

What is glucose syrup?

From the sweeties.net wiki

Glucose syrup, also called confectioner's glucose, is a syrup made by breaking down, or hydrolysing, starch. In the United States, where it is usually made from maize, it is called corn syrup. It is also made from potatoes and wheat, and less often from barley, rice and cassava.

What is in it

Despite the name, glucose syrup is not pure glucose. The syrups used in sweet making contain varying amounts of glucose, maltose and longer chains of sugars, depending on the grade, and typically 10 to 43 per cent glucose. A typical confectioner's syrup is 19 per cent glucose, 14 per cent maltose, 11 per cent maltotriose and 56 per cent larger carbohydrates.

Syrups are graded by their dextrose equivalent, or DE. The further the starch is broken down, the higher the DE and the sweeter the syrup. A typical 42 DE syrup is about half as sweet as sugar, a 63 DE syrup about 70 per cent as sweet, and pure dextrose, which is 100 DE, about 80 per cent as sweet: see [what is dextrose in sweets?](#)

How it is made

1. **Separate the starch.** The starch is separated from the plant, removing the fibre and protein. Protein would cause off flavours and colours, and the plant is ground to expose the starch to water.
2. **Soak.** The starch is swelled so that acid or enzymes can work on it. When grain is used, sulphur dioxide is added to prevent spoilage.
3. **Gelatinise.** Heating breaks the bonds between the starch molecules, so they take up water and begin to separate.
4. **Break it down.** This was once done with dilute hydrochloric acid under heat and pressure. Now it is mainly done with enzymes: alpha amylase, from *Bacillus* bacteria, breaks the starch into shorter chains, and glucoamylase, from *Aspergillus* fungi, breaks those into glucose.
5. **Clean.** The dilute syrup is passed through columns to remove impurities, which improves its colour and stability.
6. **Concentrate.** Finally it is evaporated under vacuum to thicken it.

Why sweet makers use it

In food, glucose syrup is used to sweeten, soften texture and add volume, and as a humectant, which holds on to moisture. In boiled sweets it has a special job: it stops the sugar recrystallising and turning opaque, which is how clear sweets and lollipops set glassy: see [how are lollipops made?](#) Traditional seaside rock is

made from about three parts sugar to one part glucose syrup: see [how is seaside rock made?](#)

High maltose glucose syrups, made with different enzymes, are especially useful in hard sweets. At the same moisture and temperature, a maltose solution is less thick than a glucose solution but still sets hard, and because maltose holds on to less moisture, the sweets do not turn sticky as easily.

Corn syrup and high fructose corn syrup

Turning some of the glucose in corn syrup into fructose, with an enzyme, makes a sweeter product called high fructose corn syrup. That is different again from invert sugar, which is made by splitting ordinary sugar: see [what is invert sugar?](#)

Gluten

Glucose syrup can be made from wheat, but UK allergen law makes a specific exception: wheat based glucose syrups, including dextrose, and wheat based maltodextrins do not count as a gluten allergen, and neither do glucose syrups made from barley: see [wheat in sweets](#)

A Russian invention

Glucose syrup was first made in 1811 in Russia, by Gottlieb Kirchhoff, using heat and sulphuric acid. It has found some unexpected jobs since: because it is cheap and easy to get, it is a popular base for fake blood in films.

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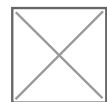
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