

# Effect of High gravity brewing on kieselguhr filtration efficiency



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## Introduction

Beer clarity is a major quality parameter and has to meet the consumer expectation at least within the shelf life printed on the label. One of the tools to reach a proper reduction of yeast cells and other turbidity forming substances is Kieselguhr filtration. The performance of that filtration is strongly influenced by the beer to be filtered and therefore also the gravity is a major parameter which has to be put into consideration.

## Results:

### Kieselguhr Consumption:

Comparing Kieselguhr consumption of high gravity brews with normal gravity brews, the use of Kieselguhr in HGB is 81% higher than in original gravity brews. (see figure 1.)

### Filtered beer volume:

Filtered beer volume before blending per run of HGB is 54% lower than the volume of lower gravity beer due to shorter filter cycles.

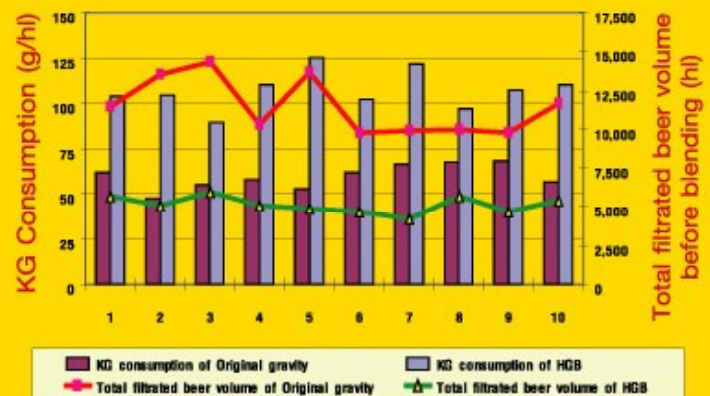


Figure 1. shows relationship between KG consumption and total filtrated beer volume before blending

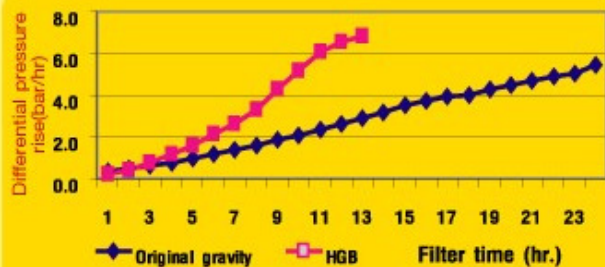


Figure 2.

### Turbidity:

There is a significant influence of the gravity on the turbidity at 90°. HGB shows a 3 times higher value than original gravity beer. If this is related to components from the raw material or to the yeast is still to be clarified.

### Summary:

The following parameters are influenced by higher gravities:

1. Kieselguhr consumption increases
2. Turbidity of filtered beer increases
3. Filtered beer volume decreases
4. Differential pressure rises faster

### Differential pressure :

The pressure increase during the filtration of HGB is 2.4 times the increase of original gravity beer. The filtration at a flow of 600 hl/h is 13 hours with HGB compared to 24 hours with original gravity beer as an average. (see figure 2.)

Filter NO.	Turbidity at 90 (EBC)	
	Original gravity	HGB
1	0.36	1.01
2	0.36	1.17
3	0.33	0.84
4	0.36	0.99
5	0.28	1.20
6	0.37	1.09
7	0.32	1.13
8	0.32	0.89
9	0.30	0.97
10	0.31	0.87

Table 1.

Filtration can be a major bottleneck in beer production. The results shown here strongly indicate that more effort has to be put into the identification of the substances responsible for this significant influence on filter performance with higher gravities.