Herbstreith&Fox

Glazes and Spray Glazes

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Content

Glazes
and Spray Glazes

Glazes and spray glazes are gel preparations, which are applied hot to the surface of cakes and pastries that are ready baked and often topped with fruit or fruit preparations. The resultant gel layer protects the pastries from drying out, prevents discolouring of the fruits and provides the desired glossy surface to the cakes or pastries.

In order to achieve a homogeneous gel layer with a smooth and appealing sheen, the technological and quality requirements of glazes and spray glazes are extremely high. By specifically employing amidated H&F "Amid" Pectins, which are specially standardised by our H&F specialists for use in glazes and spray glazes, the required technological properties can be controlled without difficulty.

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Cold-use glazes exhibit a shear-reversible texture and, thus, can be applied cold to the cakes or pastries. This specific texture is obtained by using special H&F Amid Pectins, which are standardised to this application by the addition of distinct buffering agents.

Types *of Glazes*

Fig. 1: Brush application

Fig. 2: Spray glaze

In general, on account of their various processing possibilities and application technologies, the following types of glazes are distinguished:

- **Classical glazes**
  in an TSS-range > 55% are available as semi-finished glazes (60-65% TSS). Before being applied, they are diluted with 0-20% water, heated to approx. 90°C so that they melt and then applied to the product with a brush.

- **Concentrated glazes**
  are provided as semi-finished products in paste-like or firmly gelled form. Before further processing, they are diluted with 20-70% water, heated to approx. 90°C so that they melt and then brushed hot onto the product.

- **Ready-to-use spray glazes**
  are provided as semi-finished products in liquid form. They are heated up to 80-90°C using a heatable spraying device and then sprayed onto the product.

- **Cold-use glazes**
  with an TSS-range of 60-65% are applied cold to the product and provide a delicate gel on account of reversible texture properties.



Requirements *for Glazes*

The glaze on cakes or pastries should display a smooth, shiny and transparent surface and should be evenly spread over the entire product. This requires safe and simple processing and an optimum gelation of the glaze on the product.

The thermo-reversible gel structure generated by amidated pectins allows for the complete melting of the semi-finished product. In the subsequent glazing, a low gelling temperature of around 60°C ensures high flexibility during processing. After the glazes have been applied to the pastries, the quick gelation prevents the glaze from running off the fruit or soaking into the pastries, which would adversely affect both the appearance and the quality of the finished product.

As spray glazes are processed with spraying machines, the requirements for spray glazes are distinctively higher. It is especially important that the gel particles in the semi-finished product are as small as possible and of the same size, in order to ensure steady melting in the spraying machine and to prevent the spray nozzle from being clogged up by gel particles that are not completely melted. In addition, low viscosity during spraying results in a thin layer of glaze on the pastries.

With the use of Herbstreith & Fox Amid Pectins as well as the appropriate application technology, the various types of glazes can be manufactured without difficulty and with high production reliability.

Fig. 3: Ready-to-use spray glaze

Fig. 4: Dilutable concentrated glaze

Manufacturing Technique

Classical and concentrated glazes can be filled either hot or cold. When they are filled hot, the semi-finished product obtains a firm, cuttable texture that becomes creamy when stirred. Hot depositing is, however, only possible when small containers are used as, with larger containers, the product may be impaired by long cooling periods.

When glazes are filled cold, they are cooled over a defined temperature range under a constant shear stress. In industrial production, a scraped surface heat exchanger is frequently used for this, which, with its scraper keeping close to the barrel wall during the cooling phase, guarantees that the glazes obtain an extremely homogeneous and very fine pre-gelation. This process is often performed under vacuum in order to reduce the risk of unwanted air being mixed into the viscous semi-finished product.

Spray glazes are produced on the basis of concentrated glazes which have been filled cold. To adjust the respective soluble solids content, the required amount of water is added to the concentrated glaze under constant stirring. Water should be added at low product temperatures to prevent the gel particles from melting. This ensures that the viscosity of the spray glazes is kept as low and the gel particles as small as possible, thus guaranteeing smooth and trouble-free processing in the spraying machine.

SELECTED *Recipes*

Classical Glaze

prepared with H&F Pectin Amid CB 020-A

The less reactive amidated pectin "Pectin Amid CB 020-A" is suitable for use in glazes which are to be minimally diluted or not at all. It results in a tolerant gelation in glazes producing a final product of 55-65% TSS. The pectin is completely buffered and, at a working range of 0-45°TH (French degree of hardness), or 0-180 mg/l calcium ion water hardness, does not as a rule need further buffering.

Herbstreith & Fox KG **Recipe**

Classical Glaze

Product **Pectin Amid CB 020-A**

9g	pectin (= 0.9%)
480g	sucrose, crystalline
200g	glucose syrup (15% dextrose, 15% maltose, 13% maltotriose)
330g	water
7ml	citric acid solution 50%, to adjust the pH-value

Net weight:	approx. 1030g
Output weight:	approx. 1000g
TSS:	approx. 65%
pH-value:	approx. 3.4-3.6

Manufacturing:

A Mix pectin with approx. 100g sucrose from total amount.

B Stir mixture "A" into water and citric acid solution, bring to boil and continue to stir until the pectin is completely dissolved.

C Add remaining sugar and glucose syrup and decoct to final soluble solids.

D Adapt filling temperature to container size.

Preparing the final product:

E Add 10% water and bring to boil.

Herbstreith & Fox KG

Recipe

Concentrated Glaze

Product **Pectin Amid CB 025-A**

12g	pectin (= 1.2%)
480g	sucrose, crystalline
200g	glucose syrup (15% dextrose, 15% maltose, 13% maltotriose)
330g	water
5ml	citric acid solution 50%, to adjust the pH-value

Net weight:	approx. 1030g
Output weight:	approx. 1000g
TSS:	approx. 65%
pH-value:	approx. 3.4-3.6

Manufacturing:

A Mix pectin with approx. 100g sucrose from total amount.

B Stir mixture "A" into water and citric acid solution, bring to boil and continue to stir until the pectin is completely dissolved.

C Add remaining sugar and glucose syrup and decoct to final soluble solids.

D Adapt filling temperature to container size.

Preparing the final product:

E Add 20-70% water and bring to boil.

Concentrated Glaze
prepared with H&F Pectin Amid CB 025-A

This concentrated glaze conforms to the contemporary glaze recipe for dilution with a variable amount of water. When the buffered H&F Pectin Amid CB 025-A is used, the recipe is easy to adjust. With a water hardness range of 0-45 °TH, or 0-180mg/l calcium ions, no additional buffering agent is required as a rule. If dilutions > 70% or higher firmnesses are required, the pectin dosage may be increased.

Ready-to-use Spray Glaze
prepared with Pectin Amid CB 025

Ready-to-use spray glazes are manufactured on the basis of soft-textured concentrated glazes, which are then diluted with water. When adding the water to the concentrated glaze it is important that the dilution temperature be kept as low as possible, in order to prevent post-gelation. Furthermore, homogeneous and complete shearing of the entire product mass must be ensured to avoid the presence of larger gel particles in the final product. The resultant spray glaze exhibits a free-flowing, very finely pre-gelled texture of low viscosity, which melts easily when passing through the spraying machine and which produces a smooth and even glaze coating.



Herbstreith & Fox KG — Recipe

Ready-to-use Spray Glaze

Product **Pectin Amid CB 025**

8g	pectin (= 0.8%)
280g	sucrose, crystalline
190g	glucose syrup (15% dextrose, 15% maltose, 13% maltotriose)
540g	water
1.7g	tri potassium citrate x H_2O
0.2g	tri calcium dicitrate x 4 H_2O
7ml	citric acid solution 50%, to adjust the pH-value

Net weight:	approx. 1020g
Output weight:	approx. 1000g
TSS:	approx. 44%
pH-value:	approx. 3.4-3.6

Manufacturing:

A Mix pectin and potassium citrate with approx. 100g sucrose from total amount.

B Stir mixture "A" into 210g water, calcium dicitrate and citric acid solution, bring to boil and continue to stir until the pectin is completely dissolved.

C Add remaining sugar and glucose syrup and decoct to approx. 65% TSS (670g) .

D Cool down to approx. 25°C while stirring.

E Add remaining water (330g) to dilute the concentrate.

Herbstreith & Fox KG — Recipe

Cold-use Glaze

Product **Pectin Amid CB 005-A**

9g	pectin (= 0.9%)
440g	sucrose, crystalline
250g	glucose syrup (15% dextrose, 15% maltose, 13% maltotriose)
320g	water
2ml	citric acid solution 50%, to adjust the pH-value

Net weight:	approx. 1020g
Ouput weight:	approx. 1000g
TSS:	approx. 65%
pH-value:	approx. 3.2-3.8

Manufacturing:

A Mix pectin with approx. 100g sucrose from total amount.

B Stir mixture "A" into water and citric acid solution, bring to boil and continue to stir until the pectin is completely dissolved.

C Add remaining sugar and glucose syrup and decoct to final soluble solids.

D Cool down to approx. 40°C while stirring.



Ready-to-use Spray Glaze
prepared with H&F Pectin Amid CB 025

Both the concentrated glaze and the ready-to-use spray glaze may also be manufactured using the unbuffered pectin variant Amid CB 025. Here, the product can be adjusted with outstanding accuracy to the specific requirements of the user. Gelling temperature and texture can be adjusted by varying the calcium dosage, and the hardness of the water used must be taken into account when adjusting the recipe.

Fig. 5: Apple tart with spray glaze

Cold-use Glaze
prepared with H&F Pectin Amid CB 005-A

A glaze for direct application, without heating or dilution, can be prepared with Pectin Amid CB 005-A. The product has a gel-like texture, which becomes viscous-liquid when stirred. This means that the cold glaze can be applied directly to cakes and pastries, where its reversible texture solidifies again. It is also possible to lightly dilute the product with cold water (approx. 10%) in order to promote liquefaction. Afterwards, a gel-like layer likewise forms again.

Fig. 6: Glazed pastry

H&F Amid Pectins *for Glazes*

H&F offers various amidated citrus pectins for the production of glazes. Most pectins have already been standardised to the specific requirements of the various types of glazes by the addition of buffer salts. We are very happy to provide application support for the efficient and trouble-free use of these Amid CB-Pectins, to ensure that you obtain the desired product properties in the glazes prepared with them.

For specific requirements regarding Amid CB-Pectin we are also happy to develop customised pectin types.

Pectin	DE° [%]	DA° [%]	Standardisation Composition	Characteristics / Properties	Main Applications
Amid CB 020-A	28-31	19-22	Constant calcium sensitivity, constant gelling behaviour. E 440, E 452, E 333	Amidated citrus pectin with buffering agents	Classical glazes for dilution with 0-10% water (62-65% TSS, pH 3.3-3.8)
Amid CB 025	23-28	22-25	Constant calcium sensitivity, constant gel strength. E 440	Amidated citrus pectin	Concentrated glazes for dilution with 20-70% water (62-55% TSS, pH 3.3-3.8) Ready-to-use Spray Glazes (40 - 45 % TSS, pH 3.3-3.8)
Amid CB 025-A	23-28	22-25	Constant calcium sensitivity, constant gelling behaviour. E 440, E 452, E 333	Amidated citrus pectin with buffering agents	Concentrated glazes for dilution with 20-70% water (62-55% TSS, pH 3.3-3.8)
Amid CB 005-A	30-35	4-10	Constant calcium sensitivity, constant gelling behaviour, constant flow behaviour, E 440, E 450, E 452	Amidated citrus pectin with buffering agents	Cold-use glazes (pH 3.1-3.7)




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1. edition

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