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DENMARK

**Report No.:** 06732-1 SHA18  
**Date:** 22.06.18  
**Order No.:** SHA-09447-18  
**Date of order:** 14.06.18  
**Contact:** Penny Guo  
**Direct dial:** +86(21) 60725688 x 5659  
**Email:** penny.guo@hansecontrol.com

## Test Report

Order description:

**Chemical Test**

Article Name	Silicone O-ring
Condition of sample at delivery	no defects
Arrival date	14.06.18
Test start date	14.06.18
Test end date	22.06.18



### Limit lists

Chem.	Limit values according to legal requirements
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**Final conclusion: PASS**

*Test results and evaluation are only related to tested items and to performed methods. Detailed information regarding measurement uncertainties are available on request.*

*Sara Shen*

Sara Shen  
Head of Report Review Team

## Summary

18-029634-01 - Silicone O-ring

All test results comply with the requirements according to the scope of analysis.

Remark: The test items (Migration of certain elements(Category 3), Monomers (migration), Plasticizers (migration) and Solvent (migration) ) were conducted by an accredited subcontractor.

## Overview of Chem. testing

Sample no	Type / Style
18-029634-01	-

Component list	
No	Components
01	O-ring blue silicone

Customer requirements evaluation				
	Components			
	Tested	Result	Failed	Not tested
Migration of certain elements(Category 3)	01	PASS		
Monomers (migration)	01	PASS		
Organotin compounds	01	PASS		
Phthalates	01	PASS		
Plasticizers (migration)	01	PASS		
Polycyclic aromatic hydrocarbons (PAHs - Category 1)	01	PASS		
Short chain chlorinated paraffins(SCCP)	01	PASS		
Solvent (migration)	01	PASS		
Total Cadmium	01	PASS		

Legend: Chem.: chemical tests, Phys.: physical tests, m.s.: composite sample, n.d.: not determined, n.a.: not applicable, n.t.: not tested, i.m.: insufficient material, sum: see summary, s.c.: see component, pos: positive, neg: negative, min: minimum limit, max: maximum limit

## Detailed results of Chem. testing

Sample no: 18-029634-01

### Migration of certain elements(Category 3)

Sample type: Chem.

Norm: EN 71-3

			01
Parameter	Unit	Limit	Result
Lead (Pb) EN 71-3 category 3	mg/kg	23	<10
Antimony (Sb): EN 71-3 category 3	mg/kg	560	<10
Arsenic (As) EN 71-3 category 3	mg/kg	47	<10
Barium (Ba): EN 71-3 category 3	mg/kg	18750	<50
Cadmium (Cd): EN 71-3 category 3	mg/kg	17	<10
Chromium III (Cr III) EN 71-3 category 3	mg/kg	460	<5
Chromium VI (Cr VI) EN 71-3 category 3	mg/kg	0.2	<0.2
Mercury (Hg) EN 71-3 category 3	mg/kg	94	<10
Selenium (Se): EN 71-3 category 3	mg/kg	460	<10
Boron (B): EN 71-3 category 3	mg/kg	15000	<50
Cobalt (Co): EN 71-3 category 3	mg/kg	130	<10
Manganese (Mn): EN 71-3 category 3	mg/kg	15000	<50
Strontium (Sr): EN 71-3 category 3	mg/kg	56000	<50
Tin (Sn): EN 71-3 category 3	mg/kg	180000	<5
Zinc (Zn): EN 71-3 category 3	mg/kg	46000	<50
Copper (Cu): EN 71-3 category 3	mg/kg	7700	<50
Aluminum (Al): EN 71-3 category 3	mg/kg	70000	<50
Nickel (Ni): EN 71-3 category 3	mg/kg	930	<10
Organo tin compounds DIn EN 71-3 category 3	mg/kg	12	<0.02
<b>Evaluation</b>			<b>PASS</b>

### Monomers (migration)

Sample type: Chem.

Norm: DIN EN 71-9 /-10 /-11

			01
Parameter	Unit	Limit	Result
Acrylamide	mg/l	0.02	<0.02
Bisphenol A	mg/l	0.1	<0.02
Formaldehyde	mg/l	2.5	<1
Phenol	mg/l	15	<1
Styrene	mg/l	0.75	<0.05
<b>Evaluation</b>			<b>PASS</b>

### Organotin compounds

Sample type: Chem.

Norm: CEN ISO/TS 16179(mod.)

			01
Parameter	Unit	Limit	Result
Dibutyltin (DBT)	mg/kg	1000	<0.025
Diocetyl tin (DOT)	mg/kg	1000	<0.025
Triphenyltin (TPhT)	mg/kg	1000	<0.025
Tributyltin (TBT)	mg/kg	1000	<0.025
<b>Evaluation</b>			<b>PASS</b>

### Phthalates

Sample type: Chem.

Norm: ISO 14389(mod.)

			01
Parameter	Unit	Limit	Result
Dibutyl phthalate / DBP	%	-	<0.005
Butylbenzyl phthalate/ BBP	%	-	<0.005
Di-(2ethylhexyl)-phthalate / DEHP	%	-	<0.005
Di-n-octylphthalate / DNOP	%	-	<0.005
Di-iso-nonylphthalate / DINP	%	-	<0.005
Di-iso-decylphthalate / DIDP	%	-	<0.005
Plasticizer - phthalic acid esters: DEHP, DBP, BBP	%	0.1	<0.1
Plasticizer - phthalic acid esters: DINP, DIDP, DNOP	%	0.1	<0.1
<b>Evaluation</b>			<b>PASS</b>

### Plasticizers (migration)

Sample type: Chem.

Norm: DIN EN 71-9 /-10 /-11

			01
Parameter	Unit	Limit	Result
Tri-m-kresylphosphate	mg/l	0.03	<0.02
Tri-o-kresylphosphate	mg/l	0.03	<0.02
Tri-p-kresylphosphat	mg/l	0.03	<0.02
Triphenylphosphate	mg/l	0.03	<0.02
<b>Evaluation</b>			<b>PASS</b>

### **Polycyclic aromatic hydrocarbons (PAHs - Category 1)**

Sample type: Chem.

Norm: AfPS GS 2014:01 PAK

			01
Parameter	Unit	Limit	Result
Acenaphthylene	mg/kg	-	<0.2
Acenaphthene	mg/kg	-	<0.2
Fluorene	mg/kg	-	<0.2
Phenanthrene	mg/kg	-	<0.2
Anthracene	mg/kg	-	<0.2
Fluoranthene	mg/kg	-	<0.2
Pyrene	mg/kg	-	<0.2
Benzo[a]pyrene	mg/kg	0.2	<0.2
Benzo[e]pyrene	mg/kg	0.2	<0.2
Benzo[a]anthracene	mg/kg	0.2	<0.2
Benzo[b]fluoranthene	mg/kg	0.2	<0.2
Benzo[j]fluoranthene	mg/kg	0.2	<0.2
Benzo[k]fluoranthene	mg/kg	0.2	<0.2
Chrysene	mg/kg	0.2	<0.2
Dibenzo[a,h]anthracene	mg/kg	0.2	<0.2
Benzo(g,h,i)perylene	mg/kg	0.2	<0.2
Indeno[1,2,3-cd]pyrene	mg/kg	0.2	<0.2
Naphthalene	mg/kg	1	<0.2
Sum PAH (acenaphthylene, acenaphthene, fluorene, phenanthrene, pyrene, anthracene, fluoranthene)	mg/kg	1	<0.2
Polycyclic aromatic hydrocarbons - sum 18-PAH	mg/kg	1	<1
<b>Evaluation</b>			<b>PASS</b>

### **Short chain chlorinated paraffins(SCCP)**

Sample type: Chem.

Norm: DIN EN ISO 18219 (mod.)

			01
Parameter	Unit	Limit	Result
Short chain chlorinated paraffins C10-C13 (SCCP)	mg/kg	1500	<50
<b>Evaluation</b>			<b>PASS</b>

**Solvent (migration)**

Sample type: Chem.

Norm: DIN EN 71-9 /-10 /-11

			01
Parameter	Unit	Limit	Result
Trichloroethene	mg/l	0.02	<0.01
Dichloromethane	mg/l	0.06	<0.02
2-Ethoxyethanol *	mg/l	-	<0.01
2-Ethoxyethylacetat *	mg/l	-	<0.01
2-Methoxyethylacetat *	mg/l	-	<0.01
2-Methoxypropylacetat *	mg/l	-	<0.01
Bis(2-methoxyethyl)ether *	mg/l	-	<0.01
Glykolether total (*) EN 71-9	mg/l	0.5	<0.5
Methanol	mg/l	5	<0.5
Nitrobenzene	mg/l	0.02	<0.01
Cyclohexanone	mg/l	46	<0.1
3,5,5-Trimethyl-2-cyclohexen-1-on (Isophoron)	mg/l	3	<0.1
Toluene	mg/l	2	<0.1
Ethylbenzene	mg/l	1	<0.1
xylene, total	mg/l	2	<0.3
<b>Evaluation</b>			<b>PASS</b>

**Total Cadmium**

Sample type: Chem.

Norm: EPA 3015 A ;EN ISO 17294-2;pr EN 16711-1

			01
Parameter	Unit	Limit	Result
Cadmium (Cd):total content	mg/kg	100	<10
<b>Evaluation</b>			<b>PASS</b>

The tested item was selected by the client. Remaining test material is disposed after 3 months. The report must not be reproduced except in full content without the written approval of the testing laboratory. The report is signed digitally and password protected. For printing use the print option -document and comments-. The amount of minor components may be insufficient to perform the announced tests. In this case the test report will carry the mark: component insufficient for lab test. If testing of all components is required we need a sufficient amount of all minor components.

### Migration of certain elements(Category 3)

Test method: EN 71-3

standardized method

Extractable Chromium(VI)& Extractable Chromium (III) - With reference to EN 71 Part 3, analysis was performed by HPLC-ICP-MS.  
Elements - With reference to EN 71 Part 3, analysis was performed by ICP-MS.  
Extractable Organic Tin -With reference to EN 71 Part 3, analysis was performed by GC-MS.

Parameter	CAS No	Parameter	CAS No
Aluminum (Al): EN 71-3 category 3	7429-90-5	Lead (Pb) EN 71-3 category 3	7439-92-1
Antimony (Sb): EN 71-3 category 3	7440-36-0	Manganese (Mn): EN 71-3 category 3	7439-96-5
Arsenic (As) EN 71-3 category 3	7440-38-2	Mercury (Hg) EN 71-3 category 3	7439-97-6
Barium (Ba): EN 71-3 category 3	7440-39-3	Nickel (Ni): EN 71-3 category 3	7440-02-0
Boron (B): EN 71-3 category 3	7440-42-8	Organo tin compounds DIN EN 71-3 category 3	
Cadmium (Cd): EN 71-3 category 3	7440-43-9	Selenium (Se): EN 71-3 category 3	7782-49-2
Chromium III (Cr III) EN 71-3 category 3		Strontium (Sr): EN 71-3 category 3	7440-24-6
Chromium VI (Cr VI) EN 71-3 category 3		Tin (Sn): EN 71-3 category 3	7440-31-5
Cobalt (Co): EN 71-3 category 3	7440-48-4	Zinc (Zn): EN 71-3 category 3	7440-66-6
Copper (Cu): EN 71-3 category 3	7440-50-8		

### Monomers (migration)

Test method: DIN EN 71-9 /-10 /-11

standardized method

determined in aqueous extracts of toy materials by headspace - gas chromatography with mass spectrometry detection

Parameter	CAS No	Parameter	CAS No
Acrylamide	79-06-1	Phenol	108-95-2
Bisphenol A	80-05-7	Styrene	100-42-5
Formaldehyde	50-00-0		

### Organotin compounds

Test method: CEN ISO/TS 16179(mod.)

standardized method

Parameter	CAS No	Parameter	CAS No
Dibutyltin (DBT)		Tributyltin (TBT)	
Diocetyl tin (DOT)		Triphenyltin (TPHT)	

### Phthalates

Test method: ISO 14389(mod.)

standardized method

With reference to ISO 14389 ,Analysis by GC/MS

Parameter	CAS No	Parameter	CAS No
Butylbenzyl phthalate/ BBP	85-68-7	Dibutyl phthalate / DBP	84-74-2
Di-(2ethylhexyl)-phthalate / DEHP	117-81-7	Di-iso-nonylphthalate / DINP	28553-12-0
Di-iso-decylphthalate / DIDP	26761-40-0	Di-n-octylphthalate / DNOP	117-84-0

### Plasticizers (migration)

Test method: DIN EN 71-9 /-10 /-11

standardized method

Parameter	CAS No	Parameter	CAS No
Tri-m-kresylphosphate	563-04-2	Triphenylphosphate	115-86-6
Tri-o-kresylphosphate	78-30-8	Tri-p-kresylphosphat	78-32-0



### Polycyclic aromatic hydrocarbons (PAHs - Category 1)

Test method: AfPS GS 2014:01 PAK

standardized method

Parameter	CAS No	Parameter	CAS No
Acenaphthene	83-32-9	Benzo[k]fluoranthene	207-08-9
Acenaphthylene	208-96-8	Chrysene	218-01-9
Anthracene	120-12-7	Dibenzo[a,h]anthracene	53-70-3
Benzo(g,h,i)perylene	191-24-2	Fluoranthene	206-44-0
Benzo[a]anthracene	56-55-3	Fluorene	86-73-7
Benzo[a]pyrene	50-32-8	Indeno[1,2,3-cd]pyrene	193-39-5
Benzo[b]fluoranthene	205-99-2	Naphthalene	91-20-3
Benzo[e]pyrene	192-97-2	Phenanthrene	85-01-8
Benzo[j]fluoranthene	205-82-3	Pyrene	129-00-0

### Short chain chlorinated paraffins(SCCP)

Test method: DIN EN ISO 18219 (mod.)

standardized method

Parameter	CAS No	Parameter	CAS No
Short chain chlorinated paraffins C10-C13 (SCCP)	85535-84-8		

### Solvent (migration)

Test method: DIN EN 71-9 /-10 /-11

standardized method

Parameter	CAS No	Parameter	CAS No
2-Ethoxyethanol	110-80-5	Ethylbenzene	100-41-4
2-Ethoxyethylacetat	111-15-9	Glykolether total (*) EN 71-9	
2-Methoxyethylacetat	110-49-6	Methanol	67-56-1
2-Methoxypropylacetat	70657-70-4	Nitrobenzene	98-95-3
3,5,5-Trimethyl-2-cyclohexen-1-on (Isophoron)	78-59-1	Toluene	108-88-3
Bis(2-methoxyethyl)ether	111-96-6	Trichloroethene	79-01-6
Cyclohexanone	108-94-1	xylenes, total	
Dichloromethane	75-09-2		

### Total Cadmium

Test method: EPA 3015 A ;EN ISO 17294-2;pr EN 16711-1

standardized method