



PECTIN TESTING
















Pectins are water-soluble pectinic acids of varying methyl ester content and degree of neutralization. Pectins consist of galacturonic acid and methyl ester of galacturonic acid chains of indeterminate lengths. The galacturonic acid and ester chains are cross-linked with various sugars (rhamnose, arabinose, mannose, and galactose). The pectin and gum contents of musts often indicate how easily and completely juices can be clarified. Since pectins and gums exist in musts and in a colloidal condition (as negatively charged particles), they tend to reduce the rate of clarification. Wine yeasts commonly used for fermentation do not produce significant amounts of pectin-splitting enzymes. Commercially-prepared pectinases, however, are commonly used to cleave pectins and increase juice yield. Also, if not treated with pectinases, pectins can contribute to haze formation in finished wines. In some cases, pectins act as protective colloids to prevent the precipitation of suspended material – in the case of ferric phosphate casse, for example. If musts or wines are acidified and sufficient alcohol is added to bring the ethanol to about 80%, a precipitate will form. This precipitate consists mainly of colloidal material known as pectin and pectic acids, but also contains gum, proteins and other alcohol-insoluble material." (in this test, pectins appear as gelatinous substances which float to the top of the sample.)

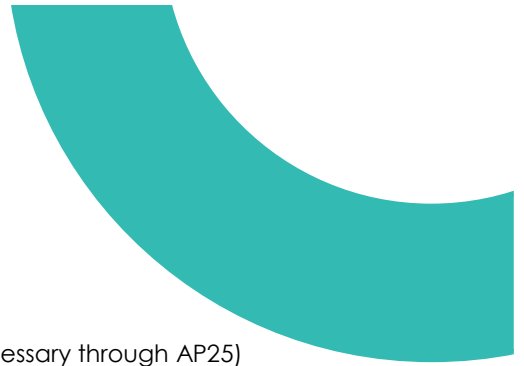
C.S. Ough and M.A. Amerine, (1988). Methods for Analysis of Musts and Wines, second edition, John Wiley & Sons, Inc.

Below are two methods for estimating pectin content:

Zoecklein, et al. Method for Pectin Testing:

Materials:

-  Sticker labels
-  Lab filtration system: Millipore Sterifil system
-  Vacuum pump
-  Membrane filters: 0.45 μ
-  Glass prefilters: AP25
-  Screwcap test tubes: 20x150mm and 25x200mm
-  Test tube racks
-  Centrifuge tube
-  Side arm filtering flask
-  Beckman pH meter
-  10mL serological pipet
-  Bulb
-  Transfer pipet
-  95% reagent alcohol
-  1N HCl



Method:

1. Filter about 50mLs wine through 0.45 μ membrane filter (prefilters if necessary through AP25)
2. Transfer the wine into a centrifuge tube
3. Read the pH of the wine sample
4. With a transfer pipet, add 1N HCl dropwise to the sample while reading the pH, until the pH of the wine is lowered to 1.00
5. Pipet 10mL of filtered, pH adjusted sample into test tube
6. Pipet 20mL of 95% reagent alcohol into the same tube and invert to mix
7. Wait 10 minutes

Interpretation of Results:

A positive result for pectins is the formation of a gelatinous mass at the top of the sample.

Alcohol Test for Estimating Juice Pectin Content:

Materials

- 30 mL glass tube
- Solution of 99.5 mL pure ethanol 96% and 0.5 mL hydrochloric acid

Method:

1. Add 5 mL of filtered or centrifuged must (without solids) in the glass tube
2. Add 10 mL of the solution prepared as described above
3. Shake gently
4. Wait 5-10 minutes

Interpretation of Results:

Pectins produce a whitish precipitate or a white flocky hat. If you can see the precipitate or the white flocks, you still have pectins in the juice. You may preform flotation only when all pectins are hydrolyzed - no precipitate or floating hat.

From the operative point of view, if you want to use this test to find out the right dosage of enzyme/time of contact:

- Take a sample of must immediately after pressing
- Divide into X parts
- Add to each part a different rate of pectolytic enzyme (10, 15, 20, 25 g/ton)
- Leave a part without enzyme as reference
- After 1, 2, 3, 4 hours perform a test on the reference and the must added with enzyme
- Visually, you will note a progressive decrease in pectin level, up to complete disappearance which proves the total absence of soluble pectin substances
- The desired dosage will be the dosage that allows you to work in the time that you need.