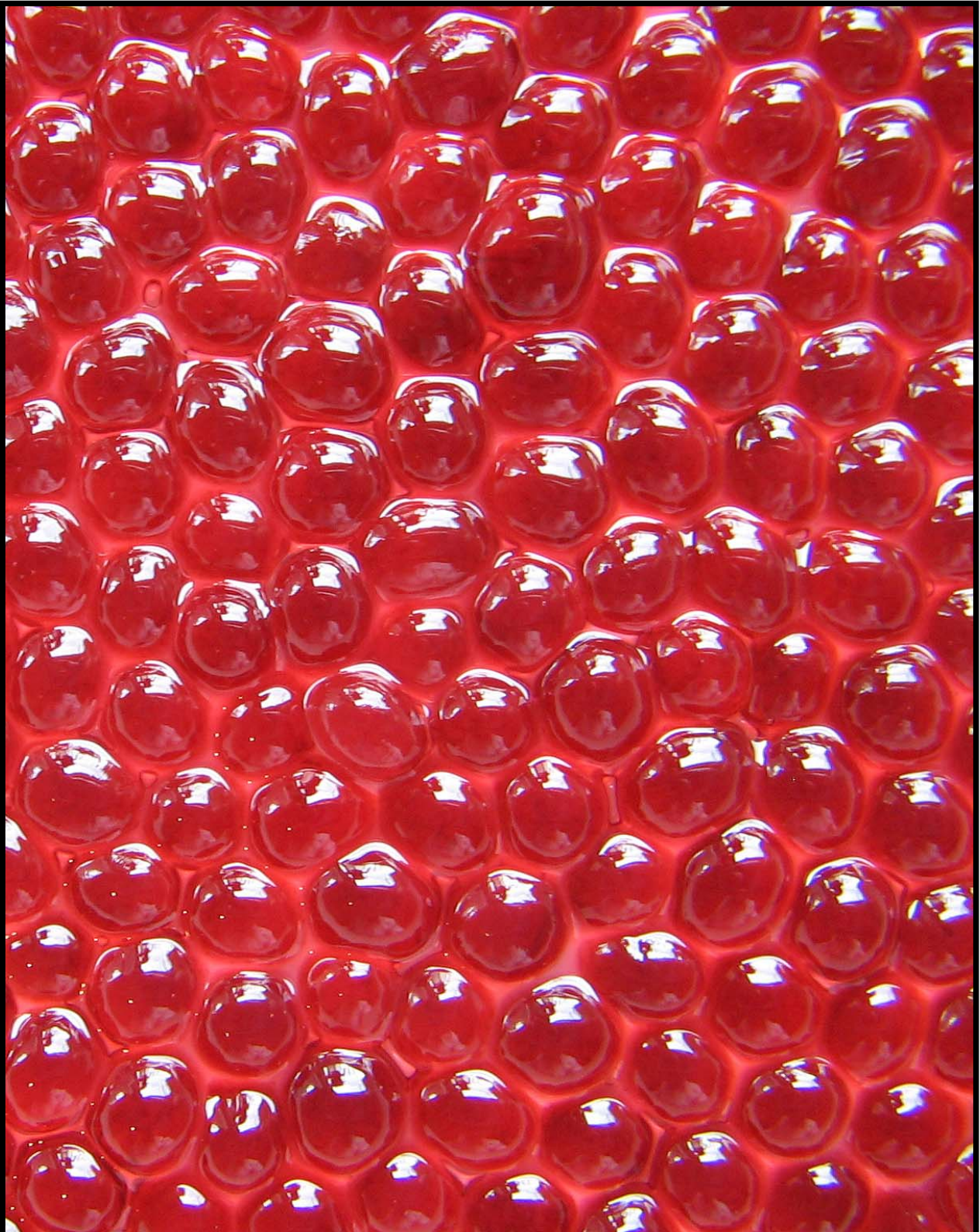


Hydrocolloid recipe collection



Introduction

A hydrocolloid can simply be defined as a substance that forms a gel in contact with water. Such substances include both polysaccharides and proteins which are capable of one or more of the following: thickening and gelling aqueous solutions, stabilizing foams, emulsions and dispersions and preventing crystallization of saturated water or sugar solutions.

In the recent years there has been a tremendous interest in molecular gastronomy. Part of this interest has been directed towards the “new” hydrocolloids. The term “new” includes hydrocolloids such as xanthan which is a result of relatively recent research, but also hydrocolloids such as agar which has been unknown in western cooking, but used in Asia for decades. One fortunate consequence of the increased interest in molecular gastronomy and hydrocolloids is that hydrocolloids that were previously only available to the food industry have become available in small quantities at a reasonable price. A less fortunate consequence however is that many have come to regard molecular gastronomy as synonymous with the use of hydrocolloids to prepare foams and spheres. I should therefore emphasize that *molecular gastronomy is not limited to the use of hydrocolloids* and that *it is not the intention of this collection of recipes to define molecular gastronomy*.

One major challenge (at least for an amateur cook) is to find recipes and directions to utilize the “new” hydrocolloids. When purchasing hydrocolloids, typically only a few recipes are included. Personally I like to browse several recipes to get an idea of the different possibilities when cooking. Therefore I have collected more than 100 recipes which utilize hydrocolloids ranging from agar to xanthan. In addition to these some recipes with lecithin (not technically a hydrocolloid) have been included. Recipes for espumas that do not call for addition of gelatin or other thickening agents have also been included for completeness.

All recipes have been changed to SI units which are the ones preferred by the scientific community (and hopefully soon by the cooks as well). As far as possible, brand names have been replaced by generic names. Most of the recipes have been edited and some have been shortened significantly. In some recipes, obvious mistakes have been corrected. But unfortunately, the recipes have not been tested, so there is no guarantee that they actually work as intended and that the directions are complete, accurate and correct. The recipes have been collected from various printed and electronic sources and every attempt has been made to give the source of the recipes.

Since recipes can neither be patented nor copyrighted, every reader should feel free to download, print, use, modify, distribute and further develop the recipes contained in this compilation. The latest version will be available for download from <http://khymos.org/recipe-collection.php> and will also be announced at <http://blog.khymos.org>. Feedback, comments, corrections and new recipes are welcome at recipe@khymos.org.

Martin Lersch
Oslo, August 2007



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Agar

Yokan

5 g agar
2-300 g water
1-200 g sugar
150-300 g inverted sugar
0.2 g citric acid
flavor and color
azuki beans (enough to produce a hard gel)

Agar is dissolved in boiling water with sugar and inverted sugar and maintained at 106°C for a few hours to reduce the volume. After brief cooling, the azuki bean puree previously prepared and the acid are added together with flavors and colorings. It is left to cool overnight at room temperature. This gel has a dried weight of 70–75%. It is placed in an oven at 55 °C as long as needed to reach a dry weight of 84–86% and is cut in small pieces that are first folded in an oblate (edible paper made of) and later in plastic.

T. Matsushashi in CRC Handbook of hydrocolloids

Hot lobster gelatin

250 g lobster stock
0.6 g agar (0.24 %)
salt

Mix the lobster stock, salted to taste, with the agar. Bring to a boil over medium heat while stirring continuously. Allow to gel in the refrigerator for at least 2 hours and heat under the salamander (hot air heater) before serving.

<http://www.texturasebulli.com>

Terrine of basil

250 g basil water
0.9 g agar (0.36 %)
salt

Combine 1/4 of the basil water and the powdered agar. Bring to a boil over medium heat while stirring continuously, remove from heat and add the rest of the basil water, salted to taste. Foam. Allow to gel in the refrigerator for at least 3 hours, in a square container so that it has a thickness of 1 cm.

<http://www.texturasebulli.com>

Hot vegetable mousse

2.5 g agar (0.33 %)
500 g water

50 g dairy cream (thick)
200 g vegetable purée (mashed and thinned)
pepper
(xanthan)

Prepare the vegetables (try French sweet peas), blend with cream and water and strain. Bring to boil and add agar. Stir well for a few minutes (can use blender). Add flavoring (pepper, etc.). Leave to set a few hours.

When cold, put into blender and blitz the gel into a mashed runny puree. Pour into 1 L heat resistant whipper. If not runny, add a little water and if too runny add a small pinch of xanthan. Blend again a few minutes.

Follow recommendations of dispenser supplier and charge with nitrous oxide. Heat whipper in saucepan of water till warm. Layer some hot vegetable puree on top of a soup or onto a very hot plate

<http://www.gastronomie.kalys.com>

Hot red berry chantilly

250 mL sweetened red berry sauce
3-4 g agar (1.2-1.6 %)

Disperse the agar in the berry sauce and heat to a minimum of 85-90 °C (below agar will not work). Pour this mix onto a tray and leave to set. Blend the gel till it is almost liquid.

Heat to 70 °C (if you heat it more, the agar melts), sieve and pour into an heat resistant 0.5 L whipper. Charge with nitrous oxide, shake and dispense. The result is a hot mousse, which is stable but very fluid. Keep canister in a warm bath to avoid blocking the nozzle.

Chef Simon via <http://www.gastronomie.kalys.com>

Agar gel cubes

125 mL orange juice (for color add some cordial or red food color)
1.3 g agar (1.0 %)

or

200 g strawberry cordial
500 mL water
10 g agar (1.4 %)

or

80 g violet cordial
450 mL water
8 g agar (1.5 %)

Bring the liquid(s) and agar to boil. Stir well. Pour into containers. Set aside 2 hours to cool down. Turn agar gel out and cut into cubes.

<http://www.gastronomie.kalys.com>

Fruity flan dessert

3.0 g agar (0.375 %)
750 mL whole milk
50 g dairy cream
1 t vanilla extract
30 g sugar
pieces of fruit, raisins or gelled dulce

Blend agar, milk and cream and heat to boiling point. Maintain boil for a few minutes. Strain and pour into small pots or ramekins. To flavor, add flavors and aromas at boiling point and stir in. Pour onto pieces of fruit or gelled dulce. You might also try adding some sodium alginate pearls or raisins.

If you mix the gel in a blender and then expand in a whipper or use a whisk you can produce a light heat stable mousse.

<http://www.gastronomie.kalys.com>

Fruit jelly

5 g agar (~ 0.4 %)
500 g halved peaches in syrup
500 g halved peaches/pears without syrup
200 g sugar (or use 50 g maltitol, 50 g maltodextrin and 100 g glucose)

Flavoring to taste:
1 spent vanilla pod
basil
lemon/orange rind
nutmeg
ginger
green pepper
orange liqueur
orange cordial

Strain the fruit. Collect the syrup from the cans and add the agar. Bring to boil.

Heat the fruit and sugar in a large saucepan. Blend to purée. When boiling add agar and canned fruit syrup. Add flavoring.

Stir well and evaporate 20% of the solution. If desired, add some orange liqueur or orange cordial for extra bitterness. Pour into jam jars or ramekins and leave to set all night.

Variation: With 10 g of agar, you obtain a harder gel closer to a firm jam.

<http://www.gastronomie.kalys.com>

Agar drink with lime

Agar jelly
25 g agar (1.5 %)
1.2 L water
480 g sugar
food coloring

Syrup
150 g rock sugar
4 pandan leaves

Drink
freshly squeezed lime juice
ice water
ice cubes

For agar jelly: Put agar, water and sugar in a pot. Mix well and bring to a boil. Once it reaches boiling point, lower heat and simmer for about 15 minutes till the mixture is somewhat clear. Add coloring and stir well. Put into a mold and set in the fridge. When it is set, grate it finely.

For Syrup: Put sugar, pandan leaves or pandan essence and water into a pot. Bring to a boil and lower heat. Simmer for another 15 minutes until sugar has melted and the syrup has thickened slightly.

Put into a tall glass some grated Agar, Syrup, lime juice and top up with ice cubes and ice water.

<http://www.recipezaar.com/147596>

Sweet Potato Jelly

200 g sweet potatoes, diced
200 mL coconut milk
20 g agar (1.6 %)
100 g sugar
750 mL water
1 pinch salt
2 screwpine leaves, knotted (pandan) or 1/2 teaspoon pandan extract

Steam sweet potatoes until soft. Combine the sweet potatoes and coconut milk in a blender. Strain mixture through a fine sieve. Combine agar powder, sugar, water and pandan leaves in a saucepan and bring to a boil until agar dissolves. Stir in pureed sweet potato and coconut mixture and simmer over low heat. Add a pinch of salt and pour the jelly mixture into a wet tray or mold. Leave aside at room temperature to set, then chill well before cutting into desired shapes.

<http://www.recipezaar.com/92942>

Chocolate flavored doughnut icing

64 % sugar

12 % water
9 % alkalized cocoa powder
9 % vegetable shortening
3 % agar (cold soluble)
3 % skimmed milk powder

Blend all dry ingredients. Slowly add dry ingredients to stirred water at 50 °C. Blend until smooth. Yields a soft icing with minimal flow suitable for doughnuts.

<http://www.cybercolloids.net>

Chocolate mousse

300 g cocoa (60%)
250 g whipped cream
200 g milk
1/2 vanilla pod
70 g egg yolk
50 g icing sugar
4 g agar (0.46%)

For citrus marmalade

1/2 lemon
1/2 lime
1/4 orange
150 g sugar
2 g agar (~ 0.5%)
50 g sugar
120 g water

Cut the chocolate into small pieces and melt it in a double boiler. Boil the cream, milk and vanilla. Once it boils, add the agar and cook for some minutes. Mix the egg yolks and the sugar and add it to the cream mixture. Add the melted chocolate as well and mix very well together. Pour in a bowl and let it rest in the fridge over night.

Citrus marmalade: cut the lemon, the lime and the orange (like for a fruit salad). Cook and add the sugar. Let it cook until getting a coarse purée. Mix the sugar and the agar in the water and heat to dissolve. Put it together with the fruits and cool it down.

<http://www.inicon.net>

Battered baby squids with agar noodles

Noodles:

3 dL white wine vinegar
2 dL concentrated fish stock
1 dL soya sauce
30 g squid ink
7 g agar (1.1%)

Garlic oil:

3 cloves garlic
2.5 dL Extra virgin olive oil

Battered baby squids:

tempura
0.5 kg baby squids
sunflower oil

Heat vinegar, fish stock, soya sauce and squid ink in a saucepan. When the mixture starts to boil, add agar and leave it boiling for 2 minutes. Cool mixture in a mould in the fridge. When cold, cut the mixture to noodles with a very sharp knife or with a special device for making noodles.

To prepare the garlic oil, slice the cloves and fry with the virgin oil in a pan until they get a light brown color.

From the baby squid only the tentacles will be used. Clean and salt the tentacles before dipping them in tempura and fry with generous hot oil. Strain.

Serve on spoons, the noodles at the bottom, dress with garlic oil and the baby squid on the top.

[Adapted from http://www.inicon.net](http://www.inicon.net)

Coconut jelly with strawberry sauce

0.25 L milk
15 g grated coconut
75 g sugar
1 g agar (~ 0.25%)
1/2 lemon, juiced
25 g cream

Strawberry sauce:

250 g strawberries
50 g sugar

Cook the milk together with the grated coconut and the sugar. When it boils, add the agar and cook for 3 minutes. Leave it to cool down until it is tepid and add the lemon juice and the cream. Pour the liquid in a mold and cool it in the fridge. Cut it into different shapes.

Wash and chop the strawberries, add the sugar and grind. Serve the coconut jelly with a little bit sauce on the top.

[Adapted from http://www.inicon.net](http://www.inicon.net)

Cold cod-fish salad with agar wrapping

For agar film:

100 mL water
1 g agar (1.0 %)
1 g glycerol

For cold cod-fish salad:

assorted chopped salad
cod-fish
chick peas
red pepper

minced olives
parsley
oil
salt
vinegar

For agar film: dissolve agar in water. Bring to boil for 1 min on low heat. Remove from heat and leave to cool. When lukewarm, add glycerol. Mix well and pour over a plastic foil to obtain a thin film of agar which gels within minutes.

Once the film has gelled, a little bit of salad is added and is rolled in such a way that the film of agar and glycerol wraps the salad in a roll.

For cold cod-fish salad: chop cod-fish, red pepper, olives and parsley in small pieces and mixed with the chick peas. Next, oil, vinegar and salt are added. All should be mixed well and served on the plate together with the agar and glycerol roll garnishing previously prepared with salad.

Adapted from <http://www.inicon.net>

Pineapple and blue cheese

200 g pineapple
40 g Fourme d'Ambert
20 g granny smith (cut into julienne)
20 g fennel (cut into julienne)
30 g syrup (sirop de Liège)
powder sugar
lemon juice
1.5 g agar
oil of grilled pistachio nuts
3 g harissa

Cut 4 fine round pieces out of the pineapple. Place on a silpat, cover with powder sugar, dry into an oven of 110 °C during 50 minutes. When ready and still hot roll the pineapple into cylinders.

Make juice out of the rest of the pineapple. Add lemon juice and agar. Heat to solve the agar, pour in the liquid into a rectangular shape and cool to solidify. Cut into pieces of 5 cm to 1,5 cm.

Cut the cheese in the similar size. Put on top of the pineapple. Mix the syrup with the harissa. Put the apple and fennel julienne on top of the cheese. Decorate with the pineapple cylinder. Add the sauce of sirop de Liège.

*Sang Hoon Degeimbre via
<http://foodfordesign.blogspot.com>*

Carrageenan

Porcini amber

5 fresh porcinis
200 g porcini stock
3 g kappa carrageenan (1.5%)

Slice the porcinis to a thickness of 0.3 cm. Mix the stock with the kappa carrageenan and bring to a boil until dissolved. Dip a porcini slice into the mixture and place on a flat tray. Repeat with the rest of the slices.

Source: <http://www.texturasebulli.com>

Gelatinated cucumbers in bloom

20 cucumbers in bloom
100 g brine from pickled gherkins
0.75 g kappa carrageenan (0.75%)

Wash the cucumbers in bloom and refrigerate. Combine 100 g of brine from pickled gherkins with the kappa carrageenan in a saucepan. Bring to a boil. Dip the cucumbers twice in the warm mixture and refrigerate.

Source: <http://www.texturasebulli.com>

Milk gelatin

200 g milk
0.6 g iota carrageenan (0.3%)

Mix the milk with the iota carrageenan and blend with a hand-held mixer until completely dissolved. Pour into a saucepan, heat to 80 °C and allow to gel in the refrigerator.

Source: <http://www.texturasebulli.com>

Pineapple gelatin

250 g pineapple juice
0.3 g iota carrageenan (0.12%)

Mix the pineapple juice with iota carrageenan and pour into a saucepan. Bring to a boil and allow to gel in the refrigerator.

Source: <http://www.texturasebulli.com>

Chocolate foam, chantilly and dessert

3.5 g carrageenan (0.28%)
600 mL water
200 g melted chocolate
400 g dairy cream
50 g sugar
1 teaspoon of instant coffee

Heat all ingredients to minimum 80 °C a few minutes. Leave aside to set. A gel will form. Beat the gel into a smooth thick solution.

Option 1: Serve chilled or heated as a hot sauce.

Option 2: Pour into a heat resistant whipper and charge with nitrous oxide. Shake well. Dispense onto a plate as decoration or onto a hot cocoa or coffee drink. Serve hot or cold.

Option 3: Melt chocolate in a double boiler. Whisk cream and sugar and fold into chocolate. Heat water to boiling point and add carrageenan while stirring. Add the chocolate and cream mix using blender. Add flavoring to taste (amaretto, cordial, instant coffee, liqueur or nuts). Pour hot into ramekins or a large dish. Leave to cool down a few hours. Serve room tempered or chilled. Variation: Blitz this chocolate flan into a rich unctuous cream (add chunky flavoring after this step i.e. nuts, agar drops, sodium alginate pearls, pieces of fruit...)

<http://www.gastronomie.kalys.com>

Frappuccino

5 dL ice
2-4 shots of espresso
1.5 dL milk
1 g carrageenan (~0.13%)
chocolate syrup to taste
sugar to taste

Blend the espresso, chocolate and milk on low speed, then add carrageenan gingerly, but quick. Then add all the ice right away, and blend on high for about 30 seconds to a minute. Substitute some of the milk with heavy cream if desired.

CoffeeKid at <http://www.coffeegeek.com>

Frappuccino

Unflavored mix
1 L milk
0.5 g carrageenan (0.04%)
125 g sugar
115 g nonfat powdered milk

For Frappuccino
2 dL unflavored mix
2 dL ice
30 mL ground chocolate (Ghirardelli or similar)
1 espresso shot

Unflavored mix: Mix ingredients in blender, at least one day ahead. Chill.

Frappuccino: Pour unflavored mix into blender. Add ground chocolate and a single shot of chilled espresso. Add ice, blend until smooth, and pour into cup.

JR at <http://www.coffeegeek.com>

Fruit-flavored water dessert jelly

sugar 15.00–20.00%
carrageenan (kappa/iota blend) 0.60–0.90%
potassium citrate 0.20–0.35%
citric acid 0.30–0.45%
color
flavor
water to 100%

Mix ingredients. Heat. Cool to set.

CRC Handbook of hydrocolloids

Gelatin

Piña colada espuma

600 mL pineapple juice
350 mL coconut milk
50 mL rum (brown, 35% vol)
10 g gelatin (1.0%)

Soak gelatin. Heat 1/8 l pineapple juice to 60 °C and stir in the pressed out gelatin. Mix coconut milk, pineapple juice and rum, add the dissolved gelatin. Fill into a 1 L whipper and charge with nitrous oxide. Chill in the refrigerator for several hours. Shake the whipper vigorously upside-down before dispensing.

Serving tip: top pineapple juice with piña colada espuma.

<http://www.espumas.com/>

Cucumber yoghurt espuma

0.5 kg salad cucumbers
0.5 kg yoghurt (3.5% fat)
10 g gelatin (1.0%)
dill
garlic
salt
white pepper

Wash the cucumbers and cut them into pieces without peeling them. Combine cucumber pieces, yoghurt and spices, purée in a blender and strain through a fine sieve. Soak gelatin in cold water. Place the squeezed out sheets into a saucepan with a little bit of the mixture and, constantly stirring, dissolve the gelatin. Next, add the cucumber blend to the gelatin, pass through a fine sieve and pour this mixture into the 1 L whipper. Charge with nitrous oxide and shake. Chill in the refrigerator for several hours. Shake the whipper vigorously upside-down before dispensing.

<http://www.espumas.com/>

Raspberry Espuma

900 g raspberries
110 g sugar (add to taste)
10 g gelatin (1.0%)
(raspberry brandy)

Soak the gelatin in cold water. Boil raspberries with sugar, purée and pass through a fine sieve. Heat 200 mL of the raspberry puree to 60 °C and stir in the pressed out gelatin. Add the remaining puree and leave to cool. Beat with a whisk before pouring into a 1 L whipper and charge with nitrous oxide.

iSi North America via <http://www.prairiemoon.biz>

Asparagus Espuma

1000 g peeled white asparagus
10 g gelatin (0.7% of final composition)
salt
sugar
1 lemon
100 mL heavy cream (33%)

Boil the asparagus in salt water with the sugar and a slice of lemon until done. Puree the asparagus with 300 mL of asparagus juices in a mixer, and pass through a fine sieve. Season to taste. Soak gelatin in cold water. Heat 100 mL of the asparagus puree to a temperature of 60 °C, stir in the pressed out gelatin, then add in the remaining mixture. Allow to cool thoroughly and stir in the cream. Pour into the 1 L whipper, charge with nitrous oxide, shake and leave to cool in fridge. The resulting consistency is firm and creamy.

Tip: To make a green asparagus Espuma, simply replace the white asparagus with blanched and pureed spinach.

iSi North America via <http://www.prairiemoon.biz>

Mango espuma

375 g ripe mangoes
50 g sugar
3.4 g gelatin (0.6%)
125 mL orange juice
(add rum to taste if desired)

Soak the gelatin in cold water. Boil diced mangoes, orange juice and sugar, puree and pass through a fine sieve. Heat 100 mL of the puree to a temperature of 60 °C and stir in the squeezed out gelatin. Add the remaining puree and allow to cool. Beat with a whisk before pouring into a 0.5 L whipper. Charge with nitrous oxide and shake vigorously. Chill in the refrigerator for several hours. Shake the whipper vigorously upside-down before dispensing. Serve with fresh or marinated mango dices.

<http://www.espumas.com/>

Jellied gin and tonic

Lime slices
1 lime
60 g simple syrup
1 t citric acid

Sugar-soda-acid mixture
1/4 t bicarbonate of soda
1/4 t confectioner's sugar
1/4 t citric acid

Jellied gin and tonic

2.5 g gelatin (3.3%)
25 mL gin
50 mL tonic water

Freeze lime and cut into chips with deli slicer.
Coat slices in simple syrup and citric acid.
Bake at 65 °C until crisp.

Mix bicarbonate of soda, sugar, and citric acid.

Soften sheet gelatin in cold water for two minutes. Warm gin and add gelatin and tonic water. Pour into a shallow baking pan lined with plastic wrap and refrigerate for two hours. Cut into 1.5 cm cubes. Put cube onto lime chip, sprinkle on sugar-soda-acid mixture (the acid combines with the baking soda for a carbonated feeling on the tongue), and serve.

Eben Freeman via <http://www.wired.com>

Cold Coffee Espuma

325 mL cold espresso
125 mL heavy cream (33% fat)
75 g sugar
3.4-4 g gelatin (~ 0.65-0.75%)

Soak gelatin sheets in cold water until soft. Heat 100 mL of espresso to 60 °C and remove from heat. Dissolve sugar. Squeeze water from gelatin sheets well, add to hot espresso and stir to dissolve. Add remaining cold espresso and set aside to cool slightly. Before gelatin sets, add cream, then stir.

Use 0.5 L whipper. Pour mixture into bottle, charge with nitrous oxide and shake well. Chill for several hours before dispensing. Keep refrigerated.

Ferran Adria via <http://www.movable-feast.com>

Fruit Espuma

250 g fruit purée (raspberry, strawberry, passion fruit, etc.)
65 g corn syrup
60 mL water
1.7 g gelatin (0.45%)

Pass fruit purée through a sieve or chinois to remove any fruit chunks or seeds. It is very important that the purée be as smooth as possible. Combine purée, water (eliminate the water in the recipe if you use juice) and corn syrup in a sauce pan. If you are using sheet gelatin, soften in a small amount of cold water. When softened, remove from water and squeeze out excess water. Over low heat, gently heat fruit mixture until warm and add your gelatin. Remove from heat and stir until gelatin is dissolved.

Pour fruit puree into an 0.5 L whipper making sure not to fill it more than halfway. Charge

with nitrous oxide. Chill for about 1 hour, and shake well before using.

Ferran Adria via <http://fooddownunder.com>

Watermelon Foam

0.5 L watermelon juice
5 g gelatin (1.0%)

Heat half of the watermelon juice. Dissolve the gelatin sheets in the hot watermelon juice. Add the rest of the juice. Strain the juice and transfer to a 0.5 L whipper. Charge the whipper with nitrous oxide and refrigerate until chilled.

José Andrés

Saffron Foam

440 mL heavy cream
60 mL whole milk
2 t saffron threads
170 mL white wine
3.4 g gelatin (0.75%)
salt
white pepper

Combine the white wine and saffron in a small sauce pot and simmer over medium heat until liquid is reduced to 60 mL. Add the heavy cream and milk and gently bring to a simmer. Meanwhile, bloom gelatin in cold water until soft, about 5 minutes, then squeeze gently to remove excess water and add to the cream mixture. Season with salt and white pepper and strain through a chinois. Chill to room temperature and fill 0.5 L whipper. Charge with nitrous oxide. Shake and refrigerate for 2-4 hours before using.

<http://www.isinorthamerica.com>

Citrus Foam

375 mL orange juice
25 g sugar
375 mL heavy cream
1/2 lemon, juiced
2.5 g gelatin

Combine orange juice and sugar and reduce over medium heat by half. Add the juice of half a lemon. Bloom gelatin in cold water until soft, about 5 minutes, then squeeze gently to remove excess water and add to warm juice reduction. Add juice to heavy cream and strain through a chinois. Fill 0.5 L whipper and charge with 1-2 cream chargers. Shake and refrigerate for 2-4 hours before using.

<http://www.isinorthamerica.com>

Red Beet Foam

1.8 kg red beets

2.5 dL heavy cream
4.3 g gelatin (1.0%)
salt
white pepper

Peel and juice the beets. This yields approx. 1 L of juice. Reduce beet juice to 180 mL over medium heat. Bloom gelatin in cold water until soft, about 5 minutes, then squeeze gently to remove excess water and add to the warm beet juice. Gently heat heavy cream until tepid. Combine cream and beet reduction. Season with salt and white pepper then strain through a chinois. Chill to room temperature, fill 0.5 L whipper and charge with nitrous oxide. Shake and refrigerate for 2-4 hours before using.

<http://www.isinorthamerica.com>

Key Lime Cloud

300 mL key lime juice
300 mL water
300 g sugar
2 g gelatin (0.2%)
50 g egg white powder
(1 egg white equals approximately 5 g egg white powder + 35 g water)

Bring 150 mL water and all sugar to a boil. Mix rest water with egg white powder to hydrate. Dissolve bloomed gelatin in syrup, cool to 45-50 °C, mix with lime juice, then rehydration egg whites. Strain, chill to 4 °C, then mount until fluffy.

<http://willpowder.net>

Clover club

For rhubarb infused gin

200 mL gin
50 grams fresh rhubarb

For pomegranate grenadine

200 mL pomegranate juice
100 mL sugar

For the drink

50 mL rhubarb-infused gin
25 mL lemon juice
12.5 mL pomegranate grenadine
25 mL gomme syrup
3.4 g gelatin (3.0%)

Gin and rhubarb are cooked sous vide for one hour at 68 °C to make the rhubarb-infused gin.

Squeeze pomegranate juice into a saucepan with the sugar and cook until dissolved to make the pomegranate grenadine.

For the drink, placed ingredients into a whipper or a soda siphon which is then charged with 1 cream charger. The liquid and canister are

chilled, shaken vigorously and the foam is poured into a glass. The Clover club is served immediately with the clove sugar on the side.

For the clove sugar: Clove flavored hard boiled sweets are put into a blender and turned into a powder. This powder is then placed into a candy floss machine with sweetener to create the spun sugar.

Tony Conigliaro via <http://guardian.co.uk>

Olive oil gummy bears

25 g glucose
2.5 vanilla pods
80 g caster sugar
10 g gelatin (2.0%)
100 mL water
100 g isomalt
200 mL olive oil (use best quality available)

Bloom gelatin. Heat water, sugar, glucose and isomalt to 90 °C, stirring continuously till all has dissolved. Mix in olive oil using blender or immersion blender. Stir in seeds from vanilla pods and gelatin (squeeze out water first). Pour into mould or tray and leave to set in fridge. Cut in pieces and cover with caster sugar and vitamin C (acid).

Paco Roncero, translated from <http://www.chefkoch.de>

Piña Colada espuma

600 mL pineapple juice
350 mL coconut milk
50 mL brown rum

10 g gelatin (1.0%)

or

1 g xanthan (0.1%)

Bloom gelatin. Heat a little of the pineapple juice and dissolve gelatin. Add remaining liquids. If using xanthan, it can be added directly to the liquids using a blender or immersion blender. Strain liquid, transfer to whipper and charge with nitrous oxide. Leave in fridge for some hours before serving.

From Fizz magazine via <http://www.cuisine-concept.de>

Slightly acidic and sweet foam

200 g squeezed lemon juice
5 g gelatin (1.6%)
5 g honey
100 g sugar

Melt the gelatin in the hot white stock and homogenize. Put the mixture in bowl and use the electric whisk at full speed. Cool the mixture by putting the bowl in frozen water, the gelatin would get hard. Stop the whisk, when

the mixture gives a firm foam and when the gelatin sets in gel. Store it in the fridge or use it directly.

<http://www.inicon.net>

Gellan

Consommé macaroni

250 g beef and chicken stock
6.5 g gellan (2.6%)

Mix gellan with stock and blend. Bring to a boil and transfer to a container. Allow to gel and slice with a mandolin into 0.15 cm thick rectangles. Roll each rectangle with the help of a pvc-rod (0.3 cm in diameter) to make macaroni.

Source: <http://www.texturasebulli.com>

Saffron tagliatelle

250 g unsalted consommé
10 saffron threads
4.8 g gellan (1.9%)

Combine the three ingredients and bring to a boil. Allow to gel in a flat tray. Cut into 0.5 mm thick strips to make tagliatelle.

Source: <http://www.texturasebulli.com>

Almond fluid gel

800 g skimmed milk
300 g roast almonds
3 bay leaves
30 drops almond essence
18 g sugar
7.5 g salt
5 g gellan gum (0.44%)

Heat all ingredients except the gellan gum and roughly blend with the hand blender. Leave to infuse for 10 minutes. Pass through a fine mesh sieve, discarding the almond, and then return to the boil. Using a hand blender, blitz of the gellan gum until dissolved and remove from heat. Place in fridge and blend repeatedly whilst cooling until smooth.

Heston Blumenthal via <http://www.nespresso.com>

Carrot Lolly

100 g carrot juice
10 g icing sugar
10 g maltodextrin
1 g gellan gum (0.83%)
orange zest as needed

Preheat the oven to 100 °C. Blend all the above ingredients and bring to the boil, continue to boil for 2 minutes. Pour into a container and cool over ice rapidly. Once this mixture has cooled it will have a hard consistency, which is then blended into a smooth paste. Cut out of cardboard an oblong template 2 cm x 3 cm. Line a baking sheet with a non-stick mat. Using the template, spread

the mix over the sheet. Sprinkle some grated orange zest over the lollies. Place a toothpick or lolly stick into the mix half way up the tuile and half sticking out of the mix. Bake in the preheated oven for 2.5 hours.

Heston Blumenthal via <http://www.nespresso.com>

Pomegranate and vodka fluid gel

1 g low acyl gellan (0.5%)
95 g pomegranate juice
6 g water
100 g vodka

Heat pomegranate juice and water to 65 °C. Add gellan, blitz with immersion blender. Continue mixing by hand until cool and partially set. Add vodka and blitz with immersion blender.

Larry at <http://chiantiblue.blogspot.com>

Apple puree

20 apples, cored, peeled and chopped
130 g sugar
1 vanilla bean
750 mL white wine
810 g apple puree
203 g water, cold
203 g white wine, cold
2.6 g high acyl gellan
1.9 g low acyl gellan
1 g maltodextrin

In large sauté pan, cook apples with sugar, vanilla bean, and white wine over medium heat until liquid becomes syrupy. Discard vanilla bean, then puree apples until smooth. Heat apple puree in a pot until warm.

Blend water and wine with high and low gellan and maltodextrin for 2 minutes with hand held electric blender. Heat in sauce pot until it's thick then becomes loose again. Working quickly, add wine mixture to apple puree and mix well using hand held blender then pour into a plastic container lined with plastic wrap, pressing wrap down over top. Chill for one hour and cut into desired shapes. Warm in an oven or microwave, sprinkle top with sugar then caramelize using torch.

Sam Mason via <http://www.starchefs.com>

Amaretto jelly

3 g gellan gum
150 g water
300 g Amaretto
200 g sugar

Hydrate the gellan gum in the water. In a small pan heat the amaretto and sugar. Combine

both mixtures and cool. Pour into a half sheet pan and allow to set. Cut into cubes.

Tom Wellings via <http://www.starchefs.com>

Banana-Cocoa Raviolis

Banana-Cocoa Raviolis Base

800 g sugar
480 g glucose
120 g chocolate powder
600 g water

Raviolis

1 kg banana puree
237 g base
137 g water
1.5 g low acyl gellan

Banana-Cocoa Raviolis Base: Take the sugar and glucose to a medium caramel and slowly whisk in the water and chocolate. Cool.

Raviolis: Freeze banana puree into tubes and cut into 1 inch-slices. Bring ravioli base with water to a boil and add the gellan. Cool to 40 °C and quickly dip the frozen banana slices. Allow to thaw.

Sam Mason via <http://www.starchefs.com>

Fruit juice jelly

250 g water
250 g fruit juice
90 g sugar
2.4 g citric acid, anhydrous
1.8 g tri sodium citrate dihydrate
0.9 g low acyl gellan (0.15%)

Pre-blend all the dry ingredients. Heat the water to boiling and dissolve the dry ingredients in the hot water. Add the fruit juice, mix and chill. The gel sets at approximately 40–45 °C and the use of chilled fruit juice with dry-mix desserts ensures a rapid set.

CRC Handbook of hydrocolloids

Fluid gel for beverages

Part 1

112 g sucrose
0.60 g tri sodium citrate dihydrate
0.28 g low acyl gellan gum (0.028%)
0.20 g sodium benzoate
862 g deionized water

Part 2

5.00 g citric acid
0.25 g calcium lactate
15 g deionized water

Blend the sucrose, tri sodium citrate dihydrate, gellan and sodium benzoate and disperse in

the deionized water of Part 1. Heat the dispersion to 70–80°C to hydrate. Dissolve the citric acid and calcium lactate in the deionized water of Part 2 and add to the hot gum solution. Cool the sample to below 15 °C undisturbed. Gently agitate the sample to form a fluid gel.

CRC Handbook of hydrocolloids

Pulp suspension beverage

338 g water
100 g fruit juice
60 g sugar
0.25 high acyl gellan gum (0.05%)
0.25 g tri sodium citrate dihydrate
0.9 g citric acid anhydrous
0.5 g potassium citrate

Blend gellan with tri sodium citrate dihydrate and disperse in the water. Heat the dispersion to 90 °C to hydrate the gum. At 90 °C add the remaining dry ingredients and the fruit juice. Cool to room temperature whilst mixing to form the fluid gel.

CRC Handbook of hydrocolloids

Gum arabic

Marshmallows

2 egg whites
15 g marsh mallow roots
500 g gum arabic
500 g sugar
1.25 L water
color (optional)
1 T orange blossom extract
2 T starch

Wash the roots (peel fresh roots) and slice into small pieces. Whisk egg whites hard. Bring the pieces of root to boil in the water. Leave to simmer for 30 min. Strain through strainer, coffee filter or towel. Pour the gum arabic into the hot water. Under mild heat stir with a wooden spoon to dissolve completely. Continue to stir. Disperse the sugar in the solution and evaporate till the liquid is syrupy. Add in the egg whites and flavoring. Continue to evaporate while whisking. Add any coloring now. Whisk in. Sift the starch over a tray or a piece of baking paper or foil. Pour the paste over the starch. Leave to set several hours. Unmold or remove from container and cut into pieces or strings.

Variation: Replace 0.25 L water and 50 g sugar by 150 g flavored cordial (mint, violet, poppy, raspberry...)

<http://www.gastronomie.kalys.com>

Lecithin

Tea air

1 L milk
200 g muscovado sugar
20 g lapsang soochong
10 g lecithin (0.83%)

Bring milk and sugar to a boil, infuse tea four minutes. Strain, add lecithin, and froth with emulsifying blade of immersion blender.

<http://willpowder.net>

Vodka Prairie Oyster

25 mL vodka
10 mL Worcestershire sauce
soya lecithin
20 mL clarified tomato juice
oil
vinegar
celery salt
pepper
tabasco
shallots, finely chopped

The tomato juice is clarified to remove all color and then recolored with orange (natural) food dye. The juice is frozen within a small round mould, shaped like an egg yolk, and the frozen yolk is dipped in gelatin.

Vodka, vinegar, clarified tomato juice, oil and lemon are mixed together. Soya lecithin is added to the Worcestershire sauce and blitzed with a hand blender to create a foamy consistency.

The egg yolk is placed in an oyster shell and the vodka mix poured over the top. Finely chopped shallots, salt and pepper are sprinkled on top and the Worcestershire sauce air is spooned over. The Vodka Prairie Oyster is served immediately.

Tony Conigliaro via <http://guardian.co.uk>

Frozen parmesan air

Parmesan solution
500 g grated parmesan
450 g water

Parmesan air
250 g parmesan solution
1.3 g lecithin (0.52%)

Mix the parmesan with the water and gradually heat to 80 °C. Steep for 30 minutes and strain. Add 1.3 g of lecithin for every 250 g of parmesan solution obtained. Use a hand-held mixer on the surface of the liquid, allow to stabilize for one minute and collect the air that

has formed on top. Freeze the air in a container of choice.

Source: <http://www.texturasebulli.com>

Lime air

225 g lime juice
275 g water
1.5 g lecithin (0.3%)

Combine the three ingredients and use a hand-held mixer on the surface of the liquid; allow to stabilize for one minute and collect the air that has formed on top.

Source: <http://www.texturasebulli.com>

Peachy Soy Ice Cream

7 dL soy milk
3.5 dL fresh or frozen peaches, sliced
100-200 g sugar (to taste)
60 mL soy oil (optional)
1 T lecithin
1 t vanilla flavoring or 1 whole vanilla bean
pinch of salt

If using a whole vanilla bean, split it down the sides and halve it lengthwise. Scrape out the insides and use the inner vanilla bean scrapings for flavoring (Do not use the bean casing). Blend all the ingredients together in a blender until smooth and creamy. If you prefer chunks of peaches, chop the peaches separately and fold into the soymilk mixture just before freezing. Freeze according to your ice cream maker instructions.

<http://www.recipezaar.com/123833>

Bread Machine Dough Enhancer

2.3 dL lecithin granules
1 T vitamin C powder
1 T ground ginger

Mix ingredients and store in a tightly closed glass jar. Use the same amount of enhancer as the yeast. The ginger boosts the yeast, and makes it act more swiftly. The ascorbic acid (vitamin C), strengthens the gluten. The lecithin granules aids the oil in causing the strands of gluten to slip against each other more easily.

<http://www.recipezaar.com/89744>

Apple strudel

6 apples, thinly sliced
2.5 dL currents or chopped raisins
2.5 dL blanched almonds
1.2 dL chopped dates
1 t vanilla
1 t cardamom

For pastry

180 g whole wheat flour
1.2 dL cold water
2 t oil
1 T lecithin
pinch of salt

Mix flour and salt together, add oil and lecithin; mix well. Add water, handling as little as possible. Roll pastry out very thin on a large smooth slightly floured kitchen towel (stretch pastry).

Combine all ingredients for filling. Spread the apple filling on pastry to about 5 cm of one end of pastry and all over the rest. Lift one end of the towel so it begins to roll. Roll it onto a cookie sheet and tuck ends under. Bake at 160-180 °C for 1 hour. Slice like a jelly roll and serve with vanilla ice cream.

<http://www.cooks.com>

Methyl cellulose

Tender broad bean balls

Methyl cellulose mix
100 g water
3 g methyl cellulose

For broad bean balls

65 g shelled tender broad beans
20 g methyl cellulose mix
(methyl cellulose in final composition: 0.7 %)

Mix the two ingredients at room temperature in the blender to obtain a lump-free mixture. Strain and leave to sit in the refrigerator for 24 h. Mix the shelled tender broad beans with the methyl cellulose mixture. Make 8 balls of 8.5 g each. Keep in the refrigerator. Put the balls in salted water which has been kept hot at 90 °C and leave to cook for 1 min.

Source: <http://www.texturasebulli.com>

Hot Vanilla Ice Cream

306 g whole milk yogurt
230 g cream cheese
80 g agave nectar
154 g water
1 Bourbon vanilla bean scraped
pinch of sea salt
11.55 g methyl cellulose (1.5 %)
METHOCEL Super Gelling A-Type Food Gum (SGA 150) from Dow was used for this recipe.

In a blender puree together the yogurt, cream cheese, agave nectar, the insides of the vanilla bean and the salt. Blend just until the mixture comes together as a smooth puree, but do not aerate. Meanwhile, heat the water up to a boil. As soon as the water boils remove from the heat and whisk in the methyl cellulose. Once the methyl cellulose is dispersed, add it to the blender and puree the contents until the mixture is homogenized, again avoid aeration.

Once the mixture is combined, pour it into a bowl over an ice bath to chill. Let the ice-cold mixture rest for at least an hour, preferably overnight before poaching the ice cream.

When ready to make the ice cream, heat a pot of water to a boil. When the water boils, shut off the heat and scoop the ice cream base. As you scoop, wipe the edges of the ice cream scoop, and then immerse the scoop and its contents into the hot water. You will see the ice cream set, and then dislodge it from the scoop. The ice cream should poach for about one minute for small scoops and longer for larger scoops. (Depending on how much ice cream you are poaching you may have to turn the heat back on to keep the water hot.)

Once the ice cream is set, remove the scoops, drain briefly on a paper towel and place into serving dishes with whatever garnishes you want. As the mixture chills the ice cream will "melt" in your dish, blending with the garnishes like and actual cold ice cream sundaes.

<http://ideasinfood.typepad.com>

Olive oil soba noodles

2 g methyl cellulose (0.625%)
80 mL water (room tempered)
1 g salt
240 mL olive oil (room tempered)

Dissolve methyl cellulose in water. Leave over night so air bubbles can escape. Add salt and olive oil slowly, like when making mayonnaise. Use a good olive oil – preferably a mild, fruity one rather than a bitter one (Valerrama Hojiblanca). Use a whisk rather than an immersion blender when mixing. Transfer mixture to syringe (or equivalent) and extrude into hot, clear liquids/soups.

Joachim Eisenberger via <http://www.bosfood.de>

Thin film

100 g water
1.5 g sugar
1.5 g methyl cellulose (1.5%)

Mix the powder of methyl cellulose with sugar. Heat up 1/3 of the water until the first bubble of boiling. Pour the powder of methyl cellulose and sugar in rain while moving. Put it in a mixer or in a blender to homogenize the solution. Add the remaining water in the mixture, continue to mix the solution for 30 min. Take 10 g of solution, pour it in a Petri dish (flat dish with diameter of 10 cm). Let the solution at room temperature for 48 hours. The thickness of the film is approximately 0.1 mm.

Adapted from <http://www.inicon.net>

Soya burgers

soya protein 21%
vegetable fat 15%
starch 2%
potato flour 2%
methyl cellulose 2% (Benecel type M043)
dried onion 1.5%
salt 1%
seasonings and flavors 0.5%
water to 100%

Methyl cellulose gels when heated. This gives shape retention. Since the gelling is thermo reversible, it is not noticed in the final product.

CRC handbook of hydrocolloids

Pectin

Green tea sour mousse

2 L water
375 g fresh lime juice
350 g billington's sugar
32 g pectin (1.1%)
60 g green tea
50 g egg white
25 g vodka
2.5 g malic acid

Mix together water and lime juice. Mix the sugar and pectin together dry, then blend into the water and lime juice. Bring this solution to a boil and simmer for five minutes. Let cool completely. Infuse the green tea in the cold solution for two hours and then strain through fine muslin.

Take this base mix and combine with the egg white, vodka, and malic acid. Pour into a whipper and charge with nitrous oxide.

To serve, spray a small amount of foam into a soup spoon, knock the foam off the spoon into a Dewar filled with liquid nitrogen. Turn the mousse over in the liquid nitrogen for around 10 to 15 seconds until the entire surface has been frozen. Serve.

Heston Blumenthal via <http://www.rsc.org>

Sodium alginate

Melon cantaloupe caviar

250 g cantaloupe juice
2 g sodium alginate (0.8%)

Setting bath

500 g water
2.5 g calcium chloride (0.5%)

Mix sodium alginate with 1/3 of the melon juice and blend. Mix in remaining 2/3, strain and set aside. Dissolve the calcium chloride in the water. Fill syringe with the melon and sodium alginate mixture. Expel it drop by drop into the calcium chloride solution. Remove after 1 minute, strain and rinse the resulting caviar in cold water.

Source: <http://www.texturasebulli.com>

Spherical mango ravioli

250 g water
1.3 g sodium citrate
1.8 g sodium alginate (0.36%)
250 g mango puree

Setting bath

1000 g water
5 g calcium chloride (0.5%)

Blend the sodium citrate with 250 g of water, add the sodium alginate and blend once more. Bring to a boil, allow to cool and mix with the mango puree. Blend 1000 g of water with calcium chloride. Pour the contents of a dosing spoon full of the mango and sodium alginate mixture into this calcium chloride bath, leave for 2 minutes and wash in cold water. Repeat until all of the ravioli are made.

Source: <http://www.texturasebulli.com>

Spherical tea ravioli

475 g water
16 g Earl Grey tea
25 g sugar
50 g lemon juice
1.5 g sodium alginate (0.3%)

Setting bath

500 g water
3.25 g calcium chloride (0.65%)

Mix 400 g of water, the tea and 20 g of sugar while cold and steep in the refrigerator for 24 hours. Strain. Combine the lemon juice with 5g of sugar and freeze in an ice tray. Blend the sodium alginate with 75 g water. Dilute the calcium chloride in 500 g water. Mix the tea

infusion with the sodium alginate base and allow to rest. Place in the freezer to chill but do not allow it to freeze.

Place a lemon cube in a 3 cm dosing spoon and fill the rest of it with the tea base. Place in the calcium chloride bath for 30 seconds. Rinse the ravioli in cold water.

Source: <http://www.texturasebulli.com>

Rob's liquid pea ravioli

260 g frozen peas
325 g water
5 large mint leaves
3 g sodium alginate (0.5%)

Setting bath

1500 g cold water
10 g calcium chloride (0.67%)

In a bowl, dissolve calcium chloride in water. Store bowl in the fridge.

Cook frozen peas in a small amount of water for four minutes, adding mint leaves for the last five seconds of cooking. Drain, then shock immediately in a cold water bath for three minutes.

Mix water and sodium alginate with immersion blender until the sodium alginate has dissolved. Bring to a boil over high heat, stirring constantly. Remove from heat and allow to cool to room temperature. When cooled, blend with pea mixture using an immersion blender until the mixture is smooth.

Remove chilled calcium chloride solution from fridge. Scoop pea mixture into a tablespoon measure in the shape of a half-sphere. Set the bottom of the tablespoon measure against the surface of the calcium chloride mixture, then pour the mixture in with a gentle turn of the wrist. Leave ravioli in the calcium chloride mixture for two minutes. Gently remove the ravioli from the calcium chloride bath using fingers or a slotted spoon. Place in another bowl filled with cold water or rinse gently under running water. Top with a couple of grains of sea salt and serve immediately.

<http://hungryinhogtown.typepad.com>

Restructured onions

40 g onion
1.1-1.3 g sodium alginate (~1%)
14 g starch
1 pinch salt
12 g sugar, maltitol or glucose syrup
50-80 g water (low in calcium)
0.2 g sodium citrate

Setting bath

16 g calcium chloride (8%)
200 g water

Blend the onion under water adding starch and sodium alginate. If tap water is rich in calcium, add some sodium citrate before you add the sodium alginate.

Use a ice cream scooper or a syringe to transfer mix to setting bath. You might also try filling a tray after spraying some setting bath solution. Collect restructured shapes from the setting bath in a strainer or with special spoon

Rinse well under running water and place in a tray to dry off. For firm shapes rest samples in the setting bath at least 10 minutes.

<http://www.gastronomie.kalys.com>

Cola caviar

1 g sodium alginate (1.0%)
100 g cola or other soda drink
(konjac or xanthan)

For setting bath

8-10 g calcium chloride/calcium lactate (8-10%)
100 g water

Heat soda to boil. Turn heat down. Mix the sodium alginate in. Stir well, turn heat off. Once at room temperature let the solution drip into the setting bath. The dripping speed depends on the viscosity of the solution. For a more viscous solution, use some thickener, e.g. 0.1-0.3 g konjac or xanthan.

Collect the spheres with a tea strainer a sieve or the perforated spoon. Rinse carefully in fresh water.

<http://www.gastronomie.kalys.com>

Sodium alginate cubes

20 g sugar or maltitol
10 g dextrin
170 g fruit juice
3 g sodium alginate (1.5%)
1 t lemon juice
1-2 g calcium citrate, calcium lactate or calcium chloride (0.5-1.0%)

For coating

50 g baking cooking chocolate
10 g butter or double cream

Optional

1 egg white
1 pinch of xanthan

Blend half of the fruit juice with the lemon juice, dextrin and calcium source. Blend sodium alginate with remaining juice. Pour the first mix into the other and blend a few seconds. Leave to set for half an hour (setting should be almost immediate and visible within minutes). Cut into cubes.

The cubes are heat stable and resist cooling and heating. They may be used in an ice cream if cut into small pieces or to top mousse and drinks

Coating the cubes: Melt the chocolate over a hot pan (or in a double boiler) and blend in with the butter or double cream

Pick up the sodium alginate cubes on cocktail sticks and dip into melted chocolate sauce. Place on a grid rack (strainer) and leave to set in a cool place or the fridge

Variation: If you add an egg white and a pinch of xanthan to the calcium solution and then beat it before mixing into the sodium alginate solution, you will obtain a lighter gelled product.

<http://www.gastronomie.kalys.com>

Kir moleculaire

80 mL black currant juice
20 mL crème de cassis
20 mL lemon syrup
1 g sodium alginate (0.8%)
champagne

Setting bath

2.5 g calcium chloride (0.5%)
500 mL water

Mix fruit juices and sodium alginate. Leave over night to get rid of air bubbles. Use plastic syringe and drip alginate solution into setting bath. Leave in setting bath at least 30 seconds. Rinse spheres with water, transfer them to a champagne glass and fill glass with champagne.

Adapted from recipe by H. Antoniewicz & A. Ariens-Derix

Thin film

100 g water or fruit juice
1 g alginate (1.0%)

Setting solution for spraying

100 g water
5 g calcium lactate (5%)

Prepare 1% sodium alginate solution with water or fruit juice. Pour onto flat dish, baking platter or similar. Prepare calcium lactate solution and spray onto alginate film. Allow several minutes for setting. Small/thin films can

be turned around and sprayed from the other side for faster setting. Short heating in the microwave after spraying (to evaporate calcium solution) gives greater flexibility and strength.

Adapted from <http://www.inicon.net>

Mozzarella spheres

250 g buffalo mozzarella
150 g heavy cream
5 g calcium lactat (1.25%)
2 tamarillo or tomato juice

Setting bath

1 L water
5 g sodium alginate (0.5%)

Mix mozzarella with cream and calcium lactate. Fill bowl with water and add sodium alginate. Stir until dissolved. Transfer mozzarella mix to alginate bath. Allow 2 min for setting. Inject spheres with tamarillo/tomato juice. Serve.

Dietmar Hölscher via <http://www.eispreis.de>

Maltodextrin

White Chocolate Powder:

80 g tapioca maltodextrin (40% of final composition)
120 g melted white chocolate

Place starch in Robot Coupe and add melted white chocolate. Spin machine and scrape side and bottom with spatula. Add starch as needed to create desired texture. For a fluffier chocolate powder, pass through tamis.

Adrian Vasquez via <http://www.starchefs.com>

Nutella powder

80 g tapioca maltodextrin (40% of final composition)
120 g Nutella

Combine ingredients in a food processor. Process until the mixture has the texture of soil. Pass mixture through a tamis or fine-meshed sieve to lighten its texture. Store in a cool dry place until ready to serve.

<http://hungryinhogtown.typepad.com>

Bitter almond oil crumbs

12 g virgin almond oil
10 g green almond oil of prune
40 g maltodextrin (65% of final composition)

Mix the two oils and reserve. Add the oil mixture slowly to the maltodextrin, mixing constantly with a hand blender until individual crumbs begin to appear. Set aside at room temperature. Heat the crumbs in a frying pan until they begin to take on a round shape and light crunchy coating.

Source: <http://www.texturasebulli.com>

Bacon powder

60 mL tapioca maltodextrin
120 mL rendered bacon fat

Add most of the maltodextrin to a bowl and drizzle in the bacon fat, scraping the sides of the bowl with a spatula and mixing well. Add more maltodextrin until desired texture is achieved.

Morou via <http://www.starchefs.com>

Sour Mix Recipe

360 mL sugar
60 mL corn syrup
120 mL maltodextrin
120 mL fresh lemon juice
120 mL fresh lime juice
30 mL lime zest

8 g dehydrated egg white (optional)
12 g citric acid
480 mL water

Mix water, sugar, maltodextrin and zest in a pot and gently heat until all the sugars have dissolved. Turn off the heat and add the remaining ingredients, stirring until dissolved. Strain the mix into a 1 liter bottle. Maltodextrin increases the viscosity of the sour mix, and if egg whites are skipped, it also provides some foaming capability.

<http://www.theartofdrink.com>

Xanthan

Iberian ham cream

50 g Iberian ham broth
30 g Iberian ham fat
0.2 g xanthan (0.25%)

Mix the 3 ingredients and emulsion with the aid of a turmix to obtain a creamy emulsion with no lumps. Keep in the refrigerator. This cream is used to go with the oyster and its pearl.

Source: <http://www.texturasebulli.com>

White sangría in suspension

500 g white sangría mix
1.4 g xanthan (0.28%)

Put the sangría in a bowl with xanthan and blend with a turmix. Strain and vacuum pack the whole mixture to extract the bubbles trapped in the interior.

The consistency obtained will enable us to maintain elements such as herbs, fruit or spherical caviar in suspension.

Source: <http://www.texturasebulli.com>

Gluten Free Flour Mix

500 mL rice flour, white
150 mL cornstarch
80 mL tapioca flour
1 t xanthan gum

Blend and use in any recipe calling for flour.

<http://www.recipezaar.com/214986>

Field poppy ice cream

ca. 800 mL plain yoghurt, stirred
1 g xanthan (0.125%)
10 g icing sugar
red color
10 g poppy flavored cordial

For cordial:

100 g water
100 g sugar
1 pinch citric acid or 0.5 t lemon juice

Cordial: boil all ingredients and cool down

Ice cream: pour yoghurts into mixing bowl. Stir. Mix xanthan to icing sugar and add home made cordial. Disperse xanthan and sugar with blender, the syrup will become sticky and gooey but remains liquid. Pour the cordial into the yoghurt and whisk. Add color and flavoring to taste. Add some poppy seeds. Churn.

Variation: xanthan can be replaced by locust bean gum.

Chef Simon via <http://www.gastronomie.kalys.com>

Balsamic Vinegar Dressing

30 mL balsamic vinegar
20 g honey
1/4 t xanthan gum
60 mL extra virgin olive oil
salt

Mix in blender until smooth.

<http://www.recipezaar.com/242717>

Fake cappuccino foam

0.5 L cream liquor
0.4 g xanthan (0.08%)

Blend, strain and transfer to whipper. Charge with nitrous oxide. Refrigerate.

Mix coffee liquor, ice and vodka/brandy in a shaker. Top with fake cappuccino foam and chocolate shavings.

Adapted from recipe by H. Antoniewicz & A. Ariens-Derix

Coco cola

400 ml coconut juice
60 g sugar
160 g spray dried coconut
2.5 g xanthan gum (0.4%)

Warm 1/4 coconut juice to dissolve sugar, followed by dried coconut, last xanthan. Bring to a boil, strain, allow to cool to 45-50 °C mix with remaining xanthan. Strain, fill soda siphon (or whipper) and charge with carbon dioxide.

<http://willpowder.net>

Tempura batter

1 egg
100 g flour
2.5 dL ice cold water
3.5-5 g xanthan (1.0-1.5 %)

Beat egg in a bowl. Add ice water in the bowl. Be sure to use very cold water. Add sifted flour and xanthan in the bowl and mix. Xanthan improves adhesion properties of batter, i.e. for onion rings and shrimps.

<http://japanesefood.about.com> with modification inspired by CRC handbook of hydrocolloids

Espumas (non-gelatin)

Spinach Espuma

500 g drained and pressed out spinach
200 mL vegetable or poultry stock
300 mL heavy cream (33%)
salt
nutmeg
white pepper

Puree the cooled spinach with the cold vegetable or poultry stock very carefully in a mixer and pass through a fine sieve. Add the cream, season to taste and pour into a heat resistant whipper. Charge with nitrous oxide

Tip: Lightly brown 50 g of diced shallots and one chopped clove of garlic, add before pureeing the mixture. Refine with just a few squirts of lemon juice. Try warm spinach Espuma: Pour in the ingredients when still hot or heat whipper to around 60 °C.

iSi North America via <http://www.prairiemoon.biz>

Warm Potato Espuma

600 g boiled potatoes (boil until powdery)
300 mL whole milk
100 mL water in which potatoes were boiled
50 g butter
salt
nutmeg

Boil potatoes in salt water until done and pass through a sieve. Mix with hot milk, water in which potatoes were boiled and butter. Season and pour into a heat resistant whipper while warm. Charge with nitrous oxide.

iSi North America via <http://www.prairiemoon.biz>

Potato Foam

250 g potatoes, peeled and cut into chunks
125 mL single cream
35 mL virgin olive oil, plus extra for drizzling

Place the potatoes in a pan of cold water, bring to the boil, and cook for about 20 minutes until soft. Drain, reserving 100 mL of the cooking water. Place the cooked potato and the water in a blender. Purée, adding the cream little by little. Follow the same procedure with the oil until you have a smooth emulsion. Season with salt. Strain, then fill the siphon using a funnel. Charge with nitrous oxide, shake, and keep warm in a bain-marie at 70 °C.

Ferran Adria via <http://www.chubbyhubby.net>

Vanilla Yogurt Parfait

250 mL plain yogurt
250 mL heavy cream

2 T vanilla syrup

Fill 0.5 L whipper and charge with nitrous oxide. Shake and refrigerate for 2-4 hours before using.

<http://www.isinorthamerica.com>

Chocolate Mousse

400 g heavy cream
1-2 t instant coffee
8 T instant cocoa
2-3 T cognac/brandy
confectioners' sugar to taste

Swirl to dissolve all ingredients. Fill 0.5 L whipper and charge with nitrous oxide. Shake and refrigerate for 2-4 hours before using.

<http://www.isinorthamerica.com>

Foamy hot ginger mayonnaise foam

60 g egg yolk (ca. 2 yolks)
130 g eggs (ca. 2 eggs)
150 g sunflower oil
50 g olive oil
50 g ginger oil
7 g Dijon mustard
7 g Raspberry vinegar
7 g salt

Mix all ingredients in a bowl. Pass through strainer and fill 0.5 L whipper. Charge with nitrous oxide. Heat in Bain Marie to 70 °C. Shake every 15 min to prevent egg from setting.

Translated from <http://www.kochpiraten.de>

Multi-hydrocolloid recipes

Dessert jelly

500 g water
90 g sugar
10.2 g gelatin (type B, 240 Bloom)
2.3 g citric acid anhydrous
1.6 g tri sodium citrate dihydrate
0.35 g low acyl gellan
color and flavor as required

Blend all the dry ingredients. Heat the water to boiling and dissolve blend into the hot water by stirring for 1–2 minutes. Deposit and chill.

CRC Handbook of hydrocolloids

Vinaigrette-style salad dressing

7% spirit vinegar 12.5%
sugar 9.5%
salt 3.2%
iota carrageenan 0.3%
xanthan 0.15%
chopped spice pieces 1.0%
color
preservative
water to 100%

Mix and serve.

CRC Handbook of hydrocolloids

Hot transparent savory mousse

600 mL water
4.2 g carrageenan (0.7%)
0.4 g konjac (0.07%)
3 g maltitol
0.2 g xanthan (0.03%)
1 soup cube or 80 g meat juices or juices from a meat dish with a bouquet garni

Mix all dry ingredients (except xanthan) and add liquids. Heat all ingredients to close to boiling point (80°C) for a few minutes. Use power blender to avoid lumps. Strain if using herbs. Leave solution to set. Blitz the gel in a mixer with the pinch of xanthan. The gel will yield some water so you don't have to add any.

Strain through a mesh size suitable for the nozzle and pour into dispenser. Use 1 to 2 gas canisters following makers guidelines.

This mousse will be quite heat resistant and can be served hot or warm (40-50 °C max.).

By changing slightly the amounts of xanthan, you can easily modify viscosity and texture to get the best mousse.

<http://www.gastronomie.kalys.com>

Loukoums chew (sweets)

100 g sugar
150 mL fruit juice
75 mL glucose syrup
15 mL lemon juice
2 g of agar and tara in a 70:30 ratio

For molds
2 T vegetable oil

For coating
1 T glucose
1 t gum arabic
25 mL water

Disperse agar and tara in two thirds of fruit juice. Heat to boil and set aside to cool. Don't let the solution set!

Dry blend the remaining powders. Pour into a saucepan, add remaining juice and heat to boil while stirring well. Once all is blended, remove from fire and mix from time to time

Put agar and tara solution on heat to melt then pour onto other solution. Add lemon juice. Flavor or color may be added to taste. Mix well and pour into moulds or onto mould's greased surface

Leave solution to dry for at least 4 hours or even overnight. Cut into pieces.

Dissolve the Gum Arabic in the water. Dip the pieces into the solution using a clean needle then sprinkle sugar onto them. Leave in a warm and aerated place to dry off for a few days.

For variation, replace agar/tara by other combinations of gums :

1-2 g agar/tara, 70:30 ratio
1-2.5 g carrageenan/tara, 70:30 ratio
3-5 g xanthan/tara, 50:50 ratio
0.5-1 g konjac/carrageenan, 20:80 ratio
1-4 g konjac/carrageenan, 60:40 ratio

<http://www.gastronomie.kalys.com>

Flavored agar cream

1.5 g agar (0.7%)
120 mL liquid cream (or full fat milk)
30 mL milk
1 t angelica liqueur
30 g absinthe cordial
1 g xanthan (0.5%)
40 g water

Heat dairy ingredients with agar till boiling then after a couple of minutes cut off the heat. Pour into a large bowl and leave to set in refrigerator

for 1-2 hours. Turn gel out and cut in pieces.
Fill blender and blitz into cream.

Add liqueur, cordial, pinch of xanthan and water (a teaspoon at a time to check texture). Whisk to beat in as much air as possible.

<http://www.gastronomie.kalys.com>

Ravioli filled with mango mousse, beads of yoghurt and pine

1 ripe mango
200 g mango puree
3.5 g gelatin (~0.9%)
2 shoots of a young pine (the very tender, fresh leaves)
3.5 g of methyl cellulose (~0.9%)
Lemon juice
Rose leaves

For the yoghurt beads

200 g yoghurt
90 g double cream
30 g sugar
2 drops of pine extract

For the sodium alginate bath

1 L water
5 g sodium alginate

Cut the mango into fine (maximum 1 mm) sheets. Mix the mango puree with the shoots of the pine (cut into fine pieces). Divide the mango puree into two parts. The first part is heated to 40 °C and mixed with the gelatin. The second part is kept cool and mixed with the methylcellulose. Beat the 2 parts together into a light foam.

For the yoghurt beads; mix all the ingredients. Make an sodium alginate bath (reverse spherification) by mixing the water with the sodium alginate. Fill syringes with the yoghurt mixtures. Inject the mixture into the sodium alginate bath so you get beads (2 cm diameter). Leave the beads into the bath for 2 minutes. Rinse in water and leave into the water until use.

Fold the mango sheets into 4 to form like little cornets. Fill the cornets with the mango foam.

Dress the cornets on a plate together with the yoghurt beads, some mango coulis, leaves of roses and shoots of pine.

Sang Hoon Degeimbre via
<http://foodfordesign.blogspot.com>

Spherical olives (inverted spheres)

400 g olive juice
2.5 g calcium chloride (0.625%)
1.5 g xanthan (0.375%)

olive oil
garlic
thyme
orange/lemon peel
pepper

Setting bath

7.5 g sodium alginate (0.5%)
1.5 L water

Mix sodium alginate and water. Keep in fridge over night to allow bubbles to escape.

Prepare olive juice by filtering puréed olives through a chinoise cloth. Mix with calcium chloride. Sprinkle xanthan and mix with a hand held mixer (not an immersion blender) until desired consistency.

Gently head olive oil with garlic, thyme, citrus peel and pepper. Cool and store in tight container.

With a small spoon, transfer the thickened olive juice to the sodium alginate bath for setting. Rinse with water, let drip of and transfer to aromatized olive oil.

Paco Roncero via <http://www.chefkoch.de>

Kiwitire (oyster and kiwi pairing)

4 oysters
2 kiwis
1 spoon lemon juice
1 tea spoon wasabi powder

Coconut mix

100 g coconut puree
1 g tara gum (1.0%)

Sepia ink mix

50 g fresh sepia ink
0.5 g methylcellulose (1.0%)

Mix the coconut with the tara gum. Sieve. Keep fresh during 1 hour. Mix the sepia ink with the methylcellulose. Keep in the fridge

Peel the kiwi. Cut into small pieces (5 mm) but discard the white parts. Mix the wasabi together with the kiwi pieces. Open the oysters. On a plate put a spoon of kiwi pieces. On top the kiwi. Put a drop of sepia ink and a spoon of coconut next to the oyster.

Sang Hoon Degeimbre via
<http://foodfordesign.blogspot.com>

Balsamic vinegar syrup

100 mL balsamic vinegar (use cheap one)
30 g sugar
5 g Gelespessa (3.8%)

Gelespessa is a mixture of xanthan and maltodextrin.

Mix until desired consistency with immersion blender.

Dietmar Hölscher via <http://www.eispreis.de>

Soya sauce foam

500 ml soya sauce
25 g Gelespuma (5%)

Gelespuma is a mixture of lecithin, glucose, dipotassium phosphate and silica.

Mix soya sauce and gelespuma well with immersion blender. Leave foam to set for 1 min. Serve.

Dietmar Hölscher via <http://www.eispreis.de>

Mint jelly sauce

0.5 g konjac (0.1%)
1 g carrageenan (0.2%)
0.5 L water
mint (dried or fresh leaves)
1 grain sea salt
0.5 t sugar

Prepare a herbal tea or infusion of herbs. Add sugar and grain of salt. Infuse for 10-15 minutes. Add konjac and carrageenan. Bring to boil. Mix and keep on boil a couple of minutes. Strain into ramekins or bowls. To make jelly, blitz the gel in a blender after cutting into smaller pieces.

Variation: Adding a pinch of xanthan to the gel with a glass of water helps whisk the jelly into a foamy solution.

<http://www.gastronomie.kalys.com>

Spherical croquettes

250 g croquette base without flour
6 g calcium gluconate/calcium lactate (2.4%)
0.8 g xanthan (0.32%)

Setting bath
1000 g water
5 g sodium alginate (0.5%)

Blend the sodium alginate into the water until it dissolves. Leave in the fridge 12 h to eliminate excess air.

Dilute the calcium gluconate/calcium lactate mix in the croquette base, then mix in the xanthan with a hand blender to avoid lumps. Reserve in the fridge. Heat the croquette base until it regains a more liquid texture. Fill a 2.5 cm-diameter dosing spoon with the croquette

base and pour it into the sodium alginate and water solution. Give the resulting sphere an elongated shape with the aid of 2 spoons so that it looks like a traditional croquette. Leave the croquettes in the sodium alginate solution for 3 min, turn them over and cook for a further 1 min. Once this time has elapsed, strain with a draining spoon and place them in hot water (60° C) for 3 min. Remove from the water taking care not to break them. Dry the croquettes thoroughly and coat them in fried breadcrumb powder. Serve hot.

<http://www.texturasebulli.com>

Spherical mussels with bacon potato soup

100 g mussel water
0.5 g xanthan (0.5%)
2.5 g calcium gluconate/calcium lactate (2.5%)
20 clean rock mussels
200 g seawater
200 g water

Setting bath
1000 g water
5 g sodium alginate (0.5%)

Completely dissolve the sodium alginate in the water using a blender. Leave in the fridge for 12 h to eliminate excess air.

Dilute the calcium gluconate/calcium lactate in the mussel water with the aid of a hand blender. Add the xanthan and blend again until obtaining a fine texture. Vacuum pack this spherical mussel mixture to remove excess air and reserve in the fridge.

Place a mussel into a 2.5 cm-diameter dosing spoon together with 4 g of the spherical mussel base. Pour the contents of the spoon into the sodium alginate solution. It is extremely important that the spheres do not touch, as they will stick together. Cook the spherical mussels in the sodium alginate solution for 5 min. Strain the spheres with a draining spoon without breaking them and rinse in cold water. Drain the spherical mussels and keep them covered with the water and seawater mixture in the fridge.

Place the spherical mussels in hot water (60° C) for 3 min. Remove them from the water taking care not to break them and place them in a spoon or on the corresponding plate.

Serve hot.

<http://www.texturasebulli.com>

Veal bone marrow

20 g reduced red wine
200 g meat stock

0.4 g xanthan (0.33%)
4.5 g calcium gluconate/lactate (3.75%)
salt

Setting bath

1000 g water
5 g sodium alginate (0.5%)

Mix 100 g of the meat stock with the reduced red wine and add salt to taste. Dissolve the calcium gluconate/calcium lactate into the mixture. Use a hand blender to dissolve the xanthan and vacuum pack the solution to eliminate excess air. Set aside.

Completely dissolve the sodium alginate in the water using a blender. Reserve in the fridge for 12 h to eliminate excess air.

Fill a 2 cm-diameter dosing spoon with the mixture of the meat stock, reduction and calcium gluconate/calcium lactate.

Pour the contents of the spoon into the sodium alginate bath, forming spheres. It is extremely important that they do not touch, as they will stick together. Cook the spheres in the sodium alginate mixture for 5 min.

Strain the spheres without breaking them using a draining spoon and rinse them in cold water. Strain again and keep them covered with the other 100 g of meat stock. This inverted sphere is perfect as a sauce to accompany meat, in this case veal marrow.

<http://www.texturasebulli.com>

Sweet potato sweet

Sugar 37%
Glucose 21%
Agar 0.181%
Locust bean gum 0.29%
Fresh sweet potato with skin 80%.

Peel the potato. Boil it in water. Sieve it to a state of purée. Mix the purée with sugar and glucose. Concentrate by boiling until 60° Brix. Add the agar that has previously been dissolved at 25%. Bring the mixture to 58/60° Brix. Add to this mixture the LBG that previously has been dry mixed at four times its weight in sugar and dissolved in cold water at 6–7 times the total weight. Carry all of it to a 60.5° Brix, flavor and can while hot.

B. Fiszman in CRC Handbook of hydrocolloids

Appendix

Conversion table for brand names

Name	Texturas	texturePro	Sosa
Agar	Agar	Agazoon	
Calcium chloride	Calcic		
Calcium gluconate	Gluc ^{a)}		Gluconolactat ^{a)}
Calcium lactate		Calazoon	
Gellan gum	Gellan	Gellazoon (high/low)	
Guar gum		Guarzoon	
Iota carrageenan	Iota	Iotazoon	
Kappa carrageenan	Kappa		
Lecithin	Lecite		Gelespuma ^{b)}
Locust bean gum		Locuzoon	
Maltodextrin	Malto		
Methyl cellulose	Metil	Celluzoon	
Mono/diglyceride	Glice		
Pectin			GelGras
Sodium alginate	Algin	Algizoon	Gelesfera
Sodium citrate	Citras		
Sucrose esters of fatty acids	Sucro		
Xanthan gum	Xantana	Xanthazoon	Gelespessa ^{c)}

a) A mixture of calcium gluconate and calcium lactate

b) A mixture of lecithin, glucose, potassium phosphate and silica

c) A mixture of xanthan and maltodextrin

Typical concentration ranges

	Low	Medium	Hard
Agar	0.25 %	0.5 %	1.0 %
Kappa carrageenan	<0.1 %	1.0 %	1.5 %
Iota carrageenan	<0.1 %	1.0 %	1.5 %
Gellan	0.5 %	1.0 %	2.5 %
Gelatin		1.0%	
Sodium alginate	0.5%	1.0 %	
Xanthan	0.25 %	0.5 %	0.75 %
Methyl cellulose	1.0 %	2.0 %	

Miscellaneous

1 gelatin sheet = 1.7 g

nitrous oxide = dinitrogen oxide = N₂O = cream charger

carbon dioxide = CO₂ = soda charger

t = tea spoon

T = table spoon

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