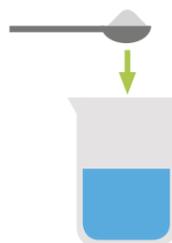


MOLECULAR COCKTAILS: GELIFICATION

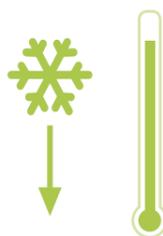
Gelification is the process of turning a substance into a gel or jelly. This can be done using a variety of agents, all of which are types of hydrocolloids. Different agents can be used in different situations, and give different properties to the resulting gel.

THE METHOD



1

The gelification agent is dispersed in the liquid to be turned into a jelly. A number of different agents can be used (see below); many require heating to fully dissolve in the liquid.



2

If heating is required, any alcohol is added after so it is not lost. The mixture is poured into a jelly mould and cooled to the gelling point, which is different for different agents.

GELIFICATION AGENTS

KEY: °C Gelification temperature % ABV Alcohol tolerance pH Acidity limit (won't gel below this)

AGAR-AGAR

32°C 40% ABV pH 2.5

For fluid gels/brittle jellies

GELATIN

15°C 40% ABV pH 4

For soft, elastic jellies

HIGH ACYL GELLAN

75°C 50% ABV pH 3

For creating spirit gels

SODIUM ALGINATE

ANY 30% ABV pH 3.6

For spherification gels

METHYL CELLULOSE

65°C 70% ABV pH 2

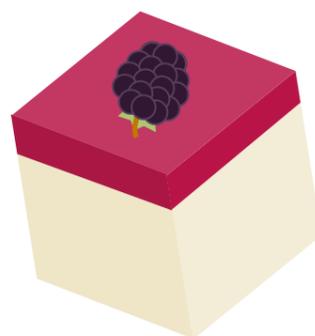
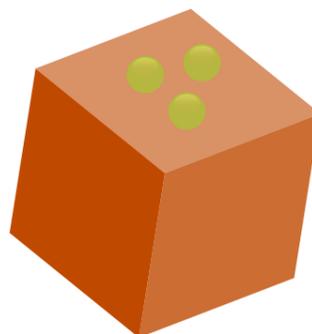
Hot gels (melts when cooled)

XANTHAN GUM

ANY 60% ABV pH 1

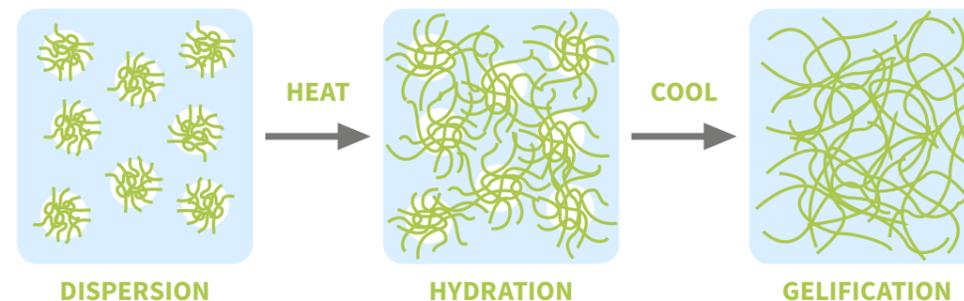
Thickener, elastic gels

LONG ISLAND & BRAMBLE JELLIES



Edible cocktails: because eating's not always cheating. The Long Island Jelly is a blend of vodka, gin, rum, tequila, and triple sec, with a coke bottom. The Bramble Jelly combines gin and lemon with a blackberry liqueur.

THE SCIENCE



Green strands = protein/carbohydrate molecules in gelification agent

Gelification agents are generally made up of either long protein or carbohydrate molecules. When heated and dispersed in water, these molecules unfurl. As the gel is cooled to the gelling agent's setting point, they tangle and intertwine to form a solid network, trapping molecules of water within it and forming the gel or jelly.



KEEPING THE GEL NETWORK TOGETHER

— = protein/carbohydrate chains
 = intermolecular forces or cross-links between chains

You might wonder what holds the solid network in gels together, and stops the intertwined chains simply sinking to the bottom of the liquid. This is due to attractive forces between the chains holding them together at certain points, whilst repulsive forces hold them apart at others.



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