

Ystral

Pectin in fruit juice



There are several methods to mix-in Pectin:

Adding the Pectin directly into the ready made product (fruit juice)

The direct mixing-in is the most difficult method. In case a simple stirrer is installed into the vessel only and the Pectin is added from the top, then the Pectin must be homogeneously pre-mixed in its dry condition with a lot of sugar (Ratio 1:5 to 1:10) or any other powdery component of the receipt. The adding has to be effected very very slowly and even then it cannot be avoided that the Pectin is only partially combusted.

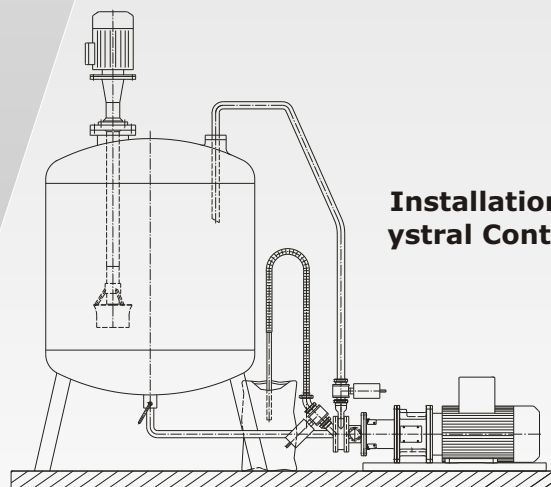
The best method for a direct incorporation of the Pectin is the use of a Conti-TDS. This machine guarantees an immediate dispersion and homogeneous distribution in the liquid. Even then it is an advantage to pre-mix the Pectin with sugar with a ratio of 1:1. Because of the height of fruit juice vessels the Conti-TDS-4 is the best choice for this application. Besides the Pectin, very often other components such as fibres or similar products have to be inducted. In this case the Conti-TDS can be executed with casters to be moved around to be used in combination with several vessels. As an alternative one machine may be connected to several vessels in the same time.

Production of a highly concentrated basic solution of Pectin in water

With a Dispermix it is possible to produce a Pectin solution with a concentration of 5 to 7,5 % in hot water (70°C to more than 80 °C), which then is mixed into the fruit juice. Disadvantage of the method is the steam from the water. The powder has to be added to the steaming water very carefully. Normally some sugar is added to the powder to facilitate the incorporation.

Pectin that is used in fruit juices may be treated very easily by a Conti-TDS or a Dispermix. They are mainly used to stabilise the turbidity. For sugar-free drinks with sweeteners such as Aspartame they should cause a more "full-body". On the other hand they are also applied to increase the viscosity of the product.

The concentration in fruit juice is around 0,05 to 0,3 percent. Very often we encounter lower concentrations than 0,05%. These are mainly medium-fast and fast gelling highly esterated Pectins with a esterification value (VE°) of around 68....78%, this means that these Pectins produce a comparatively high viscosity



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ystral Conti-TDS Powder wetting

Concentrations above 7,5% are possible, but they require a higher temperature (more steam) and a lot of energy from the Dispermix.

Much easier is the use of the Conti-TDS. The machine is installed besides the processing vessel. There is no need to open the vessel and so no steam may come out. The powder is weighed-in into the hopper and then directly inducted. Because of the better dispersing effect of a Conti-TDS the temperature during induction may be lower.

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Because of the better dispersing effect of a Conti-TDS the temperature during induction may be lower. Normal working temperature is around 60 to 70 °C, 50°C should be possible as well. The powder is mainly inducted from a hopper.

In principle an induction tube can be used for a liquid temperature of up to 70°C. For pure Pectin it is mandatory to use the version with direct injection and enlarge dispersing chamber. For mixtures of powders or sugar it is sufficient to use a normal version with a polished rotor hub. In this case we also recommend to use a pre-mix with sugar in a ratio of 1:1, but this is only applicable to increase the speed of the process. This is not mandatory for the use of our machines. Depending on the type of the Pectin, concentrations up to 10% and more may be achieved.

Production of a highly concentrated dispersion in a fruit juice concentrate or sugar solution

Fruit juice concentrates contain a small amount of free water. For this reason these dispersions may be produced relatively easy with a Dispermix or a Conti-TDS. Normal concentrations are about 10%.

Some manufacturers use other stabilisers or thickeners instead of Pectin. These products may be treated with our machines as well, without any problems.

Incorporation of Aspartame

Aspartame is a sweetening agent that is sweetening 180 times more than normal sugar. Typical concentrations for Aspartame are 0,01 to 0,06%. Same as for the Pectin, the requirement is very often to produce a highly concentrated basic solution which is then added to the fruit juice. Main argument for this is the fact that Aspartame, depending on the initial particle size, needs a dissolving time of up to 30 minutes. If the Aspartame is already completely dissolved, it is not necessary to wait for the complete dissolving in the end product.

Aspartame basic solutions are only possible in a certain limit. The dissolving of the Aspartame is so low that only solution with a concentration of about 1% are possible. With some special tricks (combination with acidic agents, pH-value optimisation) higher concentrations up to 2% may be realised. The idea to use hot water to achieve an even higher concentration, in the reality does not work, during cooling down the Aspartame solution very quickly builds up a high viscosity, sometimes even achieves a sliceable consistency

Aspartame solutions may be produced absolutely problem-free with a Jetstream mixer or the Conti-TDS.



**ystral Dispermix
(mixing and dispersing)**