# Rapid Visco Analyzer Results

Interpreting test results

Following is a brief introduction to the interpretation of pasting curves for starch-based samples tested using your RVA 4500. A heat-hold-cool cooking cycle is assumed. A good textbook covering polymer hydrocolloids should provide further information on these processes and on starch chemistry, modification and uses.

The pasting curve

Testing a starch sample using your RVA 4500 typically involves heating and cooling the starch sample in water and monitoring its viscosity. This produces a characteristic **pasting curve**, an example of which is shown in Figure 1.

Figure 1. Typical temperature profile and pasting curve.
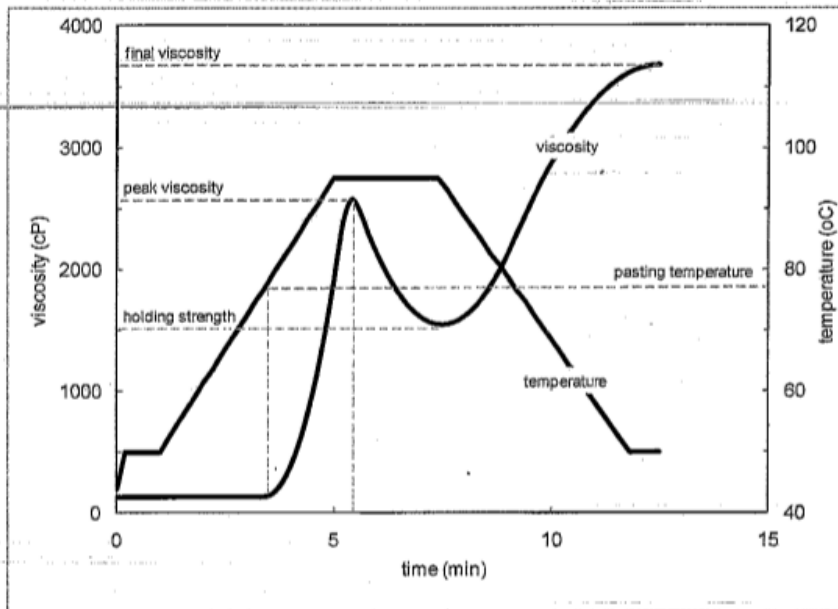
The shape and size of the pasting curve for a particular starch sample will depend on the properties of that starch. Native starch exists as microscopic granules. The size and shape of these granules are characteristic of the starch's botanic source. Granules consist of starch molecules. These starch molecules are arranged radially and form a series of concentric layers with alternate amorphous and semi-crystalline regions. Each starch molecule is a large polymer consisting of glucose units. There are two distinct polymer types: *amylose* and *amylopectin*. Amylose is a relatively small polymer with a linear structure, whereas amylopectin is a very large polymer that exhibits substantial branching. Waxy starches contain very little amylose. Other starches generally contain 15–30% amylose, depending on the starch type.

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