

Modern purée processing

Technology from nature



ERBSLÖH

Progress is our future

Purée

Modern purée processing - technology from nature

Even more so than juice, a purée is supposed to transfer all the flavour and goodness of fruit and vegetables into a processed food. Increased fibre, secondary phytochemical content and fuller mouthfeel are important in addition to the usual juice parameters - balanced flavour, ripe aroma, appealing colour. Purées are the prized basis for smoothies, desserts and fruit desserts.

Citrolase® TF Clear & CelluMASH

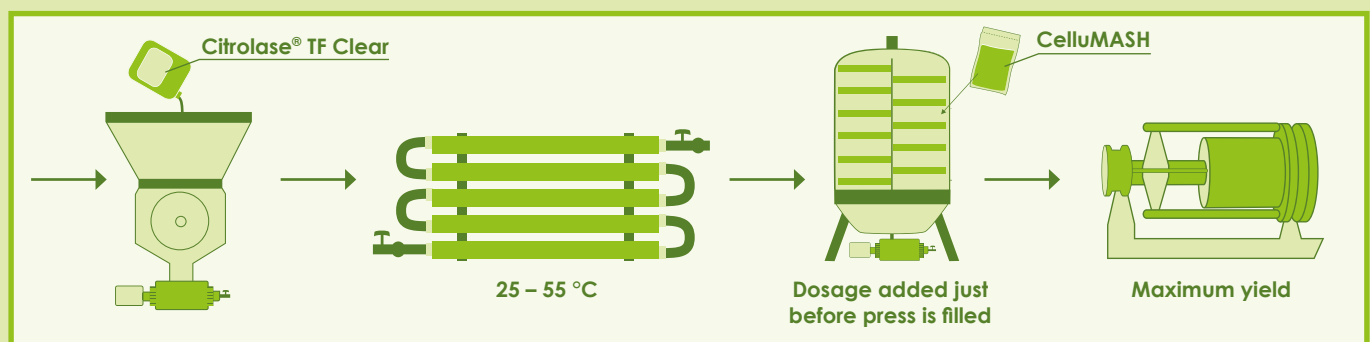


Fruit purées have long been a popular base for fruit drinks, smoothies and the like. Their use is made considerably more difficult when consumers prefer the end product to be a clear, filtered drink, as homogenising the purée is difficult to achieve, or the purée's fibre can react with an alcoholic component. This is why purées, primarily from tropical fruits such as banana, mango and passion fruit, are processed into (concentrated) juice with increasing frequency. Correct enzymation is particularly important. Cell separation has already largely taken place during purée production. This means the pectin is fully hydrolysed and has to be degraded. Treatment is further complicated by the completely different composition of pectin side chains in tropical fruit. Relevant quantities of mannans are found in the hairy region pectin in mangos, papaya and pineapple. These simply do not occur in major European processing fruits, such as apples, or blackcurrants.

Citrolase® TF CLEAR takes particular account of these circumstances and has really proven its worth for semi-finished products that are known to be problematic, such as banana, mango, red papaya and guava. Even with the best enzymation, purées cannot be immediately pressed, due to the lack of tissue structure, and can only be dejuiced using decanter centrifuges. The resulting yield is already interesting, thanks to individual enzymation and technical progress in processing technologies. Even processing set-ups that rely completely on press systems can process a specially prepared purée mash and in this way achieve really good, and therefore highly profitable yields. CelluMASH is a uniquely structured, purified cellulose fibre, which creates the necessary drainages for the juice run in otherwise structureless purées. Dehumidification of the press cake is completely successful, with the sediment content in the resulting juice not being significantly different to juice from a decanter centrifuge.

Advantages of CelluMASH

- Optimum yield
- Fastest processing
- Dry pomace; residue can be fed direct to livestock or disposed of
- Less sediment; faster filtration

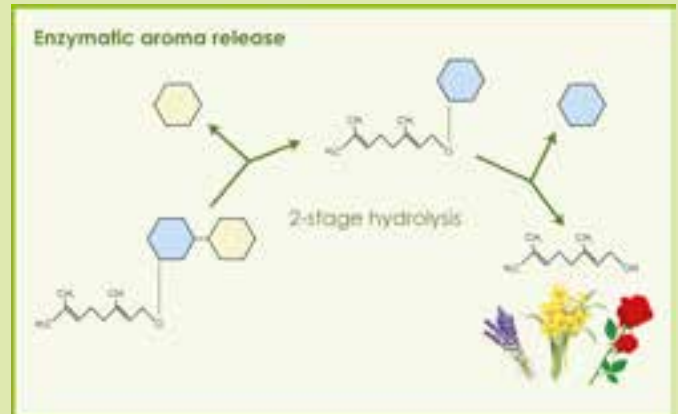


Frutase Soft

Sensory optimisation of whole fruit products and purées with

Frutase Soft

The subjective quality of comminutes from citrus fruits or tropical fruit purées is only apparent after extensive tasting. Two phenomena occur with particular frequency. Often the aroma transfer in the purée appears to be inadequate despite high-quality raw materials. Even in the case of full ripe fruit, aromatics are partly present as non-volatile glycosides. This means they are imperceptible to the senses, but offer aromatic potential. This effect is frequently encountered in aetheric compounds such as pinene, ocimenol, myrcenol, linalool. In principle, however, almost all other fruit aromas consisting of aldehydes, alcohols and sesquiterpenes are dormant, latent sensory potential in a purée or juice. The majority of these compounds pass into the purées without developing their aromatic effect. This is where Frutase Soft comes in and follows the natural ripening principle. The few aromatic glycosides are separated from their residual sugars and the semi-finished product's aromatic reserves are fully exploited. Tropical fruit preparations can benefit from this, as can European fruits, such as mangoes and raspberries. What is known as citrus fruit comminute represents a special semi-finished fruit product. In citrus fruit comminute the whole lemon, orange, mandarin, bergamot or grapefruit is simply chopped, large solids and pips are removed, and it is bottled aseptically. Strictly speaking, therefore, it partly consists of the inedible parts of the fruit. Comminutes are



highly prized in certain desserts and jams, with the peel occasionally exhibiting an unpleasant bitter taste, despite prior de-oiling, in addition to the intensive citrus flavour. Once again, glycosidic compounds are important here. Unlike the aromatic effect, the sensory impression, in this case the unpleasant bitterness, is considerably reduced by splitting off the residual sugars using Frutase Soft, contrary to the aromatic effect.

Frutase PL

Easier concentration of fruit purées using hemicellulases and special pectinases with Frutase PL

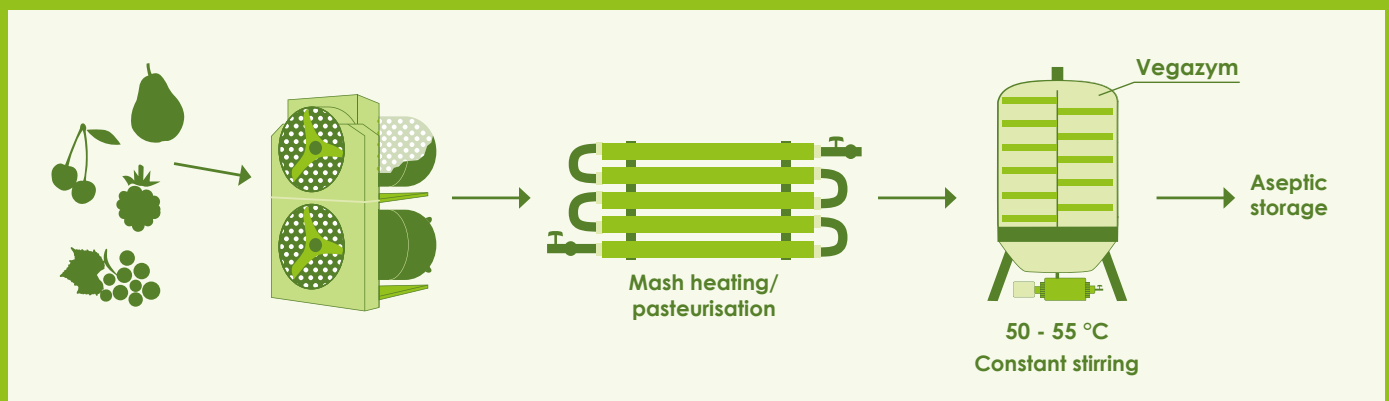


It is often worth concentrating a fresh purée from its original extract content (e.g. mango at approx. 16 °Bx) to around 30 °Bx. Natural fluctuations in the limiting factor content (mainly pectin and similar polymers) can compromise reliable achievement of the desired extract. In these cases the original purées viscosity can be reduced with special pectinases and hemicellulases. Some of the pectin should be retained, so that the purée concentrate can be used subsequently in sediment-stable beverages. This is why the pure pectin lyase Frutase PL is used, which can only partly attack the highly complex pectin structures, especially in tropical fruits. The aim of the application is to combine process reliability and product safety. This is demonstrated by the good level of semi-finished product condensation, with reliable sediment stability, in the finished fruit drink.

Influence on the thickness and homogeneity of strongly structured purées with Vegazym M

Many raw materials have a very firm tissue structure, with pectin as the natural intercellular cement. This can be largely dissolved with enzymatic assistance from the macerating polygalacturonase Vegazym M. This much improves mouthfeel in apricot, mango, guava and peach purées, as well as purées from carrots and other vegetables. Nectars made from these semi-finished goods are then perceived as being more luscious. In many cases it is worth enhancing enzymation with hemicellulase Vegazym HC. A typical application is extensive dissolution of blueberry and cranberry skins for a whole fruit drink, or

better homogenisation of strongly structured fruits, such as quince. The consistency of fruit purées can also be perceptibly condensed using enzymatic methods. This is achieved using the pure pectin esterase Fructozym® FLOT. It is mainly purées with fruit pieces that benefit from even distribution of solid and liquid parts, and improved integrity of the pieces.



Enzymes for producing and processing purées

Product	Description	Application examples	Typical dosage in mL/t
Frutase PL	Pure pectin lyase	Concentrated mango pulp	40
Frutase Soft	Optimised glucosidase-tannase	Lemon comminute, mango pulp, guava pulp	50 – 100
Citrolase® TF CLEAR	Concentrated pectinase mix	Mango pulp, papaya pulp, orange juice	200 – 300
Fructozym® FLOT	Pure pectin esterase	All pectin-containing fruits	1000
Vegazym HC	Hemicellulase mix	Carrot, cranberry	200
Vegazym M	Maceration enzyme	Carrot, apricot	300
CelluMASH	Purified cellulose fibres	Purées and weak-structured mashes	1%