TECHNICAL APPLICATION
INFORMATION

Herbstreith&Fox

Pectin Amid CS 005 for Highest Demands in Confectionery Production

Introduction

The use of pectins in jelly and gum confectionery gains more and more growing importance in the confectionery industry.

Beside the typical products such as jelly fruits and gum products also jelly bananas or extremely acidic fruit gums are part of the product range of gum confectionery.

In general the recipes for jelly and gum confectionery contain sugar, glucose syrup, water, buffer salts and pectin. Furthermore these products obtain their taste with the addition of flavours and citric acid.

Notably pectins are used in jelly and gum products together with different buffer salts (retarders) to achieve a great product variety as regards taste and texture.

For this purpose H&F offers Classic confectionery pectins which are already standardised with buffer salts, but also Classic pectins requiring the addition of buffer salts in the recipe.

The selection of the pectin type, the type of buffer salt as well as the pectin dosage depend on the designated demands on the final product.

Here a distinction is made between jelly fruits, pectin bears and pectin pastilles (fig. 1).

One of the most important demands of the confectionery industry is the processability of the jelly mass at relatively high soluble solids contents. This comprises sufficiently long filling times, relatively low filling temperatures and a quick gelation of the final products resulting in elastic-viscous gel textures.
The processability, especially the filling temperature, depends on the setting temperature of the jelly masses.

Fig. 1

Typical pectin dosages for gum and jelly products with H&F Classic pectins

Jelly fruits	1.3 - 1.5% Classic pectins (plus separate addition of buffer salts) resp. 1.7% Classic pectins (already standardised with buffer salts)
Pectin bears:	2.5% Classic pectins (already standardised with buffer salts)
Pectin pastilles:	4.0% Classic pectins (already standardised with buffer salts)

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	Potassium citrate E 332	Potassium sodium tartrate E 337	Sodium lactate E 325	Sodium citrate E 331
Setting temperature	+++	++	++	+
Texture	elastic-brittle	elastic-brittle	elastic, little viscous parts	elastic-viscous

Table: Influence of different buffer salts on gelation and texture of a jelly fruit mass.

The pH-value of the product and the soluble solids content of the jelly mass have a direct influence on the setting temperature. The higher the soluble solids content and the lower the pH-value, the faster gelation takes place.

Furtheron the setting temperature is fixed by the degree of esterification of the pectin used as well as by the type and the amount of the added buffer salt. Setting temperature and setting time, but also the texture, can be decisively altered by the selection of different buffer salts.

Additionally to the well-established H&F Classic Pectins, the H&F Pectin Amid CS 005 was developed for the production of confectionery meeting varied demands of the confectionery industry.

This pectin is a high methylester, amidated citrus pectin which provides a slower gelation than H&F Classic pectins.

The setting temperature of jelly masses produced with this pectin is also designated by its degree of esterification. Furtheron the amid groups influence the quickness of setting. The setting temperature of Pectin Amid CS 005 can be also additionally decreased by adding a buffer salt.
With the same recipe parameters the setting temperature of a jelly mass produced with Pectin Amid CS 005 is definitely lower than with H&F Classic pectins (fig. 2).

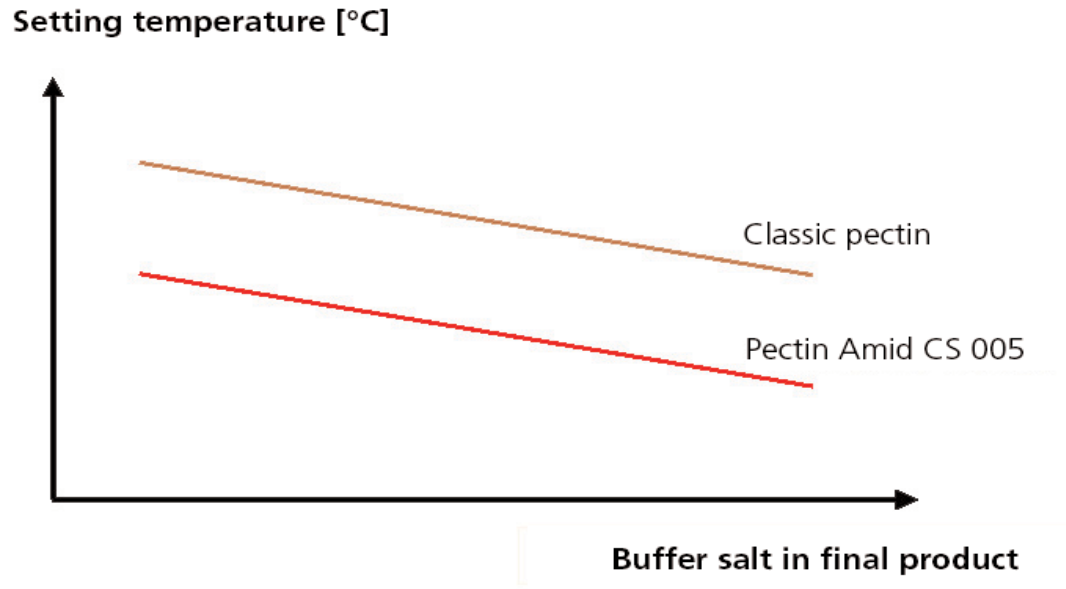

Fig. 2: Setting temperature in dependence from buffer salt dosage

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Thus a longer processability of the jelly masses is achieved which means that long filling times at lower filling temperatures or also at higher soluble solids contents (such as fruit leather) are possible with this pectin.

Furthermore the products produced with Pectin Amid CS 005 are characterised by a very smooth and brilliant cut.

Due to these gelling properties jelly fruit masses with Pectin Amid CS 005 can be produced comfortably without the addition of buffer salts. With that Pectin Amid CS 005 can be used with lowest amounts of acid for confectionery for which no sour taste is desired, e.g. jelly fruits flavoured with banana or vanilla.

Pectin Amid CS 005 can also be used in confectionery in combination with a retarder if it should be necessary for technological reasons, e.g. for further decreasing of the setting temperature or for taste reasons, e.g. for the production of sour up to extremely sour products.

When buffering the preparation by increasing the pH-value, e.g. by adding sodium citrate or potassium citrate, it is necessary to add the acid partially prior to cooking. 1/3 of the total acid amount should be added at the beginning.

In the following there are some recipes which can be seen as basis for the production of jelly and gum products with Pectin Amid CS 005.

Summary

Due to its specific gelling properties Pectin Amid CS 005 provides technological advantages in the production of gum confectionery. The very low setting temperature of the jelly masses produced with Pectin Amid CS 005 guarantees a very long processability (long filling times, low filling temperature) and with that an assured production technology. Using Pectin Amid CS 005 products of different acidic degree can be produced, from low-acidic taste up to extremely acidic. The possibility to reach good processability and long filling time also at higher soluble solids contents also favours the use of Pectin Amid CS 005 in gum confectionery with high soluble solids content.

PECTIN AMID CS 005 IN JELLY AND GUM PRODUCTS

Properties:

Good processability by low setting temperature
- Long filling times
- Lower filling temperatures
- Applicable at high soluble solids content

Small need of buffer / acid
- Jelly product without acidic taste

For the production of confectionery with
- Elastic-viscous texture
- High firmness, very smooth and brilliant cut
- Great variety as regards taste (from very sweet to extremely acidic)

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Herbstreith & Fox KG — Recipe

Jelly fruit with low acidic taste

Product **Pectin Amid CS 005**

15g	Pectin (= 1.5%)
500g	Sucrose, crystalline
330g	Glucose syrup (C*Sweet M 01535, Company: Cerestar)
220g	Water
	Colour, flavour
4.5ml	Citric acid solution 50% to adjust pH-value

Input:	approx. 1080g
Output:	approx. 1000g
SS:	approx. 78%
pH-value:	approx. 3.2 - 3.4

- Mix the pectin with approx. 100g sucrose (from the total amount).
- Stir mixture A into water and boil while stirring until the pectin is completely dissolved.
- Add the remaining sucrose and the glucose syrup and boil to final soluble solids.
- Add colour and flavour.
- Add citric acid solution to adjust the pH-value.
- Fill into forms, filling temperature approx. 85 - 95°C.

Jelly fruit with low acidic taste with Pectin Amid CS 005

Jelly fruit masses produced with Pectin Amid CS 005 show sufficiently long filling times also without separate addition of retarders.

The jelly fruits are characterised by a sweet taste with low acidic impression, furtheron by a very smooth and firm gel texture.

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Herbstreith & Fox KG — Recipe

Pectin bears

Product **Pectin Amid CS 005**

25g	Pectin (= 2.5%)
380g	Sucrose, crystalline
475g	Glucose-fructose-syrup (C*TruSweet 01732, Company: Cerestar)
200g	Water
2.0g	tri-sodium citrate x $2H_2O$ Colour, flavour
12ml	citric acid solution 50% to adjust pH-value

Input:	approx. 1080g
Output:	approx. 1000g
SS:	approx. 79 - 80%
pH-value:	approx. 3.2 - 3.4

- Mix pectin and sodium citrate with approx. 100 g sucrose (from the total amount).
- Stir mixture A into water and add approx. 4ml citric acid solution (from the total amount) and boil until the pectin is completely dissolved.
- Add the remaining sucrose and the glucose-fructose-syrup and boil to final soluble solids.
- Add colour and flavour.
- Add the remaining citric acid solution to adjust the pH-value.
- Fill into form powder, filling temperature approx. 85 - 95°C.

Pectin bears with Pectin Amid CS 005

Pectin bears produced with Pectin Amid CS 005 show a viscous-elastic texture and a mild acidic taste.

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Herbstreith & Fox KG — Recipe

Pectin jellies with acidic taste

Product **Pectin Amid CS 005**

25g	Pectin (= 2.5%)
380g	Sucrose, crystalline
475g	Glucose-fructose-syrup (C*TruSweet M01732, Company: Cerestar)
200g	Water
15g	tri-Sodium citrate x $2H_2O$
9,5g	pure citric acid, crystalline
	Colour, flavour
38ml	Citric acid solution 50% to adjust pH-value

Input:	approx. 1050g
Output:	approx. 1000g
SS:	approx. 79 - 80%
pH-value:	approx. 3.2 - 3.4

- Mix pectin and sodium citrate with approx. 100g sucrose (from the total amount).
- Stir the crystalline citric acid and mixture A into water and boil until the pectin is completely dissolved.
- Add the remaining sucrose and the glucose-fructose-syrup and boil to final soluble solids.
- Add colour and flavour.
- Add citric acid solution to adjust the pH-value.
- Fill into form powder, filling temperature approx. 85 - 95°C.

Pectin jellies with acidic taste with Pectin Amid CS 005

Jelly fruit masses produced with Pectin Amid CS 005 dispose of a sufficiently long filling time, also with high acid amount.

The jellies show a fruity, acidic taste and a viscous-elastic texture.

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Herbstreith & Fox KG — Recipe

Fruit leather

Product **Pectin Amid CS 005**

15g	Pectin (= 1.5%)
50g	Fruit juice concentrate approx. 65% SS
520g	Sucrose, crystalline
350g	Glucose-fructose-syrup (C*TruSweet M01732, Company: Cerestar)
150g	Water
2.0g	tri-Sodium citrate x $2H_2O$
12ml	Citric acid solution 50% to adjust pH-value

Input:	approx. 1100g
Output:	approx. 1000g
SS:	approx. 83 - 84%
pH-value:	approx. 3.3 - 3.5

- Mix pectin and sodium citrate with approx. 100g sucrose (from the total amount).
- Stir mixture A into fruit juice, water and approx. 4ml citric acid solution (from the total amount) and boil until the pectin is completely dissolved.
- Add the remaining sucrose and the glucose-fructose-syrup and boil to final soluble solids.
- Add the remaining citric acid solution to adjust the pH-value.
- Fill into form powder, filling temperature approx. 85 - 95°C.

Fruit leather with Pectin Amid CS 005

Fruit leather produced with Pectin Amid CS 005 shows a good processability despite its high soluble solids content.

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