

AKO Armaturen & Separationstechnik GmbH
Frederic Kopp
Adam-Opel Strasse 5
65468 Trebur-Astheim

Original test report, 22.09.2015
Modified test report, 14.10.2015

Modified test report No. FUFDCP2015-09250eEM

This test report replaces invariably test report No. FUFDCP2015-09250eE, dated 28.09.2015.

General note: Copying this test report partially is permitted only in agreement with the contracted lab. The tests results refer only to the tested item. This report consists of 5 page(s). Test methods marked with * are not listed in our accreditation document. **subcontract

Sample description: **Schwarze Gummiplatten rund, SAA9535/80**
Material: EPDM HTEC

Sample Entry: 10.08.2015
Testing period: 10.08. – 22.09.2015
Sampling through client
Head of analytical department: Christoph Dorsch
Testing acc. to client's request

Acc. to the client's confirmation the tested sample EPDM HTEC (SAA9535-80) consists of the same material and quality, which is used as elastomer for the production of the pinch valve sleeves of the following AKO Article-numbers:

M010.04HTEC; M010.04HTECK; M010.04HTECKE; M010.04HTECLF; M010.04HTECKLF;
M015.04HTEC; M015.04HTECK; M015.04HTECKE; M015.04HTECLF; M015.04HTECKLF;
M020.04HTEC; M020.04HTECK; M020.04HTECKE; M020.04HTECLF; M020.04HTECKLF;
M025.04HTEC; M025.04HTECK; M025.04HTECKE; M025.04HTECLF; M025.04HTECKLF;
M032.04HTEC; M032.04HTECE; M032.04HTECLF;
M040.04HTEC; M040.04HTECE; M040.04HTECLF;
M050.04HTEC; M050.04HTECE; M050.04HTECLF;
M065.04HTEC; M065.04HTECE; M065.04HTECLF;
M080.04HTEC; M080.04HTECE; M080.04HTECLF;
M100.04HTEC; M100.04HTECE; M100.04HTECLF;
M125.04HTEC; M125.04HTECE; M125.04HTECLF;
M150.04HTEC; M150.04HTECE; M150.04HTECLF;
M200.04HTEC; M200.04HTECE; M200.04HTECLF;
M250.04HTEC; M250N.04HTEC; M250.04HTECLF; M0250N.04HTECLF
M300.04HTEC; M300.04HTECLF

- Picture and test results please see next page(s) -



Test results

1. Sensory testing

Method: § 64 LFGB L 00.90-6

Testing conditions: Water demin (10 min / 40°C)

Evaluation (average)

Sample	
Appearance of simulant	0
Odour of simulant	1
Taste of simulant	1
Status	passed

Evaluation scale

0 = no aberration, neutral

1 = very slight deterioration, barely perceivable

2 = slight deterioration

3 = significant deterioration

4 = strong deterioration

Requirement: no significant deterioration (Limit: 2.5)

2. Physical-chemical testing

2.1. Specific Migration of formaldehyde

Method: DIN EN 13130-1 / PV_L_02.04.02

Testing conditions: Acetic Acid 3% (10 min / 40°C)

Limit of quantification: 1.0 mg/l n.d. = not determinable

Sample	
Formaldehyde (mg/l)	n.d.
Status	passed

Requirement max. 3 mg/l

2.2. Specific migration of Primary Aromatic Amines (PAA)

Method: DIN EN 13130-1 / LC-MS*

Testing conditions: Acetic acid 3% (10 min / 40°C)

Limit of detection: 10 µg/kg

Sample	
PAA µg/kg	< 10
Status	passed

Requirement: not detectable

2.3. Polycyclic aromatic hydrocarbons according to US-EPA + 2 EFSA PAH in mg/kg

Test method: ZEK 01.4-08 (2011-11) complies with AfPS GS 2014:01 (2014-08)

Limit of quantification: 0.10 mg/kg n.d. = not determinable

Substances	CAS-No	
1 Naphthalene	91-20-3	0.12
2 Acenaphthylene	208-96-8	n.b.
3 Acenaphthen	83-32-9	n.b.
4 Fluorene	86-73-7	n.b.
5 Phenanthrene	85-01-8	n.b.
6 Anthracene	120-12-7	n.b.
7 Fluoranthene	206-44-0	0.17
8 Pyrene	129-00-0	1.5
9 Benzo(a)anthracene	56-55-3	n.b.
10 Chrysene	218-01-9	n.b.
11 Benzo(b)fluoranthene + 12 Benzo(j)fluoranthene	205-99-2 + 205-82-3	n.b.
13 Benzo(k)fluoranthene	207-08-9	n.b.
14 Benzo(a)pyrene	50-32-8	n.b.
15 Indeno(1,2,3-cd)pyrene	193-39-5	n.b.
16 Dibenzo(a,h)anthracene	53-70-3	n.b.
17 Benzo(ghi)perylene	191-24-2	n.b.
18 Benzo(e)pyrene	192-97-2	n.b.
sum		1.8

Status: Specific Migration recommended (see 2.4).

2.4. Specific Migration of Polycyclic Aromatic Hydrocarbons in $\mu\text{g}/\text{kg}$

Test method: DIN EN 13130-1 / ZEK 01.4-08 (2011-11) complies with AfPS GS 2014:01 (2014-08)

Testing conditions: Ethanol 95% (10min/ 40°C)

Limit of quantification: 10 $\mu\text{g}/\text{kg}$ n.d. = not determinable

Substances	CAS-No	
1 Naphthalene	91-20-3	n.d.
2 Acenaphthylene	208-96-8	n.d.
3 Acenaphthen	83-32-9	n.d.
4 Fluorene	86-73-7	n.d.
5 Phenanthrene	85-01-8	n.d.
6 Anthracene	120-12-7	n.d.
7 Fluoranthene	206-44-0	n.d.
8 Pyrene	129-00-0	n.d.
9 Benzo(a)anthracene	56-55-3	n.d.
10 Chrysene	218-01-9	n.d.
11 Benzo(b)fluoranthene +	205-99-2 +	n.d.
12 Benzo(j)fluoranthene	205-82-3	
13 Benzo(k)fluoranthene	207-08-9	n.d.
14 Benzo(a)pyrene	50-32-8	n.d.
15 Indeno(1,2,3-cd)pyrene	193-39-5	n.d.
16 Dibenzo(a,h)anthracene	53-70-3	n.d.
17 Benzo(ghi)perylene	191-24-2	n.d.
18 Benzo(e)pyrene	192-97-2	n.d.
sum		n.d.

Requirement: not detectable (LOQ = 10 $\mu\text{g}/\text{kg}$)

Status: passed

2.5. Total content of heavy metals

Method: microwave digestion $\text{HNO}_3/\text{H}_2\text{O}_2$ / DIN EN ISO 11885 (E22) 2009-09

Limit of quantification: Cadmium 5 mg/kg, Lead 10 mg/kg, Zinc 25 mg/kg

n.d. = not determinable

Sample	
Cadmium mg/kg	n.d.
Lead mg/kg	n.d.
Zinc mg/kg	13.000
Status	passed

Requirements: Cadmium max. 100 mg/kg
Lead max. 30 mg/kg
Zinc: max. 30.000 mg/kg

2.6. Release of N-Nitrosamines

Method: DIN EN 13130-1 / GC-TEA**

Testing conditions: Water _{demin} (10 min / 40°C)

Limit of quantification: 0.5 µg/dm² n.d. = not determinable

Substance	Result Nitrosamines
N-Nitrosamines µg/dm ²	n.d.
Status	passed

Requirement max. 1 µg/dm²

Summary:

Regarding the tested parameters the present sample complies with regulation (EC) 1935/2004 and the German LFGB.



Christoph Dorsch
Deputy lab manager food contact