BEST PRACTICES

LOW ALCOHOL BEER

RECOMMENDED LOW ALCOHOL PROCEDURE

This method produces low alcohol beers by creating a wort of low fermentability. It utilises a combined method of high temperature mashing, low original gravity and fermentation using a strain of Saccharomyces cerevisiae that will not metabolise maltotriose to limit alcohol production. In this case Lalbrew® Windsor or Lalbrew® London.

Brewery wort contains fermentable sugars of low molecular weight and unfermentable sugars of high molecular weight. The ability to ferment these low molecular weight sugars varies by yeast strain. See diagram 1. Our method aims to maximize the level of unfermentable dextrin in the wort and minimize the level of fermentable sugar. See diagram 2. Utilizing Lalbrew® Windsor and Lalbrew® London for fermentation prevents the metabolism of maltotriose further limiting alcohol production by fermentation.

THE METHOD

1 - Mash a well modified ale malt at an initial temperature 82 degrees and 86 degrees.

2 - Target a low OG. Between 1.020 and 1.027

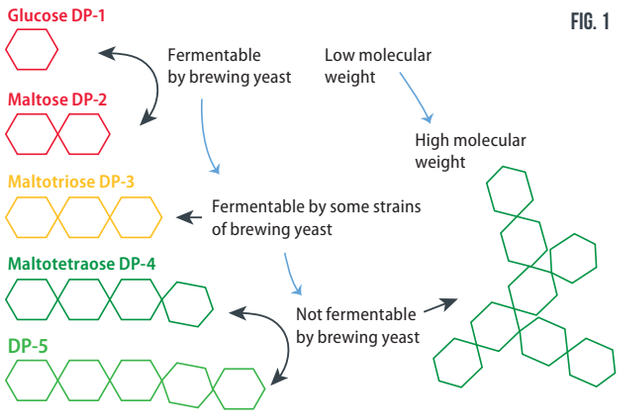
3 - Lauter as normal but ensure pH and gravity remain within normal brewing levels. (5.1-5.4) Acid additions may be necessary.

4 - Boil as normal, again being careful to maintain normal pH levels. It is also possible to add lactose at this stage to increase mouthfeel.

5 - Ferment using maltotriose negative yeasts to lower the potential alcohol yield. Either Lalbrew® Windsor and Lalbrew® London.

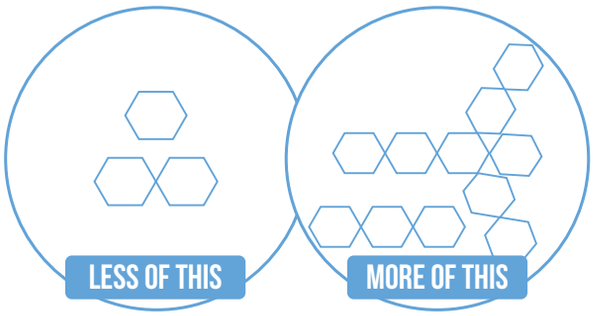
THE SUGARS PRESENT WITHIN ORDINARY BREWERY WORTS

FIG. 1



THE AIMS OF LOW ABV MASHING PROCEDURE

FIG. 2



IMPORTANT THINGS TO CONSIDER

- The pH needs to be tightly controlled. This can be done with acid additions or by using acid malt in the grist
- Mouthfeel can be enhanced by using lactose and water enriched in chloride
- Kettle hopping should be kept to a minimum
- This work was done with well modified British ale malts

Table showing the example abv levels and fermentability achievable using this method

CALCULATED POTENTIAL ALCOHOL YIELDS

FIG. 3

MASH TEMPERATURE Centigrade (Farenheight)	MASH TIME (min)	% UNFERMENTABLE WITH MOST BREWING YEAST STRAINS	% UNFERMENTABLE WITH MALTOTRIOSE NEGATIVE STRAINS (Windsor or ESB)	% UNFERMENTABLE WITH MALTOSE NEGATIVE STRAINS	POTENTIAL % ABV WITH MOST BREWING STRAINS	POTENTIAL % ABV WITH MALTOTRIOSE NEGATIVE STRAINS (Windsor or London)	POTENTIAL % ABV WITH MALTOSE NEGATIVE STRAINS (Slants available on request)
74 (165.2)	60	2	24	89	1.3	1.0	0.03
78 (172.4)	60	24	42	94	1.0	0.8	0.02
82 (179.6)	**60**	**44**	**57**	**95**	**0.7**	**0.6**	**0.01**
86 (186.8)	**60**	**63**	**71**	**96**	**0.6**	**0.5**	**0.01**
95 (203)	60	53	62	96	0.8	0.7	0.01