

# VIDOPECTINE®



## Confectionery

## Acidic or fruit flavoured jellies

Confectionery Jellies belong to the broader class and more extensive group of gummies, gums, pastilles and jellies whose texture has changed significantly over time, from tough, less chewy textures, to increasingly tender, soft and chewier. Jellies would be described as having a short and delicate texture with a clear cut, breaking down quickly in the mouth, pretty much the opposite of what you would see in gummy candy with their slow-melting behaviour and very chewy texture.

The primary use of pectin in confectionery is in such jellies, and there are two basic groups of them, fruit flavoured jellies and neutral flavoured jellies. Within these groups, there are numerous variants, such as acidic flavoured jellies with fruit juice, fruit paste or just colour and flavour and acid, neutral flavoured jellies like Turkish Delight, chocolate-coated or sugar-coated jellies, fruit slices, aerated jellies (Zefir), cake decorations (e.g. jelly cherries), inclusions and others. Also, with the use of, or combination with other hydrocolloids or through recipe modifications, the confectionery product can vary significantly in texture. From a hard, tough, short and brittle, to a chewy or a longer and more rubbery texture. From a non-gelled and viscous filling for hard candy or chocolates to a gelled aerated, whipped confection product.

Although other gelling agents than pectin might also be suitable to achieve similar textures in such products, pectin is the preferred gelling agent, particularly in jellies, for the following advantages:

- Excellent and un-matched flavour release.
- Brilliant and clear gel, fine and short texture with a clear cut and superior eating quality.
- Excellent heat resistance to thermal degradation during production.
- Setting characteristics can be controlled quickly and easily.
- Suitable for batch processing and continuous processing.
- Gelling happens quickly after depositing, no depositing in starch necessary.
- Very good humectant properties, long shelf life, no drying or crystallization.
- Good compatibility with other hydrocolloids commonly used in confectionery, like, e.g. starches or gelatin, with the chance to create jellies with a large variety of different textures.

Acidic, fruit-based or flavoured jellies, usually with a pH in the range of 3.3 – 3.8 and soluble solids between 76 and 85% are best produced using high ester/high methoxyl (HM) pectin. Ideally and almost always a Slow Set HM pectin is used as the setting characteristics of this type of pectin allows the whole batch to be deposited before it gels and without pre-gelation, despite the high solids content and low pH. The pH must be closely controlled during cooking and processing in these systems and recipes, to limit inversion of the sugar and degradation of pectin, but also to prevent pre-gelation before and during depositing. Buffer salts are necessary to achieve this. The buffer salts are often incorporated into the pectin by the pectin producer for the convenience of the pectin user, or the user adds them.

VIDOPECTINE confectionery pectins are available both in buffered or un-buffered grades, and some of these pectins may also include sequestrants which help to reduce the impact of poly- or divalent cations, which may cause high hot viscosity during cooking and depositing.

Fruit juices may be added at approximately 10 - 15% in the recipe to improve the flavour and colour. Fruit pulp is another option, resulting in a thicker, more viscous and pulpy texture, like in the popular French Pâtes-de-Fruits. The addition of starches adds another texture to the product, more chewy and long, and often masks the flavour and affects the appearance making the jellies opaque.



## Basic recipe using un-buffered and buffered HM Slow Set Confectionery pectin

	Ingredients	Un-buffered	Buffered
		g	g
<b>A</b>	Water	300	300
	Citric acid monohydrate	1.5	1
	Potassium Citrate	2.5 – 3.5	-
<b>B</b>	VIDOPECTINE CH 6010 (buffered)	-	13.0
	VIDOPECTINE CH 6060 (un-buffered)	9.5	-
	Sugar	50	50
<b>C</b>	Sugar	450	450
	Glucose syrup 42DE, 82%SS	300	300
<b>D</b>	Citric acid soln. 50%	approx. 6	approx. 6
	Flavour, colour	as required	as required
<b>E</b>	Output/batch weight	1,000g	1,000g
	Soluble solids	78%	78%
	pH	3.3 – 3.6	3.3 – 3.6
	<b>Process</b>		
<b>A</b>	Mix ingredients in A in the kettle.		
<b>B</b>	Dry-mix pectin and sugar, add this mix into A with vigorous mixing to avoid lumping.		
<b>C</b>	Heat to the boil under stirring, boil for 1 minute to hydrate the pectin completely.		
<b>D</b>	Add the sugar (from C) in several parts while heating, then the glucose syrup, making sure the batch temperature does not drop below 80°C.		
<b>E</b>	Boil until the required solids content is reached, check using a refractometer.		
<b>F</b>	Add flavour, colour and citric acid solution, make sure they are well distributed throughout the batch.		
<b>G</b>	Deposit immediately into the molds.		

## Notes

The citrate (or another alkali) ideally is included at the start of the process together with approximately 1/3<sup>rd</sup> of the acid. The rest of the acid is added just before depositing. This guarantees adequate pectin hydration and causes a lower cooking viscosity through a strong buffering effect.

A more acidic flavour and sour taste of the jellies without making the pectin gel too fast due to the lower pH can be achieved by increasing the titratable acidity rather than just lowering the pH by more acid or fruit juice. The titratable acidity can be increased while maintaining the same pH by adding one part potassium citrate and ¾ parts of citric acid.

The texture of the jellies can be adjusted by altering the pectin dosage. However, this will also affect the setting characteristics. Ingredients like glucose syrup also do affect both texture and setting characteristics. A certain ratio of glucose syrup (or rather said reducing sugars, which can be calculated from the DE value of the glucose syrup) is necessary to prevent crystallization of the jellies during storage. But if the ratio is too high, the jelly becomes less elastic and tends to sweat on storage.

The use of re-work is not recommended, but if included, make no allowance of the pectin from the re-work cause this is not properly functional any longer.

Pectin jellies can be deposited into starch, metal, rubber, silicone or plastic molds after the addition of the acid. If deposited into starch, the solids content of the batch should be no more than 76%, as drying in the mold raises the solids content by approx. 2 %. Once gelled, the jellies can be sugar-coated, chocolate-enrobed or finished as required.

## Neutral flavoured jellies

Neutral flavoured or slightly acidic jellies are such products with a less sour taste, with a higher pH and with other flavours than fruit such as butterscotch, vanilla, rose, peppermint, Turkish Delight etc. Such jellies often have a texture which is softer and less elastic/gelled or pastier, than the usual jellies made with HM Slow Set pectin. The soluble solids, however, would be the same.

HM pectin is not suitable for such jelly products as the pH usually is around pH 4.5 and therefore too high for

HM pectin to function correctly. Low Methoxyl (LM) pectin must be used here instead.

LM pectin gels in a different way than HM pectin, by reaction with calcium. The cooking method, however, in general, is the same as for HM pectin, except that there is no acid added after cooking/before depositing. The system must be as carefully controlled during the cooking process as the HM pectin system. Pectin degradation due to the high pH (pectin is more heat stable at low pH than at a pH above 4.8) and premature setting/pre-gelling is a risk, which is why the pH is usually controlled with buffer salts between 4.2 – 4.8 in the batch. Additionally, it can be necessary to use sequestering agents to control the amount of calcium or other divalent cations present in the cooking batch, which could cause pre-gelation or high viscosity of the batch.

UNIPEKTIN Ingredients AG offers various VIDOPECTINE LM pectins to the confectionery industry, amidated or conventional, buffered or un-buffered.

## Other confectionery products made with pectin

Confectionery producers take advantage of the unique gelling and thickening performance of pectins in several more unusual or country or regional-specific confectionery products. Aerated or whipped confectionery, gummy candy and hard candy fillings are just a few of the examples.

### Gummy candy with pectin/gelatin combinations:

Pectin and gelatin are often used together to achieve a range of textures from chewy/tough to tender/soft and to modify the typical chewy and long gelatin texture towards a shorter, more gel-like consistency.

The addition of pectin to gelatin-based confectionery products also improves the viscosity in the cooking batch, it makes the setting behaviour better controllable, reduces the stickiness, enhances the gel clarity, and increases the melting temperature or in other words the form stability of gelatin gummy candy at higher storage temperatures.

Low levels of a VIDOPECTINE Slow Set or Extra Slow Set confectionery pectin can be used to modify the setting or gelling behaviour of gelatin confectionery systems without significant changes in texture. Logically, gelatin can be used in pectin jellies to achieve texture modifications.

## Aerated Confectionery products:

Probably the most popular and well-known confectionery product in this category is the Eastern European and Russian Zefir (may also be spelled Zephyr or Zephir). Zefir is a type of soft confectionery with a delicate and airy texture, made by whipping fruit and berry purée (mostly apple puree) with sugar and egg whites with the subsequent addition of a gelling agent like pectin.

Zefir is derived from the traditional Russian Pastila but with added egg white foam and pectin. It is somewhat similar in its consistency to marshmallows or the German Schokokuss. The form typically resembles the traditional meringue. However, in contrast to some commercial meringues, it is never crisp. It is usually white or rose-coloured and dusted with fine or powder sugar. Chocolate-coated versions are also widespread.



Apple pectin Slow Set Confectionery is the traditional pectin of choice in Zefir, for its more forgiving and flexible gelling behaviour compared to citrus pectin. UNIPEKTIN sells both VIDOPECTINE apple and citrus pectin to Zefir producers, depending on their preferences.

## Some of UNIPEKTIN's pectin types for Confectionery products

High Methoxyl pectins				
VIDOPECTINE	Description	Typical DM	Standard	Typical application
CH 6010	Confectionery pectin, citrus/apple, buffered	60	Gel strength, setting time, buffered with K-Na-tartrate + SHMP	Confectionery jellies, fruit leathers, gummy bears
CH 6060	Confectionery pectin, citrus/apple	60	Gel strength, setting time	Confectionery jellies, fruit leathers, gummy bears
CHA 6070	Confectionery apple pectin	62	Gel strength, setting time, setting speed	Zefir, Confectionery jellies, fruit leathers
CH 5840	Confectionery pectin Extra Slow Set, citrus/apple, buffered	60	Gel strength, setting time, buffered with Na-Citrate + SHMP	Confectionery jellies, fruit leathers, gummy bears

## Product Suitability

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It is in the interest of the customer and user to determine whether our products are suitable for the intended use and if they do comply with all applicable laws and regulations valid for the food industry in their country and also observe all third-party rights



## *Know-How and Experience*



## **UNIPEKTIN Ingredients AG**

Bahnhofstrasse 9  
8264 Eschenz  
Switzerland

Tel.: +41 52 742 3131

Fax: +41 52 742 3132

Email: [info@unipektin.ch](mailto:info@unipektin.ch)

Visit our website at  
[www.unipektin.ch](http://www.unipektin.ch)

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