

Method sheet: Bottle washing machine

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Machine: Bottle washing machine

Criteria: Cleanliness of processed bottles

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# 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 O2/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

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3.2	Res	ults	and	data	shee	ts

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Date:	Site:	Line:	
Product:	Bottle type:		

	Surface		Non-ionic		Surface		Non-ionic
# of bottle	tension	COD	tenside	# of bottle	tension	COD	tenside
[mN/m]	[mg/l]	[mg/l]	[mN/m]	[mg/l]	[ml]	[mg/l]	
1				51	\		
2				52	Visiting 1		
3				53			
4				54	100		
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)

	1		
# 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 the contract.	smaller or equal than warranted in
Actual detectedmg/l ≤ mg/l agreed.	
The actual detected surface tension of rinsing water is bigger that	an warranted in the contract.
Actual detectedmN/m ≥mN/m agreed	
The content of non-ionic tensides of rinsing water is smaller than	warranted in the contract.
Actual detectedmg/l ≤mg/l agreed.	
4.2 Documentation	
When the determinated results are within the warranted ranges, t	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:	