

Fruit Oxidation Process

What is saturation?

- **Saturation** is any of several physical or chemical conditions defined by the existence of an equilibrium between pairs of opposing forces or of an exact balance of the rates of opposing processes.

Saturation Types

- **Saturated Solution:** there is so much solute present that if more were added, it would not dissolve.
- **Unsaturated Solution:** contains less solute than a saturated solution which completely dissolves leaving no remaining substances.
- **Supersaturated Solution:** a solution that contains more solute than the solvent is capable of dissolving. The undissolved solute tends to crystallize and precipitate when the solution is cooled and a seed crystal is added.

Factors Affecting Saturation

- With the exception of compounds containing anions, the solubilities of ionic solutions increase as the temperature rises.
- A finely divided solid is more soluble because it has a higher surface area to volume ratio.
- Contrary to the rate of solubility, which is largely influenced by temperature, the rate of crystallization is influenced by the concentration of the solute on the surface of the seed crystal.
- The concentration of the solute at the surface of a still solution increases crystallization. Stirring the solution prevents the build-up and maximizes the net dissolution rate.
- A net dissolving rate is calculated by subtracting the dissolving rate from the crystallization rate.