

TOPFLOR PLASTICS NANTONG CO., LTD.

TEST REPORT

SCOPE OF WORK

HOMOGENEOUS VINYL

REPORT NUMBER

191203011SHF-003

TEST DATE(S)

2019-12-03 - 2020-01-15

ISSUE DATE

2020-01-20

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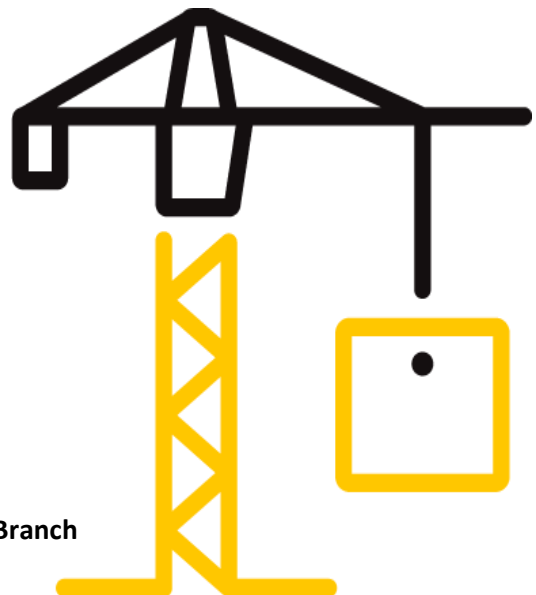
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DOCUMENT CONTROL NUMBER

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Intertek Testing Services Shenzhen Ltd. Shanghai Fengxian Branch



Test Report

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Test Report

Issue Date: 2020-01-20

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Test Items, Method and Results:

Test Item: Fungi resistance test

Test Method: ISO 846:1997 Plastics-Evaluation of the action of microorganisms Method A

Test organisms:

Aspergillus niger	ATCC 6275
Penicillium funiculosum	CMI 114933
Paecilomyces variotii	ATCC 18502
Gliocladium virens	ATCC 9645
Chaetomium globosum	ATCC 6205

Test condition:

Temperature:	28 °C
Relative humidity:	> 90%
Duration:	28 days

Assessment of fungal growth

Intensity of growth	Evaluation
0	No growth apparent under the microscope.
1	No growth visible to the naked eye, but clearly visible under the microscope.
2	Growth visible to the naked eye, covering up to 25% of the test surface.
3	Growth visible to the naked eye, covering up to 50% of the test surface.
4	Considerable growth, covering more than 50% of the test surface.
5	Heavy growth, covering the entire test surface.

Test result:

Intensity of growth	Evaluation
0	No growth apparent under the microscope.

Note: Test item was subcontracted on accreditation by CNAS L0823.

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Test Items, Method and Results:

Test Item: Resistance to staining

Test Method: ISO 26987:2008

Conditioning: At a temperature of (23±2)°C and relative humidity of (50±5) % for a minimum of 24h

Test Result:

Staining materials	Duration of contact	Types of cleaning	Results	Index
White vinegar (5% acetic acid)	2 hours	Flowing water	Not affected	0
Rubbing alcohol (70% isopropyl alcohol)	2 hours	Flowing water	Not affected	0
White mineral oil (medicinal grade)	2 hours	Flowing water	Not affected	0
Sodium hydroxide solution (5% NaOH)	2 hours	Flowing water	Not affected	0
Hydrochloric acid solution (5% HCl)	2 hours	Flowing water	Not affected	0
Sulfuric acid solution (5% H ₂ SO ₄)	2 hours	Flowing water	Not affected	0
Household ammonia solution (5% NH ₄ OH)	2 hours	Flowing water	Not affected	0
Household bleach (5.25% NaOCl)	2 hours	Flowing water	Not affected	0
Olive oil (light)	2 hours	Flowing water	Not affected	0
Kerosene (K1)	2 hours	Flowing water	Not affected	0
Unleaded gasoline (regular grade)	2 hours	Flowing water	Not affected	0
Phenol (5% active phenol)	2 hours	Flowing water	Not affected	0

Note:

1. The staining materials and duration of contact were specified by applicant.

Interpretation and presentation of results as per ISO 26987:2008

Index	Effect of test after cleaning/abrasion
0	Not affected
1	Slight
2	Moderate
3	Severe

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Test Items, Method and Results:

Test Item: Heavy metal migration

Test Method: With reference to EN 71-3:2013+A3:2018 and followed by Inductively Coupled Plasma Atomic Emission Spectrometry, Inductively Coupled Argon Mass Spectrometry, Ion Chromatography-Inductively Coupled Plasma-Mass Spectrometry, and Gas Chromatographic - Mass Spectrometry.

Test Item	Test Result (mg/kg)	Reporting Limit (mg/kg)	Migration Limit for Category(III) (mg/kg)
Aluminium (Al)	ND	300	70000
Antimony (Sb)	ND	10	560
Arsenic (As)	ND	10	47
Barium (Ba)	ND	10	18750
Boron (B)	ND	50	15000
Cadmium (Cd)	ND	5	17
Chromium (III) (Cr III)**	ND	10	460
Chromium (VI) (Cr VI)**	ND	0.025	0.2/0.053@
Cobalt (Co)	ND	10	130
Copper (Cu)	ND	10	7700
Lead (Pb)	ND	10	23
Manganese (Mn)	ND	10	15000
Mercury (Hg)	ND	10	94
Nickel (Ni)	ND	10	930
Selenium (Se)	ND	10	460
Strontium (Sr)	ND	100	56000
Tin (Sn)	ND	10	180000
Organic tin**	ND	3	12
Zinc (Zn)	ND	100	46000

Remark:

1. mg/kg = milligram per kilogram
2. ND = Not detected (less than the reporting limit)
3. Organic tin test result was expressed as tributyl tin.
4. **=Unless the test results were marked with "#" or "Δ", Chromium (III) & Chromium (VI) and Organic tin contents were not directly determined and were derived from migration results of total chromium and tin respectively.
5. @= The new chromium (VI) migration limit [(0.053mg/kg for Category (III))] were quoted from directive (EU) 2018/725 amending 2009/48/EC effective from 18 November 2019.
6. Test location: Central Chemical Lab of Intertek Testing Services Ltd., Shanghai
Address: Block B, Jinling Business Square, No. 801 Yi Shan Road, Shanghai, China

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Test Items, Method and Results:

Test Item: Volatile organic compounds content analysis

Test Method: With reference to

ISO 16000-3:2011 Indoor air - Part 3: Determination of formaldehyde and other carbonyl compounds in indoor air and test chamber air - Active sampling method;

ISO 16000-6:2011 Indoor air - Part 6: Determination of volatile organic compounds in indoor and test chamber air by active sampling on Tenax TA® sorbent, thermal desorption and gas chromatography using MS or MS/FID;

ISO 16000-9:2006 Indoor air - Part 9: Determination of the emission of volatile organic compounds from building products and furnishing - Emission test chamber method;

ISO 16000-11:2006 Indoor air - Part 11: Determination of the emission of volatile organic compounds from building products and furnishing - Sampling, storage of samples and preparation of test specimens.

Test Procedure:

The sample was tested in the emission test chamber. After 10 days, chamber air samples were collected. Samples analyzed for individual VOCs and TVOC were collected on sorbent tubes Tenax TA, and were detected by Automatic Thermal Desorption-Gas Chromatography/Mass Spectrometric (ATD-GC/MS). Samples analyzed for aldehydes were collected on DNPH cartridge, and were detected by High Performance Liquid Chromatography (HPLC).

Test condition:

Test chamber: 1.0 m³Loading factor: 1 m²/m³

Supply air temper: 23°C±1°C

Supply air humidity: 50%±5% R.H.

Air exchange rate: 1 h⁻¹

Sampling: Tenax TA & DNPH cartridge

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Test results:

No.	Compound Name	CAS Number	Chamber concentration after 10 days ($\mu\text{g}/\text{m}^3$)	Emission factor after 10 days ($\mu\text{g}/\text{m}^2\cdot\text{h}$)
1	Individual compound	/	ND	<2
2	Total of all VOC (TVOC)**	/	ND	<20

Remark:

1. TVOC means sum of the concentrations of all identified and unidentified VOCs between and including n-pentane through n-heptadecane (i.e., $\text{C}_6\text{-C}_{16}$) as measured by the GC/MS TIC method and expressed as a toluene equivalent value.

2. Detection limit of individual compound = $2 \mu\text{g}/\text{m}^3$

3. Detection limit of TVOC = $20 \mu\text{g}/\text{m}^3$

4. ** = Denotes quantified using the Relative Response Factor to toluene for the compound

5. ND = Not detected

6. Test location: Central Chemical Lab of Intertek Testing Services Ltd., Wuxi
Address: No. 8, Fubei Road, Xishan Economic Development Zone, Wuxi, China

Test Photo:



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Appendix A: Sample Received Photo



Revision:

NO.	Date	Changes	Author	Reviewer
191203011SHF-003	2020-01-20	First issue	Jackie Zhou	Sally Xie