Quality

ABMI

Association of the Beverage
Machinery Industry

Method sheet: Bottle washing machine
Sheet no.:   050401 – 1.01
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Machine: **Bottle washing machine**
Criteria: **Cleanliness of processed bottles**

Contents:

Cleanliness of processed bottles

1.   Definition: Machine and criteria

To validate the correct operation of a bottle washing machine, several interrelating parameters are measured.

Further related documents:

- BRAUWELT Nr. 41/42 (2004) page 1240 et seqq.
- User manual Tensiometer
- User manual Photometer
- User manual Cuvette Test

2.   Inspection

2.1   Scope

The cleaning effect of a bottle washing machine depends on several parameters. To check cleaning results, the VLB Berlin has established the so-called "triple jump". These three parameters show the cleaning effect of the machine.

2.2   Apparatus

2.2.1 Chemical oxygen demand

Device for detecting the COD (chemical oxygen demand) in a range of 5 to 60 mg O_2/l. (e.g. Dr. Lange Spectral photometer Cadas 100 and Cuvette Test LCK 414)

2.2.2 Surface tension

Tensiometer to gauge the surface tension in a range up to 74 mN/m. (e.g. Krüss ring method K12 or plate method K11)

2.2.3 Non-ionic tensides

Device to detect the concentration of non-ionic tensides in a range from 0.2 mg/l to 6.0 mg/l (e.g. Dr. Lange Spectral photometer Cadas 100 and Cuvette Test LCK 333)

2.3   Procedure

Rinse collected bottles with distilled water. The amount should be 10% of the nominal content of the bottles (e.g. 50 ml for a 500 ml standard beer bottle). Turn bottle 10 times around the middle axis and effuse the rinsing water in a test container (do not pipette...) Determine the values for chemical oxygen demand, surface tension and non-ionic tensides. Enter the results in the following data sheet.

3.   Sampling

To check the cleaning quality, samples of processed bottles are needed. Samples have to be taken after minimum 2 hours of production in standard operation and at nominal capacity.
Quantity of sample bottles: One row of the bottle washer's bottle cells, max. 100 bottles.
For all actions the relevant safety instructions must be strictly adhered to.

3.1   Calculation

Free

3.2 Results and data sheets

3.2.1 Data sheet

Date: _____ Site: _____ Line: _____
Product: _____ Bottle type: _____

# of bottle	Surface tension [mN/m]	COD [mg/l]	Non-ionic tenside [mN/m]	# of bottle [mg/l]	Surface tension [ml]	COD [mg/l]	Non-ionic tenside
1				51			
2				52			
3				53			
4				54			
5				55			
6				56			
7				57			
8				58			
9				59			
10				60			
11				61			
12				62			
13				63			
14				64			
15				65			
16				66			
17				67			
18				68			
19				69			
20				70			
21				71			
22				72			
23				73			
24				74			
25				75			

3.2.1 Data sheet part (II/II)

# of bottle	Surface tension [mN/m]	COD [mg/l]	Non-ionic tenside [mg/l]
76			
77			
78			
79			
80			
81			
82			
83			
84			
85			
86			
87			
88			
89			
90			
91			
92			
93			
94			
95			
96			
97			
98			
99			
100			

4. **Evaluation and Documentation**

4.1   Evaluation

The actual detected chemical oxygen demand of rinsing water is smaller or equal than warranted in the contract.

Actual detected _____mg/l ≤_____ mg/l agreed.

The actual detected surface tension of rinsing water is bigger than warranted in the contract.

Actual detected _____mN/m ≥_____mN/m agreed

The content of non-ionic tensides of rinsing water is smaller than warranted in the contract.

Actual detected _____mg/l ≤_____mg/l agreed.

4.2   Documentation

When the determinated results are within the warranted ranges, the cleaning result is o.k.

Cleanliness of processed bottles is o.k.   ▪
Cleanliness of processed bottles is not o.k.   ▪

Name and signature of inspector: _____