

Why does candy floss dissolve in water?

From the sweeties.net wiki

Candy floss, also called cotton candy or fairy floss, is sugar that has been melted and spun into threads, usually with only a little flavouring and colour added. All of its sugar is spread out in fine strands: see [how is candy floss made?](#)

How the threads are made

In a candy floss machine, a spinning head melts sugar and flings it out through tiny holes. Food scientists at the University of Minnesota describe the process as melting crystalline sugar above 210°C, then shooting the liquid sugar into the air, where it cools so fast that it sets as an amorphous, glassy solid rather than as crystals.

Reason one: a huge surface

How fast a solid dissolves depends on how much of its surface the water can reach. The Noyes Whitney equation, worked out by the chemists Arthur Noyes and Willis Whitney in 1897, links the rate at which a solid dissolves to its properties, including its surface area.

A sugar lump has a small surface for its size. Candy floss is the opposite: the same sugar is drawn out into countless hair fine threads, so a great deal of it is at the surface. When it meets water, the water reaches all of it at once, and the cloud collapses almost instantly.

Reason two: glassy sugar

Ordinary sugar is crystalline. The sugar in candy floss is amorphous: it set so quickly that it never formed crystals. The amorphous form of a substance can be more soluble than its crystals: some amorphous medicines, for example, have been shown to be absorbed better than their crystalline forms for that reason.

The same reason it hates damp air

The glassy sugar that makes candy floss dissolve so easily also makes it hygroscopic: it pulls water out of the air. That is why candy floss shrinks, goes sticky and then turns hard and crunchy if it is left out: see [why does candy floss go hard?](#)

Earn rewards on sweeties.net

Earn loyalty points on every order. Free to join.

+100 pts

Create your free account

Welcome bonus + earn on every order.



100 pts = 1 tree

Plant a tree in Scotland

Pledge points to our reforestation partner.



sweeties.net · Tunbridge Wells, Kent · hello@sweeties.net · 3-click cancel at sweeties.net/cancel/