

SGS INSTITUT FRESENIUS GmbH • Postfach 1261 • 65220 Taunusstein

Valpar Industrial Limited 13 Balloo Drive  
 Balloo Industrial Estate  
 Bangor, co. Down  
 GB-BT19 7QY

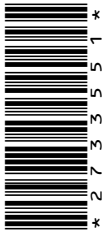
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 Consumer Testing Services  
 Non Food

Taunusstein, 18/11/2015

**Test-report no. 2733551**  
**Test-report version < 1 >**

| Original Sample ID | Sample Description                  | Sample Receipt Date |
|--------------------|-------------------------------------|---------------------|
| 150920390          | 6.7mm x 9.5mm Brewmaster2-SK012-002 | 07/10/2015          |

**General Information**



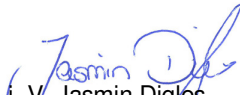
|                    |   |
|--------------------|---|
| SGS-Client's ID    | : 5854600                                 |
| SGS-Customer-Order | : 3523657                                 |
| Ordering date      | : 05/10/2015                              |
| Testing period     | : 13/10/2015 – 03/11/2015                 |
| Order No.          | : -                                       |
| Testing scope      | : Test according to client's requirements |

**Assessment**

|  |             |
|--|-------------|
| <b>Overall assessment</b>  | <b>pass</b> |
| The sample meets the requirements of LFGB and Regulation (EC) No. 1935/2004 in the tested items. |             |

For more information please refer to the next pages.  
 The performed analyses were performed acc. to client's request and serve as random assurance of product quality regarding the compliance with legally binding limits as well as arranged and commercially available benchmarks. The analysis is not necessarily performed on homogeneous material level and does not claim completeness with the selected subsamples.

**SGS INSTITUT FRESENIUS GmbH**

  
 i. V. Jasmin Digles  
 (Project Manager)

  
 i. A. Zamien Sarkardeh  
 (Project Manager)

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**Summary of results**

| Test   | Result |
|--|--------|
| sensory test   | pass   |
| overall migration  | pass   |
| specific migration of maleic acid (Ref. No: 19540/64800, CAS No: 110-16-7) and maleic anhydride (Ref. No: 19960, CAS No: 108-31-6) | pass   |
| Specific migration of 1-octene (Ref. No: 22660, CAS No: 111-66-0)  | pass   |
| Specific migration of primary aromatic amines  | pass   |
| Specific migration of 11-aminoundecanoic acid (Ref. No: 12788, CAS No: 2432-99-7)  | pass   |

**Note:**

Conclusions on pass/fail are based on the test result from the actual sampling of the received sample(s).

Conclusions are based on the relevant requirements; measurement uncertainties are not taken into account. Only results above the relevant detection limit are taken into account for the calculation of sums.

Test was conducted on composite of random parts of the item as per client's request and the test result is the overall result.

The composite sampling method is based on the client's special request and could be a modification from the testing standard.

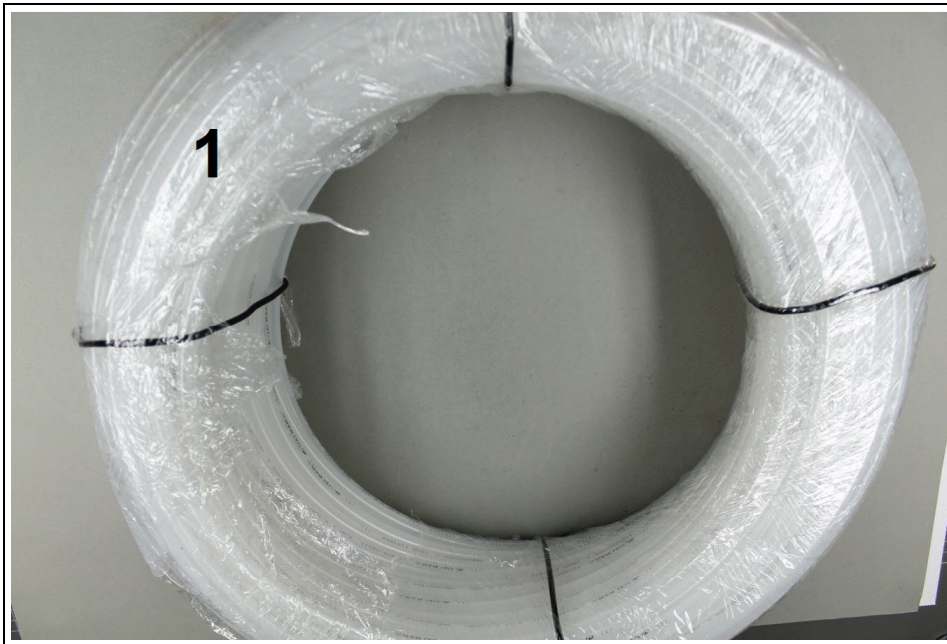
For 2-composite mix with results exceeding one half of the relevant requirements or 3-composite mix with results exceeding one third of the relevant requirements, the composite sample may have the possibility of one or more components that can lead to a failure result, it is recommended to test on individual basis.

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### Photo documentation



### List of sample parts

| Comp. no | Component-ID | Sample-Description                         |  |  | Original Sample ID |
|----------|--------------|--|--|--|--------------------|
| 1        | -            | 6.7mm x 9.5mm<br>Brewmaster2-SK012-<br>002 |  |  | 150920390          |

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**Analytical results**

**sensory test**

**Test Method**

According to BfR Recommendation VIII: „Kunststoffrohre für Getränkeleitungen in Getränkeschankanlagen“ (Plastic tubes for bar dispensers)

**Pre-treatment**

The tube was twice filled with cold 2 % sodium carbonate solution, (contact time: 10 minutes) and afterwards rinsed with running tap water. Then the tubes were filled with the test liquids, closed on both ends with glass stoppers and stored for 24 hours at room temperature (water) or 11 C ± 1 C (beer). The test liquid was rejected.

**migration**

Following the pre-treatment the tubes were filled again with the same test liquids and the ends closed with glass stoppers. After a contact time of 24 hours room temperature (water) or 11 °C ± 1 °C (beer) the test liquid was sensory tested in comparison to a blank. A blank is a similar treated test liquid without sample contact. The migration was repeated with the same sample for another 24 hours, followed by 12 hours and 6 hours.

The sensory test was carried out according to DIN 10955.

Condition  
 Carbonated water

| <u>Subsample(s)</u>       | <u>Result</u>                                     | <u>Result</u>                                     | <u>Result</u>                                    |
|---------------------------|---|---|--|
|                           | <u>1</u>  | <u>1</u>  | <u>1</u>   |
|                           | <b>1<sup>st</sup> Contact</b><br>(after 24 hours) | <b>3<sup>rd</sup> Contact</b><br>(after 12 hours) | <b>4<sup>th</sup> Contact</b><br>(after 6 hours) |
| Median Odour <sup>a</sup> | 0.5   | 0   | 0  |
| Median Taste              | 1.5   | 1.5   | 0.5  |
| Conclusion                | pass  | pass  | pass   |

Condition  
 Beer

| <u>Subsample(s)</u>       | <u>Result</u>                                     | <u>Result</u>                                     | <u>Result</u>                                    |
|---------------------------|---|---|--|
|                           | <u>1</u>  | <u>1</u>  | <u>1</u>   |
|                           | <b>1<sup>st</sup> Contact</b><br>(after 24 hours) | <b>3<sup>rd</sup> Contact</b><br>(after 12 hours) | <b>4<sup>th</sup> Contact</b><br>(after 6 hours) |
| Median Odour <sup>a</sup> | 0.5   | 0   | 0.5  |
| Median Taste              | 1.0   | 1   | 1.0  |
| Conclusion                | pass  | pass  | pass   |

Median rounded at 0.5 grades

Key:

|   |   |                                   |
|---|---|-----------------------------------|
| 0 | = | no change                         |
| 1 | = | very slight off odour / off-taste |
| 2 | = | slight off- odour / off-taste     |
| 3 | = | distinct off- odour / off-taste   |
| 4 | = | strong off-odour / off-taste      |

**Requirement:** With an assessment from 0 to 2.5 there is no, respectively a tolerable organoleptic impact existent in terms of Regulation (EG) No 1935/2004

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**overall migration**

**Test Method**  
 DIN EN 1186

simulant 3% acetic acid  
 duration 10 days  
 temperature 40 +/- 2°C  
 approach 61 dm<sup>2</sup>/L

| <b><u>Subsample(s)</u></b> | <b><u>Unit</u></b> | <b><u>Result</u></b> |
|----------------------------|--------------------|----------------------|
|                            |                    | <b>1</b>             |
| overall migration          | mg/dm <sup>2</sup> | 1st contact          |
| Conclusion                 |                    | < 1<br>pass          |

simulant 20% ethanol  
 duration 10 days  
 temperature 40 +/- 2°C  
 approach 61 dm<sup>2</sup>/L

| <b><u>Subsample(s)</u></b> | <b><u>Unit</u></b> | <b><u>Result</u></b> |
|----------------------------|--------------------|----------------------|
|                            |                    | <b>1</b>             |
| overall migration          | mg/dm <sup>2</sup> | 1st contact          |
| Conclusion                 |                    | < 1<br>pass          |

Note:

**Requirement:** max. 10 mg/dm<sup>2</sup> (Regulation (EU) No 10/2011)

analytical tolerance of the method (§ 64 LFGB B 80.30-3 (EG)):  
 2 mg/dm<sup>2</sup> for aqueous simulants  
 3 mg/dm<sup>2</sup> for olive oil and fat substitutes

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**specific migration of maleic acid (Ref. No: 19540/64800, CAS No: 110-16-7) and maleic anhydride (Ref. No: 19960, CAS No: 108-31-6)**

**Test Method**

ion chromatography , after migration DIN EN 13130-1

simulant 3% acetic acid  
 duration 24 hours  
 temperature 40 +/- 2°C  
 approach 61 dm<sup>2</sup>/L

| <u>Subsample(s)</u>         | <u>Unit</u> | <u>Result</u> |
|-----------------------------|-------------|---------------|
|                             |             | <b>1</b>      |
|                             |             | 3rd contact   |
| maleic acid (110-16-7)      | mg/kg       | < 1.0         |
| maleic anhydride (108-31-6) | mg/kg       | < 1.0         |
| Conclusion                  |             | Pass          |

simulant 20% ethanol  
 duration 24 hours  
 temperature 40 +/- 2°C  
 approach 61 dm<sup>2</sup>/L

| <u>Subsample(s)</u>    | <u>Unit</u> | <u>Result</u> |
|------------------------|-------------|---------------|
|                        |             | <b>1</b>      |
|                        |             | 3rd contact   |
| maleic acid (110-16-7) | mg/kg       | < 1.0         |
| maleic acid (108-31-6) | mg/kg       | < 1.0         |
| Conclusion             |             | Pass          |

Note:

**Requirement:** max. 30 mg/kg food simulant (calculated as maleic acid) (Regulation (EU) No 10/2011)

**Specific migration of 1-octene (Ref. No: 22660, CAS No: 111-66-0)**

**Test Method**

SOP M1030, SPME HS-GC-MS , after migration DIN EN 13130-1

simulant 20% ethanol  
 duration 24 hours  
 temperature 40 +/- 2°C  
 approach 61 dm<sup>2</sup>/L

| <u>Subsample(s)</u> | <u>Unit</u> | <u>Result</u> |
|---------------------|-------------|---------------|
|                     |             | <b>1</b>      |
|                     |             | 3rd contact   |
| 1-octene (111-66-0) | mg/kg       | < 0.10        |
| Conclusion          |             | Pass          |

Note:

**Requirement:** max. 15 mg/kg food simulant (Regulation (EU) No 10/2011)

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**Specific migration of primary aromatic amines**

**Test Method**

Migration: DIN 13130-1; measurement: LC-MS/MS

simulant 3% acetic acid  
 duration 24 hours  
 temperature 40 +/- 2°C  
 approach 61 dm<sup>2</sup>/L

| <b><u>Subsample(s)</u></b>  | <b>Unit</b>         | <b><u>Result</u></b><br><b>1</b><br>1st contact |
|-----------------------------|---------------------|---|
| Toluidine                   | mg/kg food simulant | < 0.01  |
| 2,4/2,6-Tolylenediamine     | mg/kg food simulant | < 0.01  |
| 2,4,5-Trimethylaniline      | mg/kg food simulant | < 0.01  |
| 2,4-Diaminoanisol           | mg/kg food simulant | < 0.01  |
| 3,3'-Dimethylbenzidine      | mg/kg food simulant | < 0.01  |
| Aniline                     | mg/kg food simulant | < 0.01  |
| 1,2/1,4-Phenylenediamine    | mg/kg food simulant | < 0.01  |
| 2,4/2,6-Dimethylaniline     | mg/kg food simulant | < 0.01  |
| o-Anisidine                 | mg/kg food simulant | < 0.01  |
| 4-Chloroaniline             | mg/kg food simulant | < 0.01  |
| p-Kresidine                 | mg/kg food simulant | < 0.01  |
| 4-Chloro-o-toluidine        | mg/kg food simulant | < 0.01  |
| 1,5-Diaminonaphthalene      | mg/kg food simulant | < 0.01  |
| 4-Aminodiphenyl             | mg/kg food simulant | < 0.01  |
| Benzidine                   | mg/kg food simulant | < 0.01  |
| 4,4'-Diaminodiphenylmethane | mg/kg food simulant | < 0.01  |
| 4,4'-Oxydianiline           | mg/kg food simulant | < 0.01  |
| 3,3'-Dimethyl-              | mg/kg food simulant | < 0.01  |
| 4,,4'diaminodiphenylmethane |                     |   |
| Conclusion                  |                     | pass  |

**Requirement :** not detectable (< 0.01 mg/kg food simulant) (Regulation (EU) No 10/2011)

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**specific migration of 11-aminoundecanoic acid (Ref. No: 12788, CAS No: 2432-99-7)**

**Test Method**

ion chromatography , after migration DIN EN 13130-1

simulant 3% acetic acid  
 duration 24 hours  
 temperature 40 +/- 2°C  
 approach 61 dm<sup>2</sup>/L

| <u>Subsample(s)</u>                 | <u>Unit</u> | <u>Result</u>        |
|-------------------------------------|-------------|----------------------|
|                                     |             | <b>1</b>             |
| 11-aminoundecanoic acid (2432-99-7) | mg/kg       | 3rd contact<br>< 1.0 |
| Conclusion                          |             | Pass                 |

simulant 20% ethanol  
 duration 24 hours  
 temperature 40 +/- 2°C  
 approach 61 dm<sup>2</sup>/L

| <u>Subsample(s)</u>                 | <u>Unit</u> | <u>Result</u>        |
|-------------------------------------|-------------|----------------------|
|                                     |             | <b>1</b>             |
| 11-aminoundecanoic acid (2432-99-7) | mg/kg       | 3rd contact<br>< 1.0 |
| Conclusion                          |             | Pass                 |

Note:

**Requirement:** max. 5 mg/kg food simulant (Regulation (EU) No 10/2011)

\*\*\* End of test report \*\*\*