

TEST REPORT

REPORT No.: R2XM190510F8344E

Date: May 16, 2019

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QUANZHOU YETUO SCIENCE & TECHNOLOGY CO., LTD.

Report on the submitted samples said to be:

Sample Name : TPU CUP
Country of Origin : QUANZHOU
Sample Receiving Date : May 14, 2019
Testing Period : From May 14, 2019 to May 16, 2019
Results : Please refer to next page(s).

Signed for and on behalf of BACL

Checked by: Jane
Jane Xu
Technical Supervisor

Approved by: Bensen
Bensen Huang
Laboratory Manager



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Summary of Test Results:(as the requirement of Client)

<u>TEST REQUEST</u>	<u>CONCLUSION</u>
A In accordance with German Food, Articles of Daily Use and Feed Code of September 1,2005(LFGB),Section 30 and 31, BfR recommendation & Regulation(EC) No.1935/2004 of the European Parliament	
Sensorial examination odour and taste test	Pass
Overall Migration	Pass
Specific migration of Heavy Metals	Pass
Primary aromatic amines	Pass
Total Lead (Pb) & Total Cadmium(Cd)	Pass
Polycyclic Aromatic Hydrocarbon(PAHs) Content	Pass
Phthalate content	Pass
Colour release	Pass

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Results:

Tested part(s):

(1) Grey TPU

A. In accordance with German Food, Articles of Daily Use and Feed Code of September 1,2005(LFGB),Section 30 and 31, BfR recommendation & Regulation(EC) No.1935/2004 of the European Parliament

A.1: Sensorial examination odour and taste test

Test method: Robinson’s test with reference to DIN 10955:2004.

No. of panelist: 6

Item	Results	Limit
	(1)	
Sensorial examination odour(Point scale)	0	2.5
Sensorial examination taste(Point scale)	0	2.5
Conclusion	Pass	/

Note:

- 0: No perceptible odour
- 1: Odour just perceptible(still difficult to define)
- 2: Moderate odour
- 3: Moderately strong odour
- 4: Strong odour

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A.2: Overall Migration

Test method: With reference to EN1186-1: 2002 for selection of conditions and test methods: EN1186-3: 2002 aqueous food simulates by total immersion methods

Simulant Used	Unit	MDL	Results	Limit
			(1)	
10% Ethanol at 40°C for 4 hours	mg/dm ²	3	N.D.	10
Conclusion	/	/	Pass	/

Note:

- N.D. = Not Detected or less than MDL
- MDL = Method Detection Limit
- Photo appendix is included.

A.3: Specific migration of Heavy Metals

Test method: With reference to 3% acetic at 40°C for 4 hours, Analysis was performed by Inductively Coupled Plasma-Optical Emission Spectrometer (ICP-OES)

Item	Unit	MDL	Results	Maximum permissible Limit
			(1)	
Specific migration of Barium (Ba)	mg/kg	0.1	N.D.	1
Specific migration of Ferrum(Fe)	mg/kg	1	N.D.	48
Specific migration of Lithium (Li)	mg/kg	0.1	N.D.	0.6
Specific migration of Zinc(Zn)	mg/kg	1	N.D.	5
Specific migration of Copper(Cu)	mg/kg	1	N.D.	5
Specific migration of Cobalt(Co)	mg/kg	0.05	N.D.	0.05
Specific migration of Manganese(Mn)	mg/kg	0.05	N.D.	0.6
Specific migration of Aluminum(Al)	mg/kg	0.05	N.D.	1
Specific migration of Nickel (Ni)	mg/kg	0.02	N.D.	0.02
Specific migration of Tungsten (W)	mg/kg	0.05	N.D.	0.05
Conclusion	/	/	Pass	/

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Note:

- N.D. = Not Detected or less than MDL
- MDL = Method Detection Limit
- mg/kg = ppm
- Photo appendix is included.

A.4 : Primary aromatic amines

Test method: With reference to DIN 55610-1986, 3% acetic acid at 40°C for 4 hours

Item	Unit	MDL	Results	Limit
			(1)	
Primary aromatic amines	mg/kg	0.01	N.D.	Absent
Conclusion	/	/	Pass	/

Note:

- N.D. = Not Detected or less than MDL
- MDL = Method Detection Limit
- Photo appendix is included.

A.5: Total Lead (Pb) & Total Cadmium(Cd)

Test method: With reference to US EPA 3052:1996/ EPA 3050B:1996 & EPA 6010D: 2014, by acid digestion and analysis was performed by Inductively Coupled Plasma-Optical Emission Spectrometer (ICP-OES)

Item	Unit	MDL	Results	Limit
			(1)	
Total Lead (Pb)	mg/kg	10	N.D.	100
Total Cadmium(Cd)	mg/kg	10	N.D.	100
Conclusion	/	/	Pass	/

Note:

- N.D. = Not Detected or less than MDL
- MDL = Method Detection Limit
- mg/kg = ppm
- Photo appendix is included.

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A.6: Polycyclic Aromatic Hydrocarbon(PAHs) Content

Test method: by solvent extraction and analysis was performed by gas chromatographic-mass spectrometer (GC-MS)

Item	CAS No.	Unit	MDL	Results	Limit
				(1)	
Acenaphthylene (ANY)	208-96-8	mg/kg	0.2	N.D.	---
Acenaphthene (ANA)	83-32-9	mg/kg	0.2	N.D.	---
Fluorene (FLU)	86-73-7	mg/kg	0.2	N.D.	---
Phenanthrene (PHE)	85-01-8	mg/kg	0.2	N.D.	---
Anthracene (ANT)	120-12-7	mg/kg	0.2	N.D.	---
Fluoranthene (FLT)	206-44-0	mg/kg	0.2	N.D.	---
Pyrene (PYR)	129-00-0	mg/kg	0.2	N.D.	---
Total content of 7 PAHs ¹⁾	/	mg/kg	/	N.D.	<10
Naphthalene (NAP)	91-20-3	mg/kg	0.2	N.D.	< 2
Benzo(a)anthracene (BaA)	56-55-3	mg/kg	0.2	N.D.	<0.5
Chrysene (CHR)	218-01-9	mg/kg	0.2	N.D.	<0.5
Benzo(b)fluoranthene (BbF)	205-99-2	mg/kg	0.2	N.D.	<0.5
Benzo(k)fluoranthene (BkF)	207-08-9	mg/kg	0.2	N.D.	<0.5
Benzo(a)pyrene (BaP)	50-32-8	mg/kg	0.2	N.D.	<0.5
Indeno(1,2,3-cd)pyrene (IPY)	193-39-5	mg/kg	0.2	N.D.	<0.5
Dibenzo(a,h)anthracene (DBA)	53-70-3	mg/kg	0.2	N.D.	<0.5
Benzo(g,h,i)perylene (BPE)	191-24-2	mg/kg	0.2	N.D.	<0.5
Benzo[j]fluoranthene	205-82-3	mg/kg	0.2	N.D.	<0.5
Benzo[e]pyrene	192-97-2	mg/kg	0.2	N.D.	<0.5
Total content of 18 PAHs	/	mg/kg	/	N.D.	<10
Conclusion	/	/	/	Pass	/

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Note:

- N.D. = Not Detected or less than MDL
- MDL = Method Detection Limit
- --- = Not Regulated
- mg/kg = ppm
- ¹7PAHs including Acenaphthylene (ANY)、Acenaphthene (ANA)、Fluorene (FLU)、Phenanthrene (PHE)、Anthracene (ANT)、Fluoranthene (FLT)、Pyrene (PYR)
- In the sum of all 18 PAHs according to EPA only considers PAH components whose level in the material is found to exceed 0.2mg/kg.
- Photo appendix is included.

A.7: Phthalates Content

Test method: With reference to CPSC-CH-C1001-09.4, by solvent extraction and analysis was performed by gas chromatographic-mass spectrometer (GC-MS)

Item	Unit	MDL	Results	Limit
			(1)	
Dibutyl Phthalate (DBP)	%	0.003	N.D.	0.05%
Benzylbutyl Phthalate (BBP)	%	0.003	N.D.	0.1%
Bis-(2-ethylhexyl) Phthalate (DEHP)	%	0.003	N.D.	0.1%
Diisodecyl Phthalate (DIDP)	%	0.01	N.D.	0.1%
Diisononyl Phthalate (DINP)	%	0.01	N.D.	0.1%
Conclusion	/	/	Pass	

Note:

- N.D. = Not Detected or less than MDL
- MDL = Method Detection Limit
- Photo appendix is included.

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A.8: Colour release

Test method: With reference to Kunststoffe im Lebensmittelverkehr Book II, Teil B II, IX

Item	Results	Limit
	(1)	
Distilled water at 50°C for 5 hours	No transfer of colorants	No transfer of colorants
Conclusion	Pass	/

Note:

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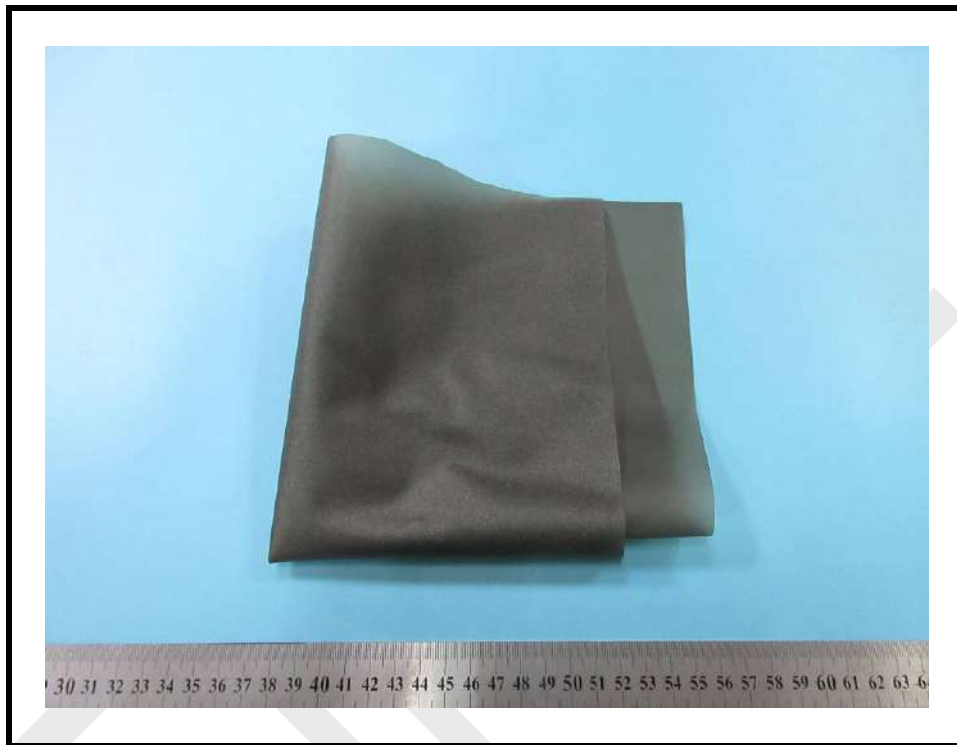
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Photograph of Sample (For test)



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Photograph of Sample (For reference)



BACL authenticate the photo on original report only
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