European Brewery Convention

PRESS REPORT

Determination of Gushing Tendency of Malt

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on behalf of the Analysis Committee of the European Brewery Convention

Summary

A Subgroup of the EBC Brewing Science Group evaluated and tested an empirical method for the determination of gushing tendency of malt. Although all the details of the procedure were carefully standardised and the same beer brand sent to all the participants the precision of the method was not acceptable for the inclusion in Analytica-EBC.

Introduction

The EBC Analysis Committee asked the Brewing Science Group to evaluate methods for the determination of the gushing tendency of malt in 1999. Since then a Subgroup has carried out several collaborative trials and tried to standardise the procedure to improve the precision of the method. The basic method was developed by Carlsberg and published by Vaag et al. at the EBC Congress in Oslo in 1993 (1). In the method an aqueous extract of ground malt is added to bottled beer. After pasteurization the bottles are rocked for three days, after which the bottles are opened and the amount of beer lost through gushing is determined by weighing and reported in grams.

Collaborative test

The last collaborative trial was carried out in 2003. Ten participants from the malting and brewing industry and from universities and research institutes analysed four samples. Malt A was a gushing negative control malt, Malt B had high *Fusarium* contamination, Malt C had high *Aspergillus* contamination and Malt D was artificially contaminated by *Fusarium* species during malting. All the details in the procedure were carefully specified and each laboratory used the same beer which was sent to them with the malt samples.

Results

Results received from ten laboratories are presented in table 1. Although the gushing test is not meant to be quantitative there were large variations in the measured gushing values. In particular, Malt C was negative in several laboratories but showed considerable gushing in some others.

Table 1: Original data from the collaborative trial. All the results are expressed in grams.

Laboratory	Sample			
	Malt A	Malt B	Malt C	Malt D
	Weight of beer lost on opening (g)			
1	0	58	65	107
2	0	22	0	1
3	0	94	9	60
4	0	13	8	37
5	0	80	3	63
6	0	95	0	13
7	0	28	27	24
8	0	22	0	3
9	3	80	0	113
10	0	150	103	124
Average	0	64	22	55
Min.	0	13	0	1
Max.	3	150	103	124
Std Dev	0.95	43.8	35.1	46.6

Conclusions

The precision of the method was not acceptable and the EBC Analysis Committee did not approve its inclusion in Analytica-EBC.

Reference

P. Vaag, P. Riis, A-D. Knudsen, S. Pedersen & E. Meiling, A simple and rapid test for gushing tendency in brewing materials, Proceedings 24th EBC Congress, Oslo 1993, IRL Press, 155-162.