

HOW **PECTIN** IS MADE

Pectin is produced in line with strict standards of quality and safety. An overview of the process used is described below, although there may be slight variations between different pectin manufacturers.



STEP 1: FRUIT

Most pectin is made from pomace (apple residue) and citrus peel that is left over after fruit juice production. Using these high-quality raw materials to make pectin means they are not wasted. Wet pomace and citrus peel deteriorate very rapidly so they are washed and dried immediately to ensure they can be transported to the pectin factory in perfect condition. This means they can also be stored for longer periods until they are used, again ensuring that waste levels are minimized.



STEP 2: EXTRACTION

Pomace and citrus peel are both naturally rich in pectin but also contain other substances, so the pectin must be extracted. To do this, the pomace or peel is first added into a hot water solution. Water alone will only extract a limited amount of pectin, so a processing aid is also added. This is usually a natural mineral acid, although in some cases enzymes may be used. After a period of time, the pectin will dissolve. The remaining solids from the pomace or peel are separated from the liquid using filtration. Filtration will sometimes take place more than once to ensure the pectin solution is clarified sufficiently, with all of the solids removed.



STEP 3: PRECIPITATION

The clarified pectin solution is concentrated by removing some of the water. The concentrate then undergoes a process of precipitation, which is the conversion of the pectin into a solid. This is done by mixing the liquid solution with alcohol or salts, which causes the pectin to solidify. The precipitate (i.e. the pectin) is separated from the rest of the solution, washed to remove any impurities, and dried.



STEP 4: DE-ESTERIFICATION

The pectin solids may be de-esterified, a process in which galacturonic ester units are transformed into galacturonic acid units. The degree of de-esterification can be controlled and varied so that the pectin produced will offer different properties in a range of products. Sometimes a process called amidation will also take place during this step. This is the addition of ammonia to the pectin to make it more suitable for use in very low sugar applications.



STEP 5: STANDARDIZATION AND DELIVERY

The dry, solid pectin is ground to a powder, tested and blended with sugar or dextrose to achieve a standardized and consistent level of gelling, viscosity or stabilization. The finished pectin ingredient is now ready to be packaged up and transported to the pectin producer's customers – food and beverage companies – who will incorporate the pectin into their recipes as required.

Want to know more? Read our other factsheets:

- Where Pectin Comes From
- The Molecular Structure of Pectin