

# Test Report

No. **8621.SH.1912**

Date: **01.03, 2019**

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Applicant

Address : ' '

Below information submitted by the applicant:

Name : stainless steel water bottle  
Model : L28094AB09  
Reference info. : 20428; 20450  
Manufacturer info. : /  
Buyer info. : /  
Destination : Europe  
Original : China

Sample Received : 09.20, 2019; 12.16, 2019  
Test Period : 09.20, 2019 - 09.26, 2019; 12.16, 2019 – 12.19, 2019  
Test Requirement : Refer to next pages  
Test Method : Refer to next pages  
Test Result : Refer to next pages  
Test Conclusion : Refer to next pages



Jerry Zhao, Technical Director  
Signed for and on behalf of  
TUV THURINGEN SHANGHAI CO., LTD.  
Shanghai

## RESULT SUMMARY

As requested by the client, according to the decree of General Requirement (Article 3) in EU Regulation No. 1935/2004, Commission Regulation (EU) No 10/2011 and its subsequent amendment Regulation EU No.321/2011, No.1282/2011, No.1183/2012, No.202/2014, No.865/2014, No. 2015/174, No.2016/1416, No.2017/752, No.2018/79, No.2018/213, No.2019/57, and Technical Guide on Metals and Alloys used in food contact materials and articles of the 1<sup>st</sup> edition in 2013 to materials which intended to come into contact with foodstuffs, test items as below:

Test Items	Verdict
1. Specific release heavy metals for metal materials – CM/Res(2013)9 for metal materials	PASS
2. Overall migration test; specific migration of primary aromatic amines; soluble heavy metals; specific migration of bisphenol A (BPA); specific migration of softeners and phthalates, color release for PP plastics	PASS
3. Overall migration test; specific migration of primary aromatic amines; soluble heavy metals; Extractable component, Total Lead, Cadmium and Platinum Content, Volatile organic matter (VOM), Peroxide Value, Organotin content (Monobutyltin, MBT; Dibutyltin, DBT; Tributyltin, TBT; Tetra-butyltin, TTBT; Mono-octyltin, MOT; Dioctyltin, DOT; Tricyclohexyltin, TcyT), Bisphenol A content for Silicone Materials	PASS

## SAMPLE DESCRIPTION

Sample description	1#	Silvery Stainless Steel Bottle Container (SUS304)
	2#	Black PP Stopper
	3#	Semi-transparent Silicone Sealer
	4#	Golden Alu. Metal Ring

## TEST RESULTS

### 1, Specific release heavy metals – CM/Res(2013)9

**Test method:** Sample prepared with reference to Technical Guide on Metals and Alloys used in food contact materials and articles of the 1<sup>st</sup> edition in 2013 (CM/Res(2013)9) and by Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES) and Inductively Coupled Plasma Optical Emission Spectrometer with Mass Detector (ICP-MS) analysis.

**Test Condition:** 70°C/2hours with Citric acid (5 g/L) (0.5%)

Extractable Elements	MDL	1 <sup>st</sup> Result	2 <sup>nd</sup> Result	1 <sup>st</sup> + 2 <sup>nd</sup> Result	7*Limit	Unit	mg/kg
		1#	1#	1#		3 <sup>rd</sup> Result	Limit
Silver, Ag	0.01	n.d.	n.d.	n.d.	0.56	n.d.	0.08
Aluminum, Al	0.01	n.d.	n.d.	n.d.	35	n.d.	5
Chromium, Cr	0.01	n.d.	n.d.	n.d.	1.75	n.d.	0.25
Cobalt, Co	0.01	n.d.	n.d.	n.d.	0.14	n.d.	0.02
Copper, Cu	0.01	n.d.	n.d.	n.d.	28	n.d.	4
Iron, Fe	0.01	n.d.	n.d.	n.d.	280	n.d.	40
Magnesium, Mg	0.01	n.d.	n.d.	n.d.	---	n.d.	---

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Extractable Elements	MDL	1 <sup>st</sup> Result	2 <sup>nd</sup> Result	1 <sup>st</sup> + 2 <sup>nd</sup> Result	7*Limit	Unit	mg/kg
		1#	1#	1#		3 <sup>rd</sup> Result	Limit
Manganese, Mn	0.01	n.d.	n.d.	n.d.	12.6	n.d.	1.8
Molybdenum, Mo	0.01	n.d.	n.d.	n.d.	0.84	n.d.	0.12
Nickel, Ni	0.01	n.d.	n.d.	n.d.	0.98	n.d.	0.14
Tin, Sn	0.01	n.d.	n.d.	n.d.	700	n.d.	100
Titanium, Ti	0.01	n.d.	n.d.	n.d.	---	n.d.	---
Vanadium, V	0.01	n.d.	n.d.	n.d.	0.07	n.d.	0.01
Zinc, Zn	0.01	n.d.	n.d.	n.d.	35	n.d.	5
Arsenic, As	0.001	n.d.	n.d.	n.d.	0.014	n.d.	0.002
Barium, Ba	0.01	n.d.	n.d.	n.d.	8.4	n.d.	1.2
Beryllium, Be	0.01	n.d.	n.d.	n.d.	0.07	n.d.	0.01
Cadmium, Cd	0.001	n.d.	n.d.	n.d.	0.035	n.d.	0.005
Mercury, Hg	0.001	n.d.	n.d.	n.d.	0.021	n.d.	0.003
Lithium, Li	0.01	n.d.	n.d.	n.d.	0.336	n.d.	0.048
Lead, Pb	0.001	n.d.	n.d.	n.d.	0.07	n.d.	0.010
Antimony, Sb	0.01	n.d.	n.d.	n.d.	0.28	n.d.	0.04
Thallium, Tl	0.0001	n.d.	n.d.	n.d.	0.0007	n.d.	0.0001

Note:

1. MDL = Method Detection Limit.

2. n.d. = Not detected, less than MDL.

3. The submitted sample/component is a repeated use article. The migration test was carried out three times on the same article. The sum of the results of the first and second tests should not exceed seven times the limit (Result 1<sup>st</sup> test + Result 2<sup>nd</sup> test < 7\* limit) and the Result 3<sup>rd</sup> should not exceed the limit.

Extractable Elements	MDL	1 <sup>st</sup> Result	2 <sup>nd</sup> Result	1 <sup>st</sup> + 2 <sup>nd</sup> Result	7*Limit	Unit	mg/kg
		4#	4#	4#		3 <sup>rd</sup> Result	Limit
Silver, Ag	0.01	n.d.	n.d.	n.d.	0.56	n.d.	0.08
Aluminum, Al	0.01	0.37	0.13	0.50	35	0.11	5
Chromium, Cr	0.01	n.d.	n.d.	n.d.	1.75	n.d.	0.25
Cobalt, Co	0.01	n.d.	n.d.	n.d.	0.14	n.d.	0.02
Copper, Cu	0.01	0.52	0.27	0.79	28	0.21	4
Iron, Fe	0.01	n.d.	n.d.	n.d.	280	n.d.	40
Magnesium, Mg	0.01	n.d.	n.d.	n.d.	---	n.d.	---

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Extractable Elements	MDL	1 <sup>st</sup> Result	2 <sup>nd</sup> Result	1 <sup>st</sup> + 2 <sup>nd</sup> Result	7*Limit	Unit	mg/kg
		4#	4#	4#		3 <sup>rd</sup> Result	Limit
Manganese, Mn	0.01	n.d.	n.d.	n.d.	12.6	n.d.	1.8
Molybdenum, Mo	0.01	n.d.	n.d.	n.d.	0.84	n.d.	0.12
Nickel, Ni	0.01	n.d.	n.d.	n.d.	0.98	n.d.	0.14
Tin, Sn	0.01	n.d.	n.d.	n.d.	700	n.d.	100
Titanium, Ti	0.01	n.d.	n.d.	n.d.	---	n.d.	---
Vanadium, V	0.01	n.d.	n.d.	n.d.	0.07	n.d.	0.01
Zinc, Zn	0.01	n.d.	n.d.	n.d.	35	n.d.	5
Arsenic, As	0.001	n.d.	n.d.	n.d.	0.014	n.d.	0.002
Barium, Ba	0.01	n.d.	n.d.	n.d.	8.4	n.d.	1.2
Beryllium, Be	0.01	n.d.	n.d.	n.d.	0.07	n.d.	0.01
Cadmium, Cd	0.001	n.d.	n.d.	n.d.	0.035	n.d.	0.005
Mercury, Hg	0.001	n.d.	n.d.	n.d.	0.021	n.d.	0.003
Lithium, Li	0.01	n.d.	n.d.	n.d.	0.336	n.d.	0.048
Lead, Pb	0.001	n.d.	n.d.	n.d.	0.07	n.d.	0.010
Antimony, Sb	0.01	n.d.	n.d.	n.d.	0.28	n.d.	0.04
Thallium, Tl	0.0001	n.d.	n.d.	n.d.	0.0007	n.d.	0.0001

**2, Overall migration test**

**Test Method:** With reference to

EN 1186-1:2002 guide to the selection of conditions and test methods for overall migration

EN 1186-3:2002 test methods for overall migration into aqueous food simulants by total immersion

Test Items	Test Results		Permissible Limit
	2#	3#	
Test Media	20% Ethanol		---
Temperature, °C	70	70	---
Contact Time, hour	2.0	2.0	---
Overall migration test, mg/dm <sup>2</sup>	<3.0	<3.0	10, max
Comment(s)	PASS	PASS	---

Test Items	Test Results		Permissible Limit
	2#	3#	
Test Media	3% acetic acid		---

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Test Items	Test Results		Permissible Limit
	2#	3#	
Temperature, °C	70	70	---
Contact Time, hour	2.0	2.0	---
Overall migration test, mg/dm <sup>2</sup>	<3.0	3.4	10, max
Comment(s)	PASS	PASS	---

### 3, specific migration of extractable heavy metal

**Test Method:** with reference to EN 13130-1:2004, followed by analysis using ICP-OES

Test Items	Test Results		Permissible Limit
	2#	3#	
Test Media	3% acetic acid		---
Temperature, °C	70	70	---
Contact Time, hour	2.0	2.0	---
Soluble Aluminum, mg/kg	<0.05	<0.05	1, max
Soluble Barium, mg/kg	<0.05	<0.05	1, max
Soluble Cobalt, mg/kg	<0.01	<0.01	0.05, max
Soluble Copper, mg/kg	<0.05	<0.05	5, max
Soluble Iron, mg/kg	<0.25	<0.25	48, max
Soluble Lithium, mg/kg	<0.05	<0.05	0.6, max
Soluble Manganese, mg/kg	<0.05	<0.05	0.6, max
Soluble Zinc, mg/kg	<0.25	<0.25	5, max
Soluble Nickel, mg/kg	<0.02	<0.02	0.02, max
Comment(s)	PASS	PASS	---

### 4, Specific Migration of Primary aromatic amine, PAA

**Test Method:** Sample preparation with reference to EN 13130-1:2004, followed by analysis with GCMS, UV-Vis

Test Items	Test Results		Permissible Limit
	2#	3#	
Test Media	3% acetic acid		---
Temperature, °C	70	70	---
Contact Time, hour	2.0	2.0	---
Specific migration of primary aromatic amine, mg/kg	<0.01	<0.01	0.01, max

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Test Items	Test Results		Permissible Limit
	2#	3#	
Comment(s)	PASS	PASS	---

## 5, Specific Migration of Bisphenol A

**Test Method:** sample preparation with reference to EN 13130-1:2004, EN 13130-3:2004, analysis by LC/MS/MS

Test Items	Test Results		Permissible Limit
	2#	3#	
Test Media	3% acetic acid		---
Temperature, °C	70	70	---
Contact Time, hour	2.0	2.0	---
Specific migration of bisphenol A, mg/kg	<0.05	<0.05	0.05, max
Comment(s)	PASS	PASS	---

## 6, Specific migration of softeners and phthalates

**Test Method:** Sample preparation with reference to EN 13130-1:2004, followed by analysis with GC/MS

Test Items	Test Results		Permissible Limit
	2#	3#	
Test Media	3% acetic acid		---
Temperature, °C	70	70	---
Contact Time, hour	2.0	2.0	---
Specific migration of DEHP, mg/kg	<0.05	<0.05	1.5, max
Specific migration of DBP, mg/kg	<0.05	<0.05	0.3, max
Specific migration of BBP, mg/kg	<0.05	<0.05	30, max
Specific migration of DINP, mg/kg	<0.05	<0.05	9, max
Specific migration of DIDP, mg/kg	<0.05	<0.05	9, max
Specific migration of DEHT, mg/kg	<0.05	<0.05	60, max
Specific migration of DEHA, mg/kg	<0.05	<0.05	18, max
Specific migration of other phthalates and softeners, mg/kg	<0.05	<0.05	0.05, max
Comment(s)	PASS	PASS	---

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**7, Color release test**

**Test method:** with reference to Kunststoffe im Lebensmittelverkehr, Part B II IX

Test Items	Test Results	Permissible Limit
	2#	
Test Media	3% acetic acid	---
Temperature, °C	70	---
Contact Time, hour	2.0	---
Color release	No color release	No color release
Comment(s)	PASS	---

Test Items	Test Results	Permissible Limit
	2#	
Test Media	10% Ethanol	---
Temperature, °C	70	---
Contact Time, hour	2.0	---
Color release	No color release	No color release
Comment(s)	PASS	---

**8, Extractable component**

**Test Method:** With reference to 61<sup>st</sup> Communication on testing of plastics in Bundesgesundheitsbl 46 (2003) 362.

Test Items	Test Results	Permissible Limit
	3#	
Test Media	10% Ethanol	---
Temperature, °C	70	---
Contact Time, hour	2.0	---
Extractable Components, %(w/w)	<0.10	0.5, max
Comment(s)	PASS	---

Test Items	Test Results	Permissible Limit
	3#	
Test Media	3% Acetic acid	---
Temperature, °C	70	---
Contact Time, hour	2.0	---
Extractable Components, %(w/w)	<0.10	0.5, max

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Test Items	Test Results	Permissible Limit
	3#	
Comment(s)	PASS	---

## 9, Total Lead, Cadmium and Platinum Content

**Test Method:** acidic digestion, analysis was performed by ICP-OES

Test Items	Units	MDL	Test Results	Permissible Limit
			3#	
Total Lead content	mg/kg	2	n.d.	40, max
Total Cadmium content	mg/kg	2	n.d.	20, max
Total Platinum content	mg/kg	2	n.d.	50, max

## 10, Organotin content (Monobutyltin, MBT; Dibutyltin, DBT; Tributyltin, TBT; Tetrabutyltin, TTBT; Monoctyltin, MOT; Dioctyltin, DOT; Tricyclohexyltin, TcyT)

**Test Method:** Solvent extraction followed by analysis using Gas Chromatography Spectrometer.

Test Items	Units	MDL	Test Results	Permissible Limit
			3#	
Monobutyltin, MBT	mg/kg	0.10	n.d.	1.0, max
Dibutyltin, DBT	mg/kg	0.01	n.d.	0.05, max
Tributyltin, TBT	mg/kg	0.01	n.d.	0.05, max
Tetrabutyltin, TTBT	mg/kg	0.01	n.d.	Sum of MBT, DBT, TBT, TTBT, MOT, DOT, TcyT: 2.5, max
Monoctyltin, MOT	mg/kg	0.01	n.d.	
Dioctyltin, DOT	mg/kg	0.01	n.d.	
Tricyclohexyltin, TcyT	mg/kg	0.01	n.d.	

## 11, Peroxide value

**Test Method:** with reference to European Pharmacopoeia, 2005 Appendix XF, Peroxide Value method A

Test Items	Units	MDL	Test Results	Permissible Limit
			3#	
Peroxide value	---	---	Neg.	Negative

## 12, Bisphenol A content

**Test Method:** with reference to EPA 3550, solvent extracted, followed analyzed by GC/MS and LC/MS/MS

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Test Items	Units	MDL	Test Results		Permissible Limit
			2#	3#	
Bisphenol A content BPA, CAS No.80-05-7	mg/kg	0.05	n.d.	n.d.	0.05, max

- Note: 1) % = Percentage by weight;  
 2) n.d. = Not detected, less than MDL;  
 3) “---” = Not Regulated;  
 4) MDL = Method Detection Limit.

\*\*\*\*\* To be continued \*\*\*\*\*



**SAMPLE IMAGE**



1#



2#



3#



4#



*Tested specimen*



*Tested specimen*

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*Tested specimen*



*Tested specimen*



*Reference specimen*



*Reference specimen*



*Reference specimen*



*Reference specimen*

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Reference specimen



Reference specimen



Reference specimen



Reference specimen



Reference specimen



Reference specimen

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*Reference specimen*



*Reference specimen*



*Reference specimen*



*Reference specimen*



*Reference specimen*



*Reference specimen*

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*Reference specimen*



*Reference specimen*

**\*\*\*\* END OF REPORT \*\*\*\***

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