The Hydrometer

Contributed by jema

The hydrometer is an indispensible aid to those who wish to be scientific about wine and beer making.

Even
if you are not interested in the finer details, it is a great tool for
diagnosing problems with stuck ferments and judging whether your wine
and beer has consumed all the available suger.

introduction

The principle behind a
hydrometer is quite simple. A suger solution is denser than plain
water, thus when you put a weighted hollow object in a suger solution,
it will sink less than it would in plain water. Thus you can measure
the density of the water.

Alchohol on the other hand is lighter than water and so a fermented out solution, will have a density less than plain water.

A
hydrometer may come with a few different scales, but the relevent one
to home brewing will run from below a 1000 to maybe 1200.

Hydrometers with a built in sampler
The biggest problem using a hydrometer is getting you sample, the type
of hydrometer picture here, allows you to use the simple principle of a
vacuum to lift a sample and measure it, in a quick simple action. If
you can get this type, it is worth the extra money.

Simple use of a hydrometer

At its simplest you can use the hydrometer at the start of wine making to check that the reading which is called the specific gravity or SG
is in the range 1070-1090. It is in this range that there is enough
suger to make a dry wine 9.2% to 12% alchohol by volume. Add more
suger than this, and you may find the ferment struggles to start, less
and the keeping qualities of the wine may be less.

At the end of fermantation you need to check that the suger really has fermented out, and the ferment is not simply stuck. The hydrometer reading should be taken and checked that it has fallen below the 1000 mark.

The
above usage is really very easy, and will avoid you making the basic
mistakes, that lead to problem ferments or burst bottles.Advanced use of a hydrometer

Apologies for the use of imperial scales, but we brew wine in gallons, so it makes life easier.

The primary advanced use of a hydrometer is if you want to feed your wine suger, as it ferments, if you are trying to brew

a high alcohol wine, it is bettter to feed the wine suger in stages.

In
this case what matters it the total drop in SG throughout the process,
each time you add suger you take before and after readings, enabling
you to add up each drop in SG from the previous stage. This total is
then divided by 7.36 to give alcohol by volume.Specific gravity (SG)Potential %vol alcohol

sugar /Gallon10100.92 oz10151.64 oz10202.37 oz10253.09 oz10303.712 oz10354.415 oz10405.11 lb 1 oz10455.81 lb 3 oz10506.51 lb 5 oz10557.21 lb 7 oz10607.81 lb 9 oz10658.61 lb 14 oz10709.22 lb 1 oz10759.92 lb 4 oz108010.62 lb 6 oz108511.32 lb 9oz109012.02 lb 12 oz109512.72 lb 15 oz110013.43 lb 2 oz110514.13 lb 5 oz111014.93 lb 8 oz111515.63 lb 11 oz112016.33 lb 14 oz112517.04 lb 1 oz113017.74 lb 4 oz113518.4

4 lb 7ozTemperature Correction

When wine making, boiling ingredients to extract flavour is a common process and you may want to get a reading before the must has returned to room temperature.

Degrees FahrenheitCorrection40Subtract 250Subtract 160Correct70Add 180Add 290Add 4100Add 5110Add 7120Add 8130Add 10140Add 13150Add 15

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