

Sugars reduction in chocolate confectionery

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Public Health England's (PHE) [report](#) '*Achieving the 20% sugar reduction*', identified a wide range in the sugar content of chocolate products across the UK, ranging from 1.2g up to 81.5g sugars per 100g. The average sugars content, weighted by sales volume (sales weighted average – SWA), was 54.6g per 100g and PHE has asked that this is reduced by 20%, down to 43.7g per 100g, by 2020. This is to be achieved by all companies reducing their own SWA sugars content of their chocolate portfolio by 20%.

PHE have also asked that single serve chocolate products contain no more than 250 kcal, with a SWA of 200 kcal across the category portfolio. Single served products are defined by PHE as being between 10g and 80g, and include:

- individual chocolate bars
- mini and treat size bags
- duo, trio and bar and half chocolate
- chocolate lollipops
- single festive items e.g. chocolate bunnies, Santas, or eggs.

Functionality of sugars

Chocolate is mainly sugar, cocoa mass and cocoa butter, with the addition of milk ingredients for milk chocolate. Sugar is generally the highest nutrient in chocolate formulations followed by fat. Sugar is the main ingredient in chocolate (~55%), accounting for 41% of calories; the additional components such as caramel and biscuit can also provide additional sugars.

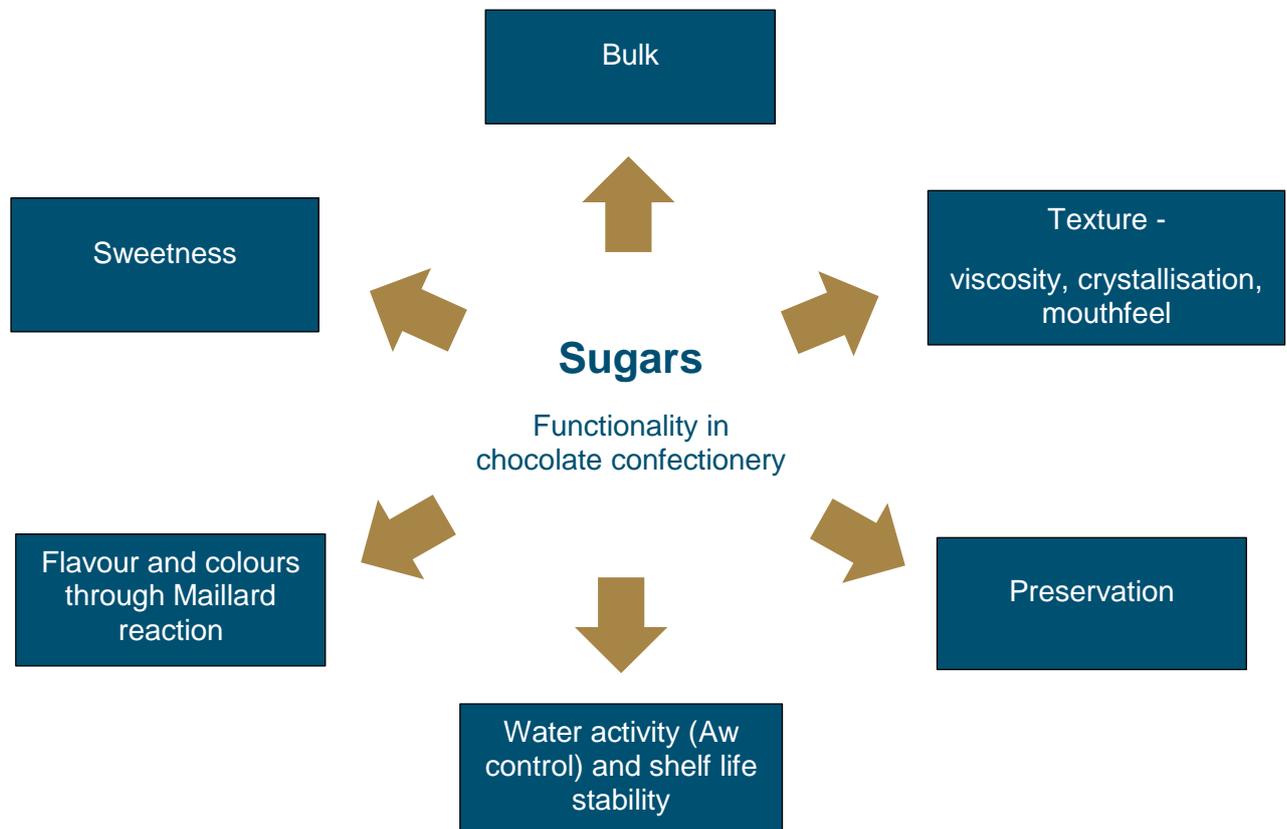
The sugar ingredients used are primarily:

- Sucrose; used to give sweetness, flavour, bulk and texture
- Lactose; from the milk ingredients in the chocolate confectionery
- Glucose syrups; typically bringing viscosity and bulk to components (e.g. caramel and nougat) and inhibiting crystallisation of sucrose to control texture. It will also contribute to the Maillard reaction (e.g. caramelisation).

Isoglucose, otherwise known as high fructose corn syrup in the US, is not a common constituent in chocolate confectionery products in the UK, but may be used in some snack products.

Role of sugars in chocolate confectionery

The role of sugars in confectionery is more complex than only delivering a sweet taste, sugars also provide (Gwinn & Hanby, 2013):



Advice for reducing sugars in chocolate confectionery

Approaches to reducing sugars

Sugars reduction may be achieved through various means. For example, through:

- reducing sugars in the chocolate
 - by using low-calorie sweeteners in energy reduced or no added sugar chocolate
 - increasing the cocoa and/or milk ingredients in the recipe
- changing the proportion of components within the product e.g. thickness of chocolate, caramel layer or biscuit component
- inclusion of additional components lower in sugars
- reducing the sugars in each of the individual components of the product
- adding aerated components
 - equivalent to reducing the portion size, whilst maintaining the size impression
- reducing the portion size

Reduction of sugars may be achieved by substituting sucrose with sugars replacers. However, the type and quantity of replacers that can be used is regulated (e.g. additives legislation) and may also impact taste. Additionally, depending on the reformulation carried out the calorie content of the product may not be significantly reduced; whereas portion size reduction can be a more significant route to reducing both calories and sugars.

When reducing sugars in chocolate products it is important to consider each of the components that make up the product. For example, if the chocolate product contains biscuit, consider how sugars in the biscuit can be reduced ([see here](#) for our specific guidance on reducing sugars in biscuits). It is also important to consider the total nutrition that the product contains, thus any reformulation should consider:

- a decrease in free sugars (i.e. added mono & di-saccharides)
- a decrease in calories (even if minimal)
- no increase in fat
- an increase in fibres and / or protein
- no difference in consumer experience.

Additive legislation

Additive legislation specifically restricts the use of sweeteners (with maximum levels) to only 'energy reduced' (i.e. delivering 30% less calories compared to the average of the standard product on the market) or 'no added sugar' chocolate and chocolate confectionery. The full text of the additives legislation is available online ([Regulation \(EU\) No 1333/2008](#)).

Furthermore, the following labelling considerations set out in the [Food Information to Consumer \(FIC\) Regulation](#) need to be considered during reformulation:

- The words 'with sweetener(s)' must be displayed by the name of the food product if it contains a sweetener; or 'with sugar(s) and sweetener(s)' if used in combination.
- A warning statement must be displayed if the product contains aspartame:
 - 'contains a source of phenylalanine' if aspartame is named on the ingredients list
 - 'contains aspartame (a source of phenylalanine)' if using the E number (E951) instead of the name is on the ingredients list.
- A declaration of 'excessive consumption may produce laxative effects' is required if the product contains more than 10% added polyols (e.g. maltitol).

It is important to note that for full compliance the actual legislation should be consulted and advice could be sought from your Local Authority's Trading Standards. It is also important to check that you comply with the correct compositional standards that are laid down in law. For example, 'chocolate', 'milk chocolate' and 'white chocolate' are all reserved descriptions under the Cocoa and Chocolate Products Regulations 2003, which prescribes strict compositional standards to use the terms, such as being a 'product obtained from cocoa products and sugars', with minimum cocoa butter/cocoa solids contents. If sweeteners are used in a chocolate product, the conditions for the reserved description of 'chocolate' are no longer being met and, therefore, an alternate product name would be required (e.g. no added sugar chocolate with sweeteners).

See the following links for further information on:

- [Cocoa and Chocolate Products Regulations 2003](#)
- [Composition Standards](#)
- [Food Labelling](#)

Sugar replacers

Commercially available sugar replacers can originate from various sources: chemically synthesised or of natural origin. To deliver the various roles that sugars can play in different foods, different types of sugar replacers have been developed.

- **High intensity sweeteners** (e.g. sucralose, stevia, and acesulfame K) can be used in very small quantities to deliver the same sweetness as sugar but as such cannot replace the bulk so are often used in combination with bulking agents in food products.
- **Reduced calorie bulk sweeteners** (e.g. polyols such as maltitol, sorbitol and erythritol) deliver similar or slightly lower sweetness than sugar and less calories. All polyols deliver a cooling sensation in the mouth which can have an unfavourable impact on the flavour profile of chocolate. Different polyols exhibit different cooling sensations which should be considered as part of the overall flavour profile. Polyols have only a moderate effect on blood sugars and do not promote dental caries, however, they can cause gastrointestinal discomfort and laxative effects at higher levels of ingestion. Therefore, at levels above 10% they require a declaration of 'excessive consumption may produce laxative effects' on the label.
- **Bulking agents** (e.g. polydextrose, inulin, fructo-oligo-saccharides (FOS), resistant starch or dextrins) deliver no or low sweetness and less calories. These oligo-or polysaccharides with lower digestibility can be used in a wider variety of application. As with polyols, these ingredients do not promote dental caries, and some have a pre-biotic effect in the gut. However, they also have negative gastrointestinal effects at higher dosages.

For further information on sweeteners, see page 6-9 of the [Leatherhead Reformulation Guide](#).