

Australian Citrus Quality Standards - Calculating citrus fruit maturity

1. Selecting a sample

A sample consists of 10 pieces of fruit (minimum) from the pallet.

Take the sample from a number of cartons (loose fruit) or from a single pre-pack bag.

The sample should be free of any damaged fruit - punctures, splits etc.

Record details of the vendor, batch number etc. for traceability.

2. Percentage Juice

Weigh the sample fruit (FW).

Cut the fruit through the centre across the axis.

Juice the halves, pouring the juice through a sieve to remove excess rag and record the juice weight (JW).

Divide the juice weight by the fruit weight and multiply by 100.

i.e. $JW/FW \times 100 = \% \text{ Juice}$

3. Take a Brix reading

Using a syringe place a small quantity of the juice sample onto the prism of the refractometer.

Record the Brix reading displayed (B).

Wash the refractometer with distilled water and calibrate regularly.

4. Measure the acid percentage

Using a syringe place 10 millilitres of the juice sample into a conical flask.

Add 4 to 5 drops of phenolphthalein to the juice sample in the conical flask.

Check the burette is at zero, then add sodium hydroxide to the juice solution in the conical flask, this is best done by adding small amounts frequently.

Continue adding sodium hydroxide to the solution until the colour of the solution in the conical flask remains a light pink.

If the solution colour turns from the light pink to a dark pink/purple, too much sodium hydroxide has been added. Tip the solution out and repeat.

Record the amount of sodium hydroxide added to the solution (measuring from the bottom of the meniscus).

Multiply the amount of sodium hydroxide added by 0.064 to calculate the percentage acid (A).



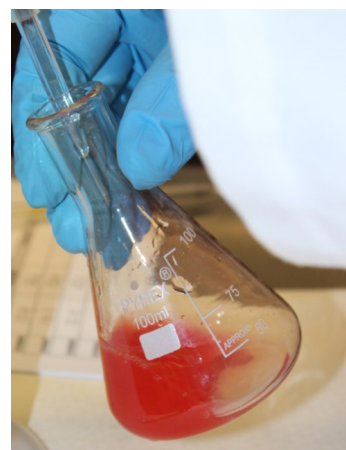
No colour change



No permanent colour change



Target pinkish colour change



Too much, start again

5. Calculate the Brix acid ratio and the ACQ Standard

Divide the Brix (B) by the acid (A) to obtain the Brix acid ratio.

To calculate the ACQ Standard multiply the acid (A) by 4 and subtract that amount from the Brix (B), then multiply that amount by 16.5, i.e. $(\text{Brix} - (\text{acid} \times 4)) \times 16.5$

More detail is available on the ACQS Step by Step DVD and accompanying manual. Refer to the Seasonal Australian Citrus Quality Standards Table for minimum maturities, contact admin@citrusaustralia.com.au (Produced by Citrus Australia, September 2013).