Application Note

Gas volume and Air content measurement of Beer

Industry	:	Food & beverage
Instrument	:	Gas Volume and Air Content Analyzer
Measurement method	:	Gas volume measurement method
Standards	:	

1. Scope

Measurement of gas volume and air content is essential for quality control in beer container filling process.
In this measurement example, we will introduce the result of measurement of gas volume and air content of commercial beer using gas volume and air content analyzer.

2. Precautions

1) For the measurement, use 6 mol / L sodium hydroxide solution. There is fear of blindness if it enters the eyes. Please wear protective glasses when handling.
2) Please stabilize the measurement instrument and measurement sample in an environment where the measurement environment temperature is set to 20 ^{o}C.
3) Prepare the instrument air or air compressor as opening, rotation is done by air drive.
Pressure 0.490 - 0.686MPa (5 -7 kgf/cm^{2})

3. Post-measurement procedure

1) Please discard the sample properly.
2) After the measurement is completed, rinse the measurement instrument.

4. Apparatus

- Gas Volume and Air Content Analyzer

5. Reagents

- 6 mol/L sodium hydroxide solution, pure water
- Commercial Beer

6. Procedure

1) Select the measurement mode gas volume / gas pressure + air conditioner tent measurement (GV / P + AIR) and input the measurement conditions.

Measurement parameters are an example of our equipment. Please set the optimum parameters with the measurement sample.

・Mode : GV/P+AIR
・GV/P Cal. : EBC
・Method
Sniff. Level : 0.999 MPa *)
E-Sni. Level : 0.015 MPa
Trial Count : 1
Press Level : 0.010 MPa
Rot 4-1 : 300 Sec
Wait 4 : 300 Sec
Rot 4-2 : 300 Sec
Rot 4-3 : 40 Sec
*) Setting value without snift

2) Place the sample on the sample stage and press the start button.

Note: Please refer to the operation manual for details.

7. Example

Table 1 shows the measurement results of commercial beer.

Table 1. Measurement result list of commercial beer

No.	Samples	n	Gas Volume (g/kg)	Air Volume (mL)	Gas Press (MPa)	Press (MPa)	°C
1	Company A Glass bottle products 334mL	n1	5.33	0.38	0.230	0.206	17.5
2		n2	5.34	0.53	0.231	0.225	19.4
3		n3	5.35	0.45	0.231	0.241	21.0
		Ave	5.34	0.45	0.23	0.22	19.3
		SD	0.01	0.08	0.001	0.018	1.75
		CV	0.2	16.6	0.3	7.8	9.1
1	Company B Glass bottle products 334mL	n1	4.99	0.50	0.208	0.237	23.1
2		n2	4.99	0.38	0.209	0.239	23.3
3		n3	4.97	0.40	0.208	0.239	23.4
4		n4	5.01	0.36	0.210	0.243	23.5
5		n5	4.95	0.44	0.207	0.240	23.6
		Ave	4.98	0.42	0.21	0.24	23.4
		SD	0.02	0.06	0.001	0.002	0.19
		CV	0.5	13.3	0.5	0.9	0.8
1	Company C Glass bottle products 330mL	n1	5.17	0.68	0.220	0.249	23.0
2		n2	5.17	0.75	0.220	0.250	23.1
3		n3	5.14	0.75	0.218	0.255	23.8
		Ave	5.16	0.73	0.22	0.25	23.3
		SD	0.02	0.04	0.00	0.00	0.44
		CV	0.3	5.6	0.5	1.3	1.9
1	Company D Can products 350mL	n1	5.27	1.35	0.226	0.257	23.1
2		n2	5.26	1.31	0.225	0.260	23.5
3		n3	5.24	1.27	0.224	0.261	23.7
		Ave	5.26	1.31	0.23	0.26	23.4
		SD	0.02	0.04	0.001	0.002	0.31
		CV	0.3	3.1	0.4	0.8	1.3

8. Summary

The gas volume and air content of commercial beer could be measured in GV / P + AIR mode. Regardless of the sample packing form (glass bottle or can), it was confirmed that measurement was reproducible well.

9. References

None