TEST REPORT

Quantitative Analysis of Harmful Substances in Floor Coating Materials

& Physical Test

APPLICANT	:	UQESH ADVANCED MATERIALS TECHNOLOGY (SHANGHAI) CO.,LTD.
CONTACT ADDRESS	:	4Layer Block B，Building 7, Jinshan Industrial Park, Panyu District, Guangzhou, PR China
DATE SAMPLE RECEIVED	:	2018-10-31
DATE TEST COMPLETED	:	2018-11-16

SHIMADZU (GUANGZHOU) ANALYSIS & TECHNOLOGY SERVICES CO., LTD.

ROOM 201-213/214 D DISTRICT, GUANGZHOU TECHNOLOGY INNOVATION BASE, NO.80 LANYUE ROAD, SCIENCE CITY, GUANGZHOU 510663

TEL:（020）32058871 FAX:（020）32068891

SAMPLE INFORMATION

Sample	:	Thin waterborne polyurethane mortar
Sample No.	:	181031010
Sample description	:	Material: fiber cement board Colour : gray，green Style No.: UQESH®PF Ratio：A (emulsion)：B (curing agent)：C (aggregate)：D (color paste) =2.5:2.8:10.2:0.5
Conserving method	:	Conserved at room temperature tightly
Note	:	The above sample(s) and information are provided and confirmed by the client.

TEST INFORMATION

Order No.	:	3331
Test instrument	:	ICPE-9000 SHIMADZU CORPORATION, UV-2600 SHIMADZU CORPORATION GC/MS-QP2010 plus SHIMADZU CORPORATION, GC/MS-QP2010E SHIMADZU CORPORATION, WDW-50D Microcomputer controlled electronic universal tester, WAW-600B Microcomputer controlled electrohydraulic servo universal tester HF-500 Digital push pull gauge, 10002 Electronic balance, Pencil hardness tester, Taber abrasion tester
Test request	:	According to GB/T 22374-2008, physical test and quantitatively analyze the content of hazardous substances in samples, specified by applicant.
Test method	:	1. Quantitative analysis of formaldehyde Reference to GB 18583-2008 『Indoor decorating and refurbishing materials—Limit of harmful substances of adhesives』. 2. Quantitative analysis of the migrated elements of Cd, Cr, Hg andPb Reference to GB 18582-2008 『Indoor decorating and refurbishing materials—Limit of harmful substances of interior architectural coatings』. 3.Qualitative analysis of Volatile Organic Compounds (VOC) Reference to GB 18582-2008 『Indoor decorating and refurbishing materials—Limit of harmful substances of interior architectural coatings』. 4.Qualitative analysis of benzene, toluene, xylene Reference to GB 18582-2008 『Indoor decorating and refurbishing materials—Limit of harmful substances of interior architectural coatings』. 5.Qualitative analysis of toluene diisocynate (TDI) Reference to GB/T 18446-2009 『Binders for paints and varnishes-Determination of monomeric diisocyanates in isocyanate resins』. 6. Physical test
Test period	:	2018-10-31~2018-11-14
Test result comment	:	Detailed results please refer to page 3~5.
Note	:	This test report is only used for scientific research, teaching or internal quality control.

Prepared by ： 闵叶　　Checked by ： 周家波　　Approved by ： 韦鸿劲

Date ： 2018-11-16

TEST RESULTS

Sample: Thin waterborne polyurethane mortar

1. The quantitative analysis results of formaldehyde

Test Item	Test Results [g/kg]	Limit requirements [g/kg]	MDL [g/kg]
formaldehyde	**N.D.**	≤0.1	0.05

Note: 1. N.D.: Less than Method Detection Limit; 2. MDL: Method Detection Limit.

2. The quantitative analysis results of Pb, Cd, Hg, Cr

Test Item	Test Results [mg/kg (ppm)]	Limit requirements [mg/kg (ppm)]	MDL [mg/kg (ppm)]
Pb	**N.D.**	≤30	2
Cd	**N.D.**	≤30	2
Hg	**N.D.**	≤10	2
Cr	**N.D.**	≤30	2

Note: 1. N.D.: Less than Method Detection Limit; 2. MDL: Method Detection Limit.

3. The quantitative analysis results of Volatile Organic Compounds (VOC)

Test Item	Test Results [g/L]	Limit requirements [g/L]	MDL [g/L]
VOC	**7**	≤60	2

Note: 1. N.D.: Less than Method Detection Limit; 2. MDL: Method Detection Limit.

4. The quantitative analysis results of benzene, toluene, xylene)

Test Item	Test Results [g/kg]	Limit requirements [g/kg]	MDL [g/kg]
Benzene	**N.D.**	≤0.1	0.001
Toluene	**N.D.**	Toluene, xylene ≤10	0.001
p-xylene	**0.028**		0.001
m-xylene	**0.077**		0.001
o-xylene	**0.034**		0.001

Note: 1. N.D.: Less than Method Detection Limit; 2. MDL: Method Detection Limit.

5. The quantitative analysis results of toluene diisocynate (TDI)

Test Item	Test Results [g/kg]	Limit requirements [g/kg]	MDL [g/kg]
Toluene diisocynate (TDI)	**N.D.**	≤2	0.01

Note: 1. N.D.: Less than Method Detection Limit; 2. MDL: Method Detection Limit.

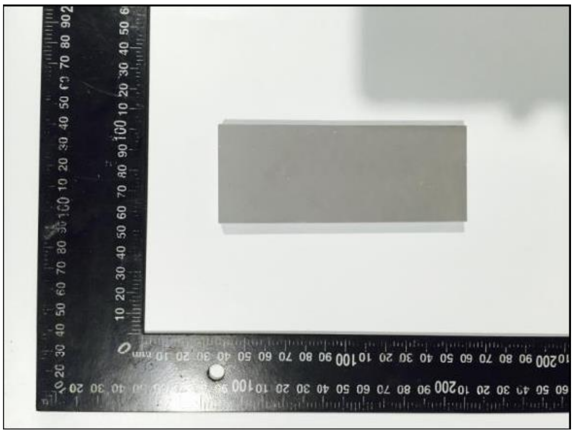
6. Physical test

Test item	Teat method	Test condition	Test result	Standard's requirements
Status in container	Applicant's requirement	Sample is weighed in proportion to 2 kg, poured into agitator within 30 seconds, stirring at low speed for 1 minute. After stopping stirring, scraper is used to scrape off the uneven mixture on the stirring liquid and the wall of the pan within 30 seconds. After stirring at high speed for 1 minute, stop for 5 minutes, stirring at high speed for 15 seconds, the mixture should not have bubbles, and then test the mixture immediately.	Visual liquid material is homogeneous, and aggregate has no agglomeration.	After full stirring, the liquid should be homogeneous. Aggregate should be no agglomeration. (visual)
Film appearance	Applicant's requirement	Visual the appearance of test paint film	Visual the appearance of sample has smooth surface, no crack and uniform color.	Smooth surface, no crack, uniform color.
Operational time	Applicant's requirement	Visual the operation time of liquid material	14min	≥8min
Fluidity	JC/T 985-2005	Test conditions: 5-10cm is raised in 2s, and keep 10-15s to free flow of samples. Test time: 4min	139mm	≥130mm
7d Compression strength	GB/T 17671-1999	Teat square: 40mm×40mm	54.6MPa	≥40MPa
7d Flexural strength	GB/T 17671-1999	Test speed: 50±10N/s	18.7MPa	≥10MPa
7d Tensile bond strength	GB/T 22374-2008	Specimen: 40mm×40mm Test speed: 5mm/min	3.4MPa	≥2MPa
Skid resistance	GB/T 4100-2006	Load: 44.1N	Dry friction coefficient: 0.68	≥0.5
Impact resistance	GB/T 1768-2008	1kg steel ball Test height: 100cm	After test, there is no crack and no spalling on the surface of the sample.	No cracks, no spalling.

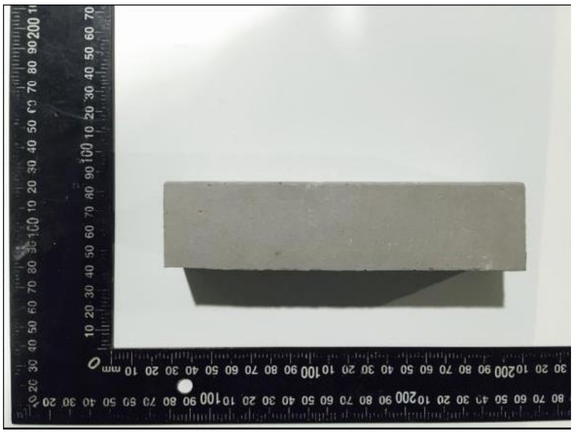
Test item	Teat method	Test condition	Test result	Standard's requirements
Pencil hardness	GB/T 22374-2008 Section 6.4.4.1, GB/T 6739-2006	Pencil: Mitsubishi®	Hardness: 5H	≥H
Taber abrasion	GB/T 22374-2008 Section 6.4.8, GB/T 1768-2006	Wheel: CS-17 Load: 750g/wheel Speed: 60r/min Times: 500 Test specimen: 3pcs	0.045g	≤0.060g

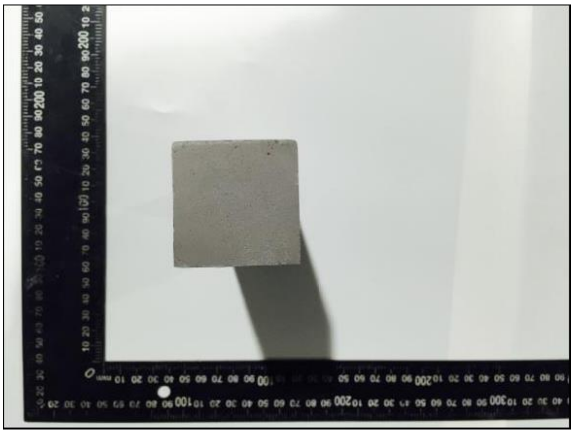
SAMPLE PHOTO

Test sample- Other test items'

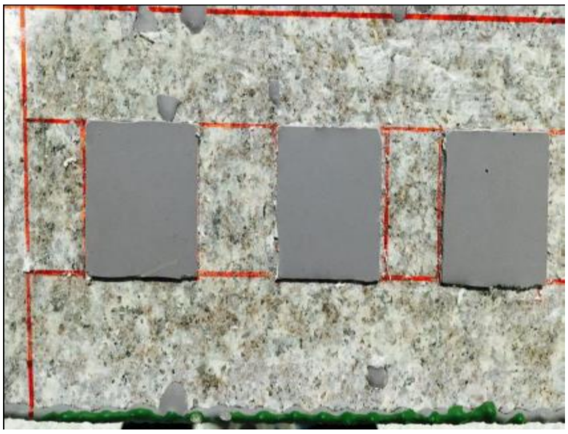


Test sample- Film appearance

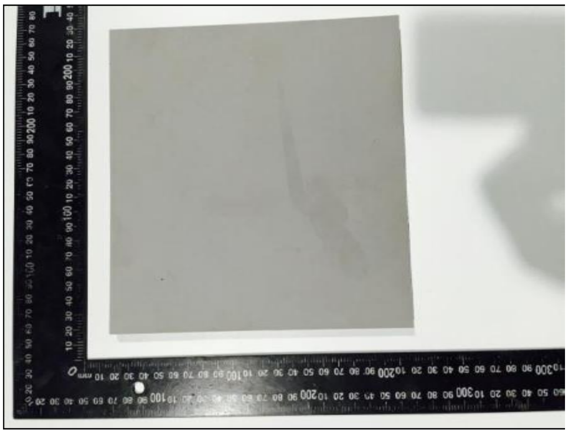




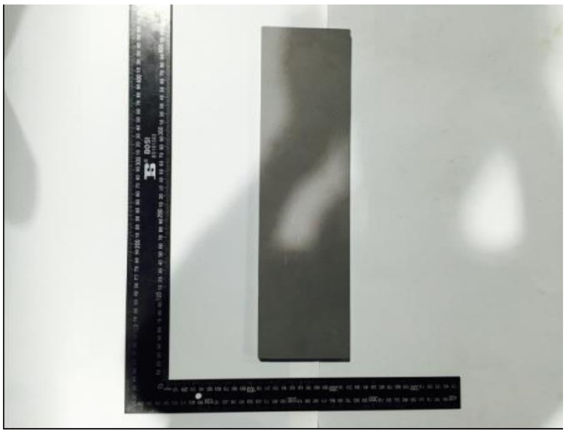
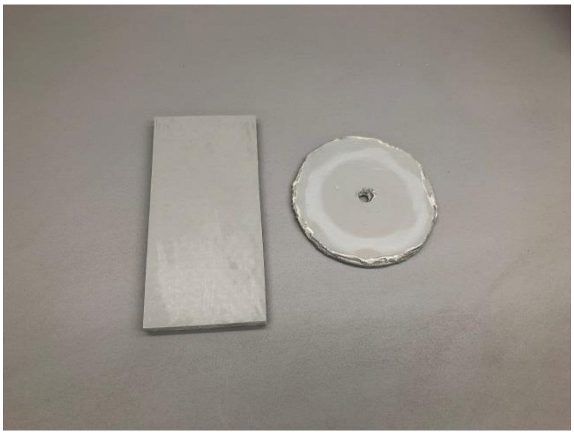
Test sample- Compression strength, Flexural strength



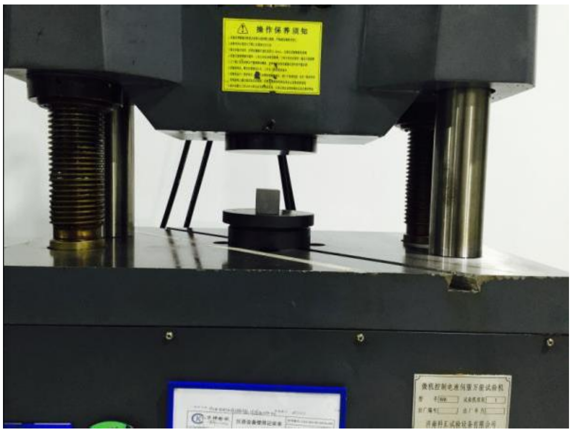
Test sample- Tensile bond strength



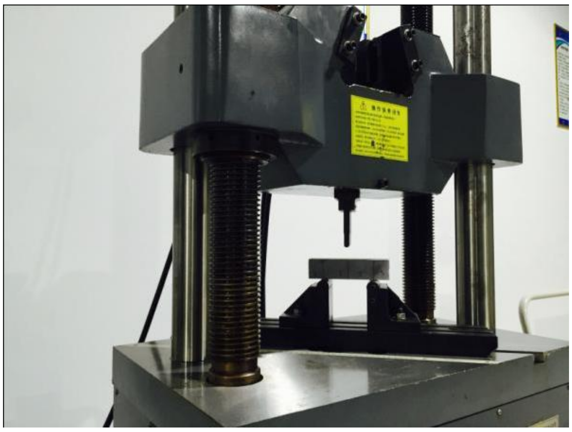
Test sample- Skid resistance

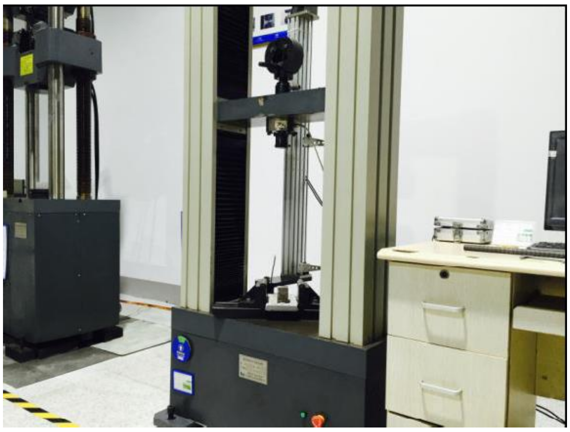
Test sample- Impact resistance	Test sample- Pencil hardness, Taber abrasion

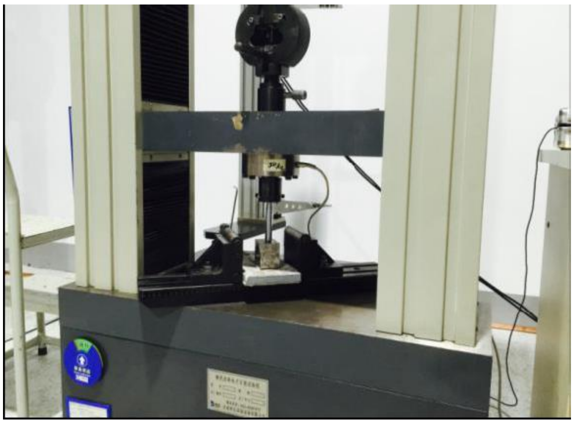



Testing- Compression strength

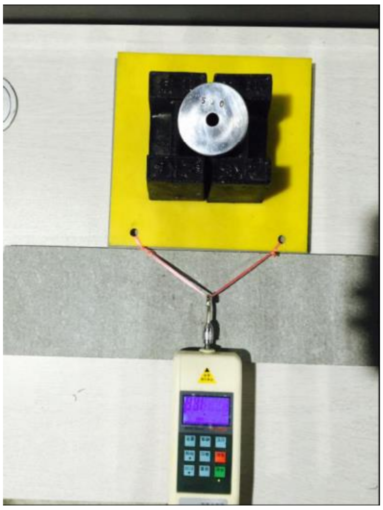



Testing- Flexural strength

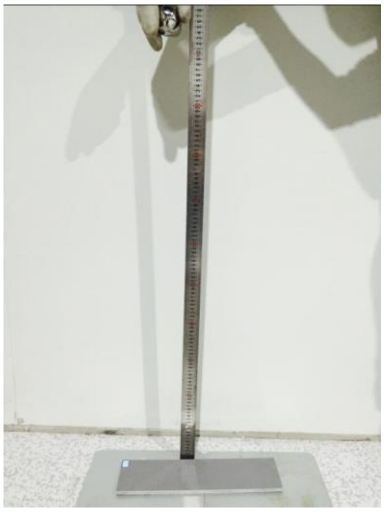




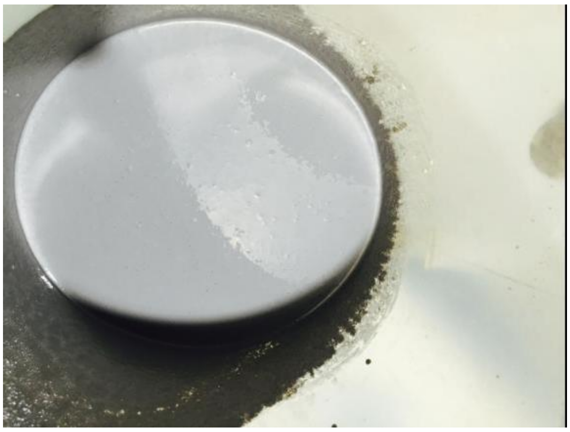
Testing- Tensile bond strength



Testing- Skid resistance

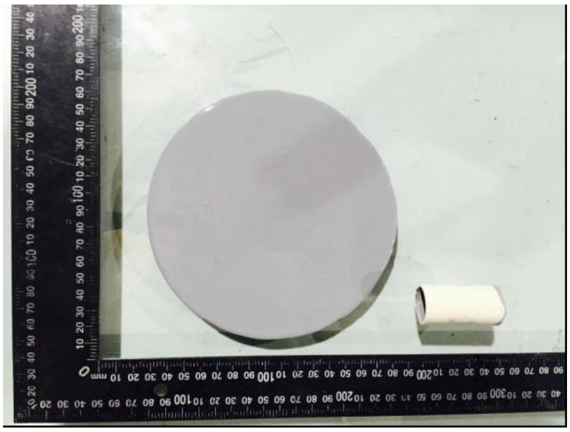
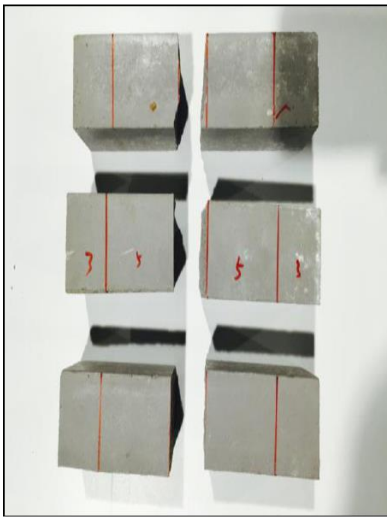
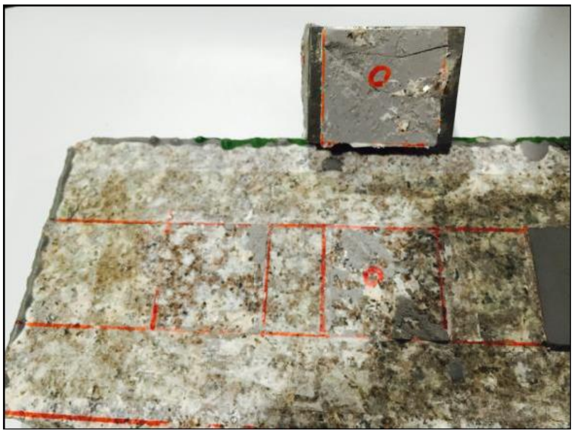


Testing- Impact resistance



After test- Status in container

After test- Film appearance

	
After test- Fluidity	After test- Compression strength
	
After test- Flexural strength	After test- Tensile bond strength
	---
After test- Impact resistance	---

----- End of report-----

TEST REPORT

CLIENT NAME: UQESH ADVANCED MATERIALS TECHNOLOGY(SHANGHAI) CO., LTD.
ADDRESS: ROOM 6008, 588 YINDU ROAD, MINHANG DISTRICT, SHANGHAI, CHINA.

The following sample(s) was/ were submitted and identified on behalf of the client as:

Sample Name	:	Water base polyurethane motar floor coating
Spec.	:	A: 2.5kg, B:2.8kg, C: 14.2kg, D: 0.5kg
SGS Ref. No.	:	GZIN160500806CCM, GZIN151001566CCM
Test Performed	:	Selected test(s) as requested by applicant
Date of Receipt	:	Oct. 22, 2015
Test Period	:	Oct. 22, 2015 to Nov. 05, 2015
Test result(s)	:	Please refer to the following page(s)

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

Signed for
SGS-CSTC Standards Technical
Services Co., Ltd. GZ Branch Testing
Center

Eleain Fan
Authorized signatory

** Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. The report should not be reproduced except in full without written approval from the Company

Test Information:

Sample description: See photo

Test item 1: Wear resistance

Test method: GB/T 22374-2008 Section 6.4.8 and GB/T 1768-2006

Test condition:

Type of abrasive wheel: CS-17

Load: 750g/wheel

Number of cycles: 500

Test result: 0.026g

GB/T 22374 requirement: Water-based≤0.06g; Solvent-based type, Solvent-free type≤0.03g

Conclusion: pass

Test item 2: Tensile Strength

Test method: GB/T 1040.2-2006 and GB/T 1040.1-2006

Test condition:

Specimen type: dumbbell-shaped

Specimen: 100×4.87×2.45mm

Testing speed: 1mm/min

Test result: 6.53MPa

Test item 3: Bending strength

Test method: With reference to GB/T 9341-2008

Test condition:

Specimen: 80.1×10.1×5.10mm

Testing speed: 1mm/min

Span: 70mm

Test result: 20.9MPa

Test item 4: Compressive strength

Test method: GB/T 1041-2008

Test condition:

Specimen: 25.5×16.2×13.9mm

Testing speed: 2mm/min

Test result: 38.3MPa

Test item 5: Static coefficient of friction

Test method: GB/T 22374-2008 & GB/T 4100-2006 Annex M

Specimen: 145mm×200mm, 3pcs, cut from 2 pcs of sample of 290mm×200mm, see photo

Test result:

Test surface: see photo

Test item	GB/T 22374-2008 Requirements	Test result
Static coefficient of friction-dry condition	≥0.70	0.73
Static coefficient of friction-wet condition		0.72

Test item 6: Soluble Heavy Metals

Test method: With reference to GB 18581-2009 Annex D, analysis was performed by ICP OES.

Test Item(s)	Unit	MDL	001
Soluble Cadmium (Cd)	mg/kg	5	ND
Soluble Lead (Pb)	mg/kg	5	ND
Soluble Mercury (Hg)	mg/kg	5	ND
Soluble Chromium (Cr)	mg/kg	5	ND

Note: The result(s) shown is/are of the total weight of dried sample.

198 Kezhu Road, Scientech Park, Economic & Technical Development District, Guangzhou, China. 510663 t (86–20) 82155555 f (86–20) 82075080 www.sgsgroup.com.cn
中国・广州・经济技术开发区科学城科珠路198号 邮编: 510663 t (86–20) 82155555 f (86–20) 82075080 e sgs.china@sgs.com

TEST REPORT

Test item 7: Benzene, Toluene, Xylene,

Test method: With reference to GB 18581-2009 Annex B Analysis was performed by GC MS.

Test Item(s)	Unit	MDL	001
Benzene	%	0.01	ND
Toluene	%	0.1	ND
Xylene	%	0.1	ND

Note: The result(s) shown is/are of the total weight of wet sample.

Test item 8: Volatile Organic Compounds

Test method: With reference to GB 18582-2008 Annex A & Annex B, Analysis was performed by GC MS

Test Item(s)	Unit	MDL	001
Volatile Organic Compounds (VOC)	g/L	2	ND

Note: The result(s) shown is/are of the total weight of wet sample.

Test item 9: Free Diisocyanate

Test method: With reference to GB/T 18446-2009, analysis was performed by GC MS.

Test Item(s)	Unit	MDL	001
2,4-Toluene Diisocyanate	%	0.01	ND
2,6-Toluene Diisocyanate	%	0.01	ND

Note: The result(s) shown is/are of the total weight of wet sample.

Test item 10: Free Formaldehyde

Test method: With reference to GB 18582-2008 Annex C. Analysis was performed by UV Vis

Test Item(s)	Unit	MDL	001
Free Formaldehyde	mg/kg	5	ND

Note: The result(s) shown is/are of the total weight of wet sample.

198 Kezhu Road, Scientech Park, Economic & Technical Development District, Guangzhou, China. 510663 t (86–20) 82155555 f (86–20) 82075080 www.sgsgroup.com.cn
中国・广州・经济技术开发区科学城科珠路198号 邮编: 510663 t (86–20) 82155555 f (86–20) 82075080 e sgs.china@sgs.com

Remarks:

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

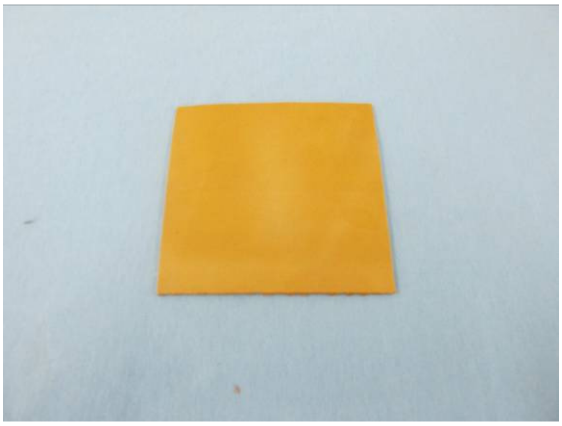
Note: 1. Results of test item 6-10 are only for reference.

2. Results of test item 6-10 shown are of the total weight of mixed samples.

3. The sample(s) of test item 6-10 were analyzed on behalf of the applicant as mixing sample in one testing. The above result(s) were only given as the informality value and only for reference.

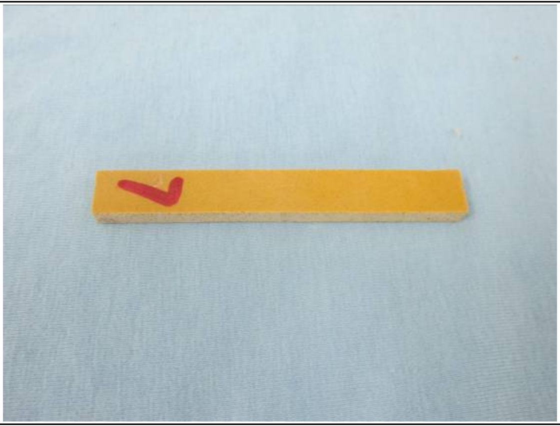
4. This test report is the English version of test report No. GZIN151001566CCM.

Photo:



Sample for test item 1

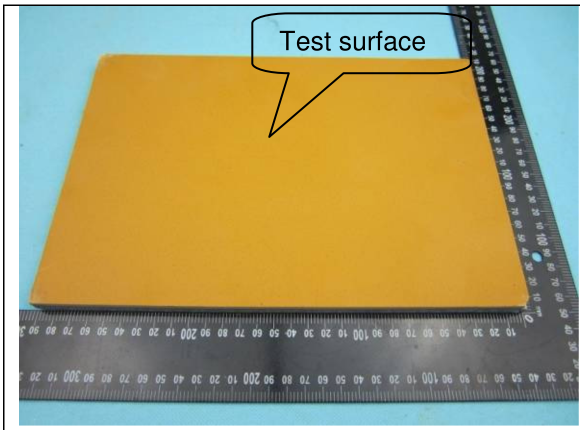
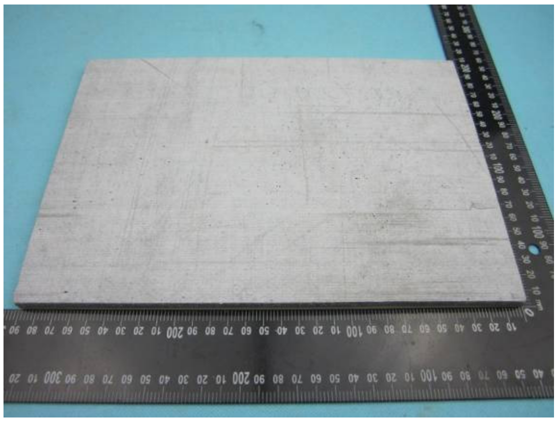
Sample for test item 2



Sample for test item 3

Sample for test item 4

198 Kezhu Road, Scientech Park, Economic & Technical Development District, Guangzhou, China. 510663 t (86–20) 82155555 f (86–20) 82075080 www.sgsgroup.com.cn
中国・广州・经济技术开发区科学城科珠路198号 邮编: 510663 t (86–20) 82155555 f (86–20) 82075080 e sgs.china@sgs.com

	
Sample（front）	Sample（back）

Sample for test item 5

Sample for test item 6~10

********End of report********

No.: SAT19EA03714

TEST REPORT

Quantitative Analysis of Harmful Substances in Floor Coating Materials

& Physical Test

APPLICANT	:	UQESH ADVANCED MATERIALS TECHNOLOGY (SHANGHAI) CO.,LTD.
CONTACT ADDRESS	:	301，Building 20, Jinshan Industrial Park, Panyu District, Guangzhou
DATE SAMPLE RECEIVED	:	2019-09-10
DATE TEST COMPLETED	:	2019-09-30

SHIMADZU (GUANGZHOU) ANALYSIS & TECHNOLOGY SERVICES CO., LTD.

ROOM 201-213/214 D DISTRICT, GUANGZHOU TECHNOLOGY INNOVATION BASE, NO.80 LANYUE ROAD, SCIENCE CITY, GUANGZHOU 510663

TEL:（020）32058871 FAX:（020）32068891

SAMPLE INFORMATION

Sample	:	UQESH® HEFloor 高耐磨水性聚氨酯辊涂砂浆
Sample No.	:	190909034
Sample description	:	Colour : gray/yellow Ratio：A(emulsion)：B(curing agent)：C(aggregate)：D(color paste)=2：2：1.5：0.5
Conserving method	:	Conserved at room temperature tightly
Note	:	The above sample(s) and information are provided and confirmed by the client.

TEST INFORMATION

Order No.	:	3714
Test instrument	:	ICPE-9000、UV-2600 SHIMADZU CORPORATION GC/MS-QP2010 plus、 GC/MS-QP2010E SHIMADZU CORPORATION, WDW-50D Microcomputer controlled electronic universal tester, WAW-600B Microcomputer controlled electrohydraulic servo universal tester HF-500 Digital push pull gauge, 10002 Electronic balance, Pencil hardness tester, Taber abrasion tester
Test request	:	According to GB/T 22374-2018, physical test and quantitatively analyze the content of hazardous substances in samples, specified by applicant.
Test method	:	1. Quantitative analysis of formaldehyde Reference to GB 18583-2008 『Indoor decorating and refurbishing materials—Limit of harmful substances of adhesives』. 2. Quantitative analysis of the migrated elements of Cd, Cr, Hg and Pb Reference to GB 18582-2008 『Indoor decorating and refurbishing materials—Limit of harmful substances of interior architectural coatings』. 3.Qualitative analysis of Volatile Organic Compounds (VOC) Reference to GB 18582-2008 『Indoor decorating and refurbishing materials—Limit of harmful substances of interior architectural coatings』. 4.Qualitative analysis of benzene, toluene, xylene Reference to GB 18582-2008 『Indoor decorating and refurbishing materials—Limit of harmful substances of interior architectural coatings』. 5.Qualitative analysis of ethylene glycol ethers and ethylene glycol ether esters Reference to GB/T 24408-2009『Limit of harmful substances of exterior wall coatings』. 6. Physical test
Test period	:	2019-09-10~2019-09-25
Test result comment	:	Detailed results please refer to page 3~5.
Note	:	This test report is only used for scientific research, teaching or internal quality control.

Prepared by :

Checked by :

Approved by :

Date : 2019-09-30

TEST RESULTS

Sample: UQESH® HEFloor 高耐磨水性聚氨酯辊涂砂浆

1. The quantitative analysis results of formaldehyde

Test Item	Test Results [g/kg]	Limit requirements [g/kg]	MDL [g/kg]
formaldehyde	**N.D.**	≤0.1	0.05

Note: 1. N.D.: Less than Method Detection Limit; 2. MDL: Method Detection Limit.

2. The quantitative analysis results of Pb, Cd, Hg, Cr

Test Item	Test Results [mg/kg (ppm)]	Limit requirements [mg/kg (ppm)]	MDL [mg/kg (ppm)]
Pb	**N.D.**	≤30	2
Cd	**N.D.**	≤30	2
Hg	**N.D.**	≤10	2
Cr	**N.D.**	≤30	2

Note: 1. N.D.: Less than Method Detection Limit; 2. MDL: Method Detection Limit.

3. The quantitative analysis results of Volatile Organic Compounds (VOC)

Test Item	Test Results [g/L]	Limit requirements [g/L]	MDL [g/L]
VOC	**2**	≤30	2

Note: 1. N.D.: Less than Method Detection Limit; 2. MDL: Method Detection Limit.

4. The quantitative analysis results of benzene, toluene, ethylbenzene, xylene

Test Item	Test Results [g/kg]	Limit requirements [g/kg]	MDL [g/kg]
Benzene	**N.D.**	Benzene, Toluene, ethylbenzene, xylene ≤5	0.001
Toluene	**N.D.**		0.001
ethylbenzene	**N.D.**		0.001
p-xylene	**N.D.**		0.001
m-xylene	**N.D.**		0.001
o-xylene	**N.D.**		0.001

Note: 1. N.D.: Less than Method Detection Limit; 2. MDL: Method Detection Limit.

5. The quantitative analysis results of ethylene glycol ethers and ethylene glycol ether esters

Test Item	Test Results [mg/kg]	Limit requirements [mg/kg]	MDL [mg/kg]
Ethyleneglycol-monomethyl ether	**N.D.**	ethylene glycol ethers and ethylene glycol ether esters≤300	10
2-Mthoxyethyl acetate	**N.D.**		10
2-Ethoxyethanol	**N.D.**		10
Acetic acid-2-ethoxyethyl ester	**N.D.**		10
Diethyleneglycol-monobutylether acetate	**N.D.**		10

Note: 1. N.D.: Less than Method Detection Limit; 2. MDL: Method Detection Limit.

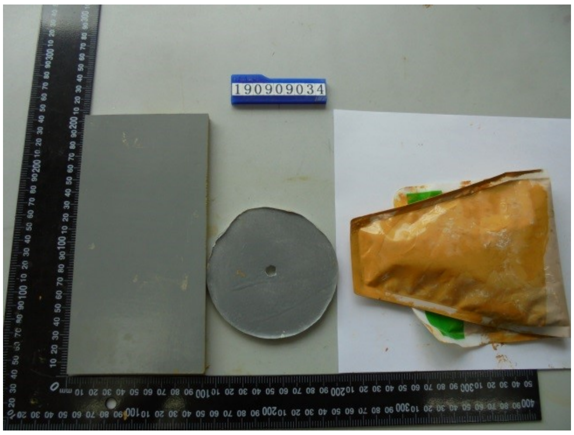
6. Physical test

Test item	Teat method	Test condition	Test results		Standard's requirements	Conclusion
Drying time	GB/T 22374-2018	Method B: Touch the surface of the paint film with fingers. If you feel a little sticky, but there is no paint on your fingers, it is considered that the surface is dry.	Surface drying time	2h	≤4h	Pass
		Method A: Press filter method put a qualitative filter paper on the paint film (the smooth surface contacts the paint film), and then gently place the drying tester on the filter paper. At the same time, start the stopwatch for 30 seconds, remove the drying tester, turn the sample plate (the paint film is downward), and the filter paper can fall freely, or tap a few times with the index finger on the back, and the filter paper can fall freely while the filter paper fiber is not stuck on the paint film. That is to say The film is actually dry.	Actual drying time	5h	≤24h	Pass
Pencil hardness	GB/T 22374-2018 Section 6.4.4.1, GB/T 6739-2006	Pencil: Mitsubishi®	Hardness: 3H		≥3H	Pass
7d Tensile bond strength	GB/T 22374-2018	Specimen: 40mm×40mm Test speed: 5mm/min	3.9MPa		≥2MPa	Pass
Skid resistance	GB/T 4100-2006	Load: 44.1N	Dry friction coefficient: 0.66		≥0.6	Pass
Taber abrasion	GB/T 1768-2006 and applicant's requirement	Wheel: CS-17 Load: 500g/wheel Speed: 60r/min Times: 100	0.0037g		≤0.15g	Pass
Impact resistance	GB/T 1768-2008	1kg steel ball Test height: 100cm	After test, there is no crack and no spalling on the surface of the sample.		No cracks, no spalling.	Pass
Water resistance	GB/T 22374-2018 and applicant's requirement	Pure water, 168h	No blistering, no peeling, no cracking, no discoloration.		No blistering, no peeling, no cracking, no discoloration.	Pass

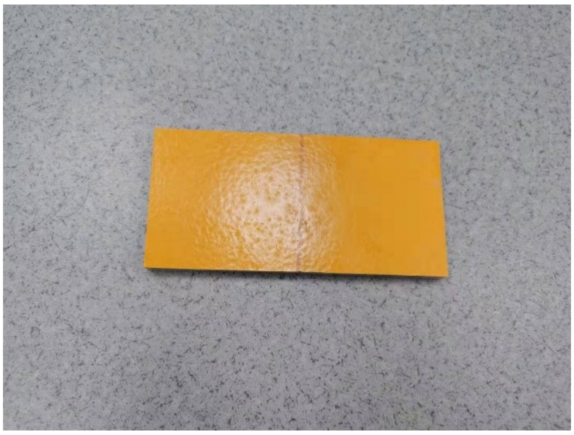
Continued

Test item	Teat method	Test condition	Test results	Standard's requirements	Conclusion
Chemical resistance	GB/T 22374-2018 and applicant's requirement	Alkali resistance: 20%NaOH, 72h	No blistering, no peeling, no cracking, no discoloration.	No blistering, no peeling, no cracking, allowed slight discoloration.	Pass
		Acid resistance: 10%H_2SO_4, 48h	No blistering, no peeling, no cracking, no discoloration.		
		Oil resistance: 120# Solvent naphtha, 72h	No blistering, no peeling, no cracking, no discoloration.		
		Salt tolerance: 3%NaCl, 168h	No blistering, no peeling, no cracking, no discoloration.		

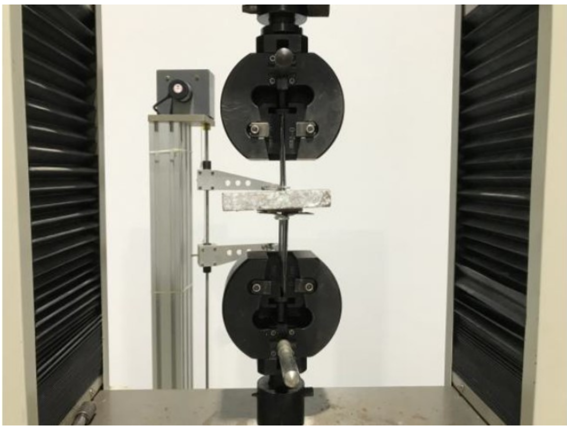
SAMPLE PHOTOS



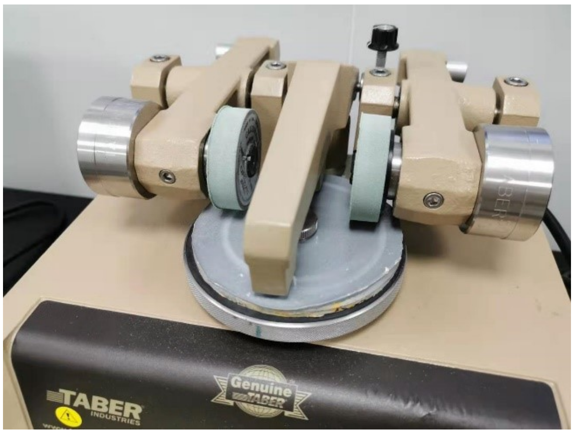
Test sample- Other test items'



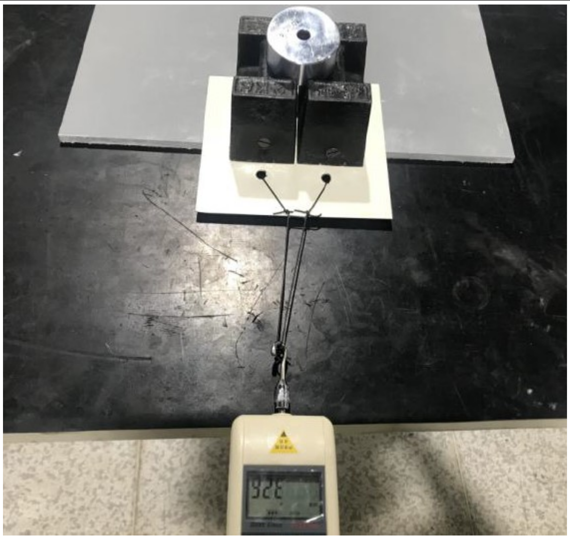
Test sample- Chemical resistance



Testing- Tensile bond strength



Testing- Taber abrasion



Testing- Skid resistance

Testing- Impact resistance

	
After test- Tensile bond strength	After test- Taber abrasion (100 times)
	-
After test- Impact resistance	-

----- End of report-----