

# HYDROMETER USAGE – BEER/WINE

**Why Use a Hydrometer?** A Hydrometer is an instrument used to measure the progress of fermentation and determine alcohol percentage.

**How it works** – A Hydrometer measures the density of a liquid in relation to water. In beer or wine making we are measuring how much sugar is in solution. The more sugar that is in solution, the higher the hydrometer will float. As sugar is turned into alcohol during the fermentation, the hydrometer will slowly sink lower in the solution. When fermentation is finished, the hydrometer will stop sinking.

**Three Scales – What are they used for?**

- *Specific Gravity* - most often used in brewing.
- *Brix* - most often used in winemaking.
- *Potential Alcohol* - estimate of potential alcohol that can be used in beer or wine making.

**How to Use my Hydrometer** – Place a sample of the liquid to be tested into a hydrometer testing jar and lower the hydrometer into the sample. Spin the hydrometer to eliminate any air bubbles that might cling to the side of the hydrometer. Once the Hydrometer stops moving, take your first reading from the Specific Gravity (beer) or Brix (wine) scale. In beer making, the first reading is often called the “*Original Gravity (OG)*”, which implies it was taken prior to the onset of fermentation. Write down your reading on a recipe or log sheet.

**Is my beer/wine done fermenting???** When fermentation stops, usually indicated by a lack of bubbles in your airlock or blow off, take a “*Final Gravity (FG)*” reading and record this on your recipe or log sheet. If you are unsure if fermentation is over, take two readings 1–2 days apart. If the reading drops between the two you still have an active fermentation.

**How to Determine Alcohol Percentage for BEER** – The most accurate way to determine alcohol percentage by volume in beer is to make an OG reading and FG reading. Then use either of these methods...

**Method 1:** Subtract FG Alc. % from OG Alc. %

Example:

OG = 1.090 SG = 11.80 Alc. %

FG = 1.010 SG = 1.30 Alc. %

Final % ABV = 10.50% (11.80 – 1.30)

**Method 2:** (OG) - (FG) x (131) = % ABV

Example where OG = 1.073 and FG = 1.012:

1.073 - 1.012 = 0.06 x 131 = 7.99 % Alc. By Vol

**How to Determine Alcohol Percentage for WINE** – For Wine, your final reading is often below zero. In wine, nearly all the sugar is converted to alcohol – because alcohol is lighter than water, your reading at the end of a wine fermentation is often negative. When the reading is negative, you need to add this back to your first reading.

Original Reading: 12.5 Potential alcohol

Final Reading: - 0.7 Potential alcohol

(12.5 + 0.7) = 13.2 % ABV

*Tips:*

- Perform your readings in a hydrometer sample jar, rather than the fermenter itself.
- The easiest way to draw a sample out of a fermenter is to use a sample taker (thief), which looks like a variation of a turkey baster.
- Once the reading has been taken, it is best to discard tested liquid rather than risk contamination by adding it back into your beer or wine.

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## Temperature Correction:

The hydrometer has been calibrated to give an accurate reading at 68°F. Use the chart below to correct the reading for temperature:

BEER	
Temp °F	Correction Specific Gravity 68°F
54.2	- 0.002
61.5	- 0.001
68.0	-
73.7	+ 0.001
79.2	+ 0.002
84.3	+ 0.003

WINE	
Temp °F	Correction Brix 68°F
53.9	- 0.4
61.4	- 0.2
68	-
71.7	+ 0.2
78.7	+ 0.4
83.5	+ 0.6

## Correction Example:

If the temperature of the wort or must is 84 °F and the Specific Gravity is 1.040, the true reading would be 1.043.

Specific Gravity (SG) = 1.040  
 Correction Figure = + 0.003  
 Actual SG = 1.043

SPECIFIC GRAVITY	POTENTIAL ALCOHOL % VOL	BRIX
0.980	-2.6	-5.3
0.985	-2.0	-3.9
0.990	-1.3	-2.6
0.995	-0.7	-1.3
1.000	0.0	0.0
1.005	0.7	1.3
1.010	1.3	2.6
1.015	2.0	3.8
1.020	2.6	5.1
1.025	3.3	6.3
1.030	4.0	7.6
1.035	4.6	8.8
1.040	5.3	10.00
1.045	5.90	11.20
1.050	6.60	12.40
1.055	7.20	13.60
1.060	7.90	14.70
1.065	8.60	15.90
1.070	9.20	17.10
1.075	9.90	18.20
1.080	10.50	19.30
1.085	11.20	20.50
1.090	11.80	21.60
1.095	12.50	22.70
1.100	13.20	23.80
1.105	13.80	24.90
1.110	14.50	25.90
1.115	15.10	27.00
1.120	15.80	28.10
1.125	16.50	29.10
1.130	17.10	30.20
1.135	17.80	31.20
1.140	18.40	32.20