

Iodophor:

½ ounce of 1.6% TT iodine iodophor in 5 gallons = 12.5 ppm
½ ounce = 14.8 ml so ~ 3 ml per gallon (2.96 actual) = 12.5 ppm
0.74 ml per quart, 0.37 ml per pint, 0.023125 ml per ounce = 12.5 ppm
At this concentration, there is no need to rinse.

Sodium Hypochlorite:

To sanitize, 100 to 200 ppm of available chlorine is required with an exposure time of ten minutes.

½ ounce (14.8 ml) of **5.25% NaOCl** in one gallon = 200 ppm
.44 ounces (13 ml) of **6.00% NaOCl** in one gallon = 200 ppm
2.5 ounces of **5.25% NaOCl** in 5 gallons = 200 ppm
2.2 ounces of **6.00% NaOCl** in 5 gallons = 200 ppm
7.5 ounces of **5.25% NaOCl** in 15 gallons = 200 ppm
6.6 ounces of **6.00% NaOCl** in 15 gallons = 200 ppm

Sodium and Potassium Metabisulphite:

For sanitizing: 1 ounce per gallon

Mixing Sodium Hydroxide:

For a 1 N solution of NaOH using 100% NaOH 40g/l
For a 1/5 (.2) N solution of NaOH using 100% NaOH 8g/l
For a 1/5 (.2) N solution of NaOH using 50% NaOH 16g/l

Yeast Starters:

10.2 g DME in 100 ml water gives 38 points → ~ .1 g per ml
For a 400 ml starter: 40 g, for a 1600 ml starter: 160g, etc.
A step from a smack pack → 400ml → 800ml → 1600ml works nicely for 15 gallons.
The first step to 400ml is added to the 800ml after 24 hours (bubbles rising well to the surface) The next step to 800ml is done after _____ hours
*Don't, under any circumstance, add any water to the wort while it is boiling.
Especially when boiling in an erlamayer flask

Yeast cell counts (from Daniels' book "Designing Great Beers")

A good cell count estimate is 50E6 (50,000,000) yeast cells per ml of starter
All you need to know now is to estimate the volume of wort in the fermenter, and the OG of your beer, so you can hit the target starter cell concentration of 1E6 cells/ml/degree P. Here's an example:

OG = 1.050 = 50/4 = 12.5 degrees P
Volume = 5 gal = 50 * 3.775 * 1000 = 19,375 ml
Required Starter Volume = (1E6*19375*12.5)/50E6 = 4844 ml = 4.8 L = 1.25 gallons
To sum this up, you will need a 1.25 gallon starter for 5 gallons of a 50 gravity beer to reach the required commercial yeast pitching rates.

1 Dram = 3.7 ml

1 TBS = ½ fl. ounce

Pressure Cooking

5psi is ~227F, 10psi is ~240F, and 15psi is ~250F

On large stove electric burner, "one-half to one notch below Med" setting will maintain the pressure at 15psi after the pressure has been reached

For meat, it is recommended to maintain 10psi for 75 min for pints and 90 min for quarts. I figure that maintaining at 15psi for 60 min for wort is overkill.

Also, it is recommended to let the Pcooker heat up without the weight on the outlet for 10 min to make sure all of the air is vacated from the inside otherwise the steam will not be saturated inside the vessel.

Specific Gravity and Percent Solids:

$S = K(G-1)/G$ where:

S = Percent Solids

G = Specific Gravity

$K = D/(D-1)$

D = Density of the Solid Phase

Densities (all at 20°C):

Density of sucrose ($C_{12}H_{22}O_{11}$) is 1.5805 g/cm³

Density of β -D-fructose ($C_6H_{12}O_6$) is 1.60 g/cm³

Density of α -D-glucose and β -D-glucose ($C_6H_{12}O_6$) is 1.5620 g/cm³

Density of α -maltose ($C_{12}H_{22}O_{11}$) is 1.546 g/cm³

AP/Armaflex Sheet and Roll has a thermal conductivity of 0.27

Champagen Carbonation: Guidelines given by Philip Jackisch in 'Modern Winemaking': Carbonate to no more than 4 or 5 atm (that would be 58.8 and 73.5 psi—not quite sure what temperature he is talking about. It would be nice to get a number of "volumes" to carbonate to.). This can be achieved by using 12 grams of sugar per 750 ml bottle.

Pasteurization (data is from <http://www.icnr.org/info/pasteur.htm> referring to milk):

Temperature	Time
63°C (145° F)	30 minutes
72°C (161° F)	15 seconds
89°C (191° F)	1.0 seconds
90°C (194° F)	0.5 seconds
94°C (201° F)	0.1 seconds
96°C (204° F)	0.05 seconds
100°C (212° F)	0.01 seconds

Propane:

.2357 gallons per pound ?? According to Amerigas

From <http://www.signaturedrywall.com/petro.html> :

Physical Properties of Propane:

Formula	CoH2
Boiling point	44°F
Specific Gravity of Gas (air = 1)	1.50
Specific Gravity of Liquid 60°F (water = 1)	504
Latent Heat Vaporization total/gal	773.0
Pounds per gallon of Liquid 60°F	4.23
Gallons per pound of Liquid 60°F	0.236
BTU per Cubic Foot of Gas 60°F	21548
BTU per lb. of Gas	2488
BTU per Gallon of Gas 60°F	90502
Lower Limit of Flammability (% of gas)	2.15
Upper Limit of Flammability (% of gas)	9.60
Cubic Feet of Gas per Gallon of Liquid	36.38
Octane Number	100