerance**” either side of the target for an attribute and your assessments can monitor the product within this defined range.

Examples might be

- the thickness of a cookie or the length of a salami expressed in millimetres,
- a piece count of prawns in a ready meal
- a pH or viscosity reading for a juice drink or a sauce,
- the evenness of distribution of herb particulates in a garlic and herb mayonnaise
- the level of browning in the oven for bread rolls



Measuring Against Attribute Standards

An important decision will be **how** you will assess the attributes that you plan to focus upon.

Devising a **method for objective assessment** is a critical part of your quality monitoring. For products which are cooked by the customer, you will also wish to agree which assessments are made on the product “**as sold**” and which are more meaningful when conducted “**as cooked**” at home for retail products or by a chef or other staff for food service products.

For some assessments you may need to use certain **specific equipment**, for example

- a pH meter to measure acidity

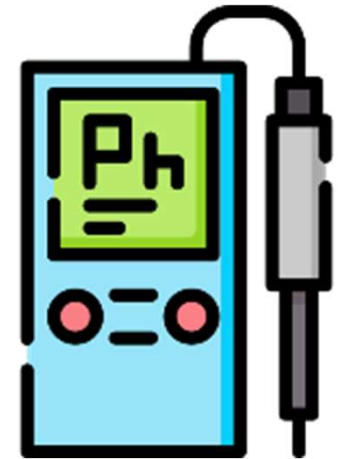
- a viscometer to confirm the viscosity of a liquid component

- Callipers to measure thickness

- Pantone reference swatches to review colours

- a mesh grid with known spacing to assess presence of components in a defined area

For other types of assessment you may wish to invite **well trained sensory panellists** to review products, this can be particularly relevant when considering aroma and flavour attributes.



Documenting Attribute Standards and Assessments

Once you have defined the quality attribute standards that are important for your product, you should decide the **most helpful format** for you to use to **record these in a formal document** which can be used for future reference.

As well as written standards, **photographs** can be very helpful for illustrating visual standards – as they say, a picture speaks a thousand words !

Just be mindful, however, that printers and screen monitors vary considerably in how they display colour, so they may not give you a consistent representation of your colour targets and tolerances.

Recording the results of your assessments and their outcomes in a methodical way is an equally important part of the process.

So having a document format that is **easy to use** but **captures the key findings** is important.

It should also **act as a trigger** to highlight any shortfalls against the standards you have in place, so that **prompt and effective corrective actions** can be taken to put things right.



An Example of Product Attribute Standards

This example suggests a few of the attributes that might be relevant to a pre-prepared pizza :-

Pizza	Toppings remain in contact with the pizza base and are presented upwards in the packaging. No off odours, taints, discolouration present upon opening. No excessive condensation present.
Base	Base forms a complete circle, no tearing, indentations over 10mm or mis-shaping visible. Size – minimum & maximum acceptable diameter expressed in mm Thickness - minimum & maximum acceptable depth at centre and edges expressed in mm. Weight in grammes of the base with other components removed Bake colour correct e,g, level of browning, evenness of colour, patches of dark brown allowed. Crispness of base, ease of cutting and resistance to bite within acceptable tolerances.
Tomato Sauce	Colour of sauce correct to reference, Viscosity and pH of sauce meets standards defined. Thickness of sauce coverage over the base & coverage to the edge within tolerances. Tomato flavour, seasoning levels and top, mid and base notes as expected.
Cheese	Grate size, evenness of coverage and distribution across the surface of pizza within tolerances. Shreds are well separated without clumping and colour of cheese as per references. Relative position correct - above sauce but below the other toppings
Pepperoni	Number whole or part slices within permitted range. Distributed evenly over pizza surface above the cheese layer. Spiciness, flavour & aroma meets standards, no rancid notes present. Thickness of slices, level of fat marbling within the slices and absences of gristle within standards.
Jalapeños	Number of pieces and evenness of distribution over pizza meets standards. Not clumped together or causing discolouration or sogginess on the pizza. Level of chilli heat as per tolerances.
Herbs	Colour meets expectations, quantity per square cm and evenness of distribution within standards. Relative position above cheese but below all the other toppings is correct. Aroma muted when raw, but becomes aromatic with noticeable Oregano odour when cooked.

Summarising the Benefits of Quality Attribute Standards

Defining clear and measurable quality attribute standards is a very helpful part of your product development process. They set in place a **framework** against which you can

1. **Lock into place** the desired characteristics of your new product, ensuring that by time the product launches you have achieved what you set out to create.
In this way you can **avoid “creeping elegance” or “mission drift”** both of which may undermine the future viability or affordability of your concept and dilute its appeal to consumers.
2. **Set a benchmark** against which you can judge the outcomes of your production trials.
3. **Create a clearly defined specification** for your finished product, which can form the basis of contractual supply commitments to your retail or food service customers.
4. **Undertake and document regular objective assessments** to ensure that, once in full production, the new product **continues to meet expectations** remains faithful to the original concept which was approved internally and by customers and consumers.
5. Ensure that any deviance from agreed standards is **swiftly identified and corrected** to prevent damage to your business's reputation and brand image.



We hope that you have found this training module a useful and helpful support to your healthy food and drink innovation.

This training module is one of a number of training opportunities, organised into themed training programmes to support SME's (small & medium sized enterprises) in the participating regions of Wales, Northern Ireland, Ireland, Spain, Portugal and France to successfully bring new and reformulated healthy food and drink products to market.

The training was created by the partners within the AHFES project which is a quadruple helix Atlantic area healthy food eco-system for the growth of SME's funded by the European Union under the Interreg Atlantic Area Funding Programme.

This programme promotes transnational cooperation among 36 Atlantic regions of 5 European countries and co-finances cooperation projects in the fields of Innovation & Competitiveness, Resource Efficiency, Territorial Risks Management, Biodiversity and Natural & Cultural Assets.

For more information about other training available [please click here](#).



This project is co-financed by the
European Regional Development Fund
through the Interreg Atlantic Area
Programme



Acknowledgements

This is where you give credit to the ones who are part of this project.

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