

测试报告

编号: XMIN180300438CCM_CN

日期: 2018年05月25日

页码: 共1页, 共28页

客户名称: 上海客乐思实业发展有限公司
客户地址: 上海市宝山区共和新路5199号

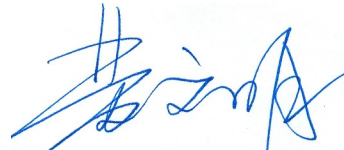
样品名称 : 纯亚克力实体面材
石种 : 实体面材
产地 : 中国山东
生产商 : 山东客乐思新材料科技有限公司
型号规格 : KS003 纯白

以上信息及样品由客户提供及确认, SGS 不承担证实客户提供信息的准确性、适当性和(或)完整性的责任。

测试要求 : 根据申请者的要求
SGS 参考编号 : CANMLC1804744502, XMIN1803001763SC_CN, SDHL1803005229FB_CN,
KV302411, GZIN1803011762MR_CN, GZAFN1803003470S002,
XMAFN180300138-1, GZIN1805025488MR_CN
收样日期 : 2018年03月12日
测试开始时间 : 2018年03月12日
测试结束时间 : 2018年05月25日
测试结果 : 请见下页 (除另有特别说明外, 此报告结果仅对测试样品负责)

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通标准技术服务有限公司厦门分公司
授权签名



黄文明

授权签字人



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编号: XMIN180300438CCM_CN

日期: 2018年05月25日

页码: 共2页, 共28页

测试结果概要

(平均值)

编号	测试项目	测试方法	测试结果
1	吸水率	参考 ASTM C97/C97M-15	0.05%
	密度		1750 kg/m ³
2	耐磨性	参考 ASTM C241/C241M-15 ^{e1}	32
3	耐污染性	参考 ANSI Z124.6-2007 第 5.2 节	总耐污染值: 52 最大单个污迹深度: 0.04mm
4	香烟燃烧	参考 ANSI Z124.6-2007 第 5.4 节	测试后, 样品表面无明火或阴燃, 有 明显污迹残留, 可用干净棉布和水 除去。
5	耐加热性	参考 ANSI Z124.6-2007 第 5.7 节	测试后, 试样表面无破裂, 无裂缝, 无 起泡, 无颜色变化
6	耐高温测试	参考 NEMA LD-3-2005	无影响
7	耐化学药品性	参考 ANSI Z124.6-2007 第 5.5 节	未受明显损伤
8	光老化试验-氙灯辐射暴露	参照 ANSI Z124.6-2007 第 5.1 节 & ASTM D2565-99(2008) & ASTM D2244-16 和客户要求	合格 详见结果
9	线性热膨胀系数	参考 ASTM D696-16	-30°C~ 30°C: 29.08×10 ⁻⁶ (1/°C)
10	表面燃烧	ASTM E84-17	A 级
11	挥发性有机化合物	SGS 内部方法	未检出

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SGS-CSTC 圣克莱斯技术服务有限公司
Xiamen Branch Testing Center Commercial Construction Material Laboratory

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编号	测试项目	测试方法	测试结果	
12	巴柯尔硬度	ASTM D2583-13a	58	
13	弯曲测试	参照 ASTM D790-17 程序 A 和 客户要求	弯曲强度	64.3MPa
			弯曲模量	9600MPa
14	洛氏硬度	ASTM D785-08(2015) 程序 A	107L	
15	拉伸模量	ASTM D638-14	10500MPa	
16	拉伸强度	ASTM D638-14	42.5MPa	
17	抗真菌效果实验	参考 ASTM G 21-15	0 级	
18	抗菌效果实验	参考 ASTM E 2180-07 (2012 重新批准)	97.2	
19	悬臂梁缺口冲击强度	ASTM D256-10 ^{E1} 方法 A	18J/m	

备注:

- 1.线性热膨胀系数测试是由 SGS 台湾检验科技股份有限公司公司高雄材料及工程实验室执行的。
- 2.表面燃烧测试是由通标准技术服务有限公司顺德分公司执行的。
- 3.测试项目 11~19 是由通标准技术服务有限公司广州分公司执行的。

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1. 吸水率和密度

测试方法:

参考 ASTM C97/C97M-15 规格石材的吸水率和体积密度的标准测试方法

样品: 人造石, 50mm×50mm×12mm, 5片, 一面抛光

测试结果:

样品编号	1	2	3	4	5
吸水率 (%)	0.06	0.05	0.03	0.06	0.07
平均吸水率 (%)	0.05				
密度 (kg/m ³)	1752	1747	1752	1751	1748
平均密度 (kg/m ³)	1750				

2. 耐磨

测试方法:

参考 ASTM C241/C241M-15^{SP1} 人行道用石板耐磨性能的标准测试方法

样品: 人造石, 50mm×50mm×12mm, 3片, 一面抛光

测试结果:

测试面: 抛光面

样品编号	1	2	3
耐磨度	34	32	31
平均耐磨度	32		

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3. 耐污染性

测试方法:

参考 ANSI Z124.6-2007 塑料水槽 - 5.2 耐污染测试

样品: 人造石, 100mm×100mm×12mm, 10片, 一面抛光

测试面: 抛光面

测试结果:

试剂	测试结果			
	(加盖)		(不加盖)	
	单个耐污等级	耐污深度	单个耐污等级	耐污深度
黑色蜡笔	2	/	2	/
黑色液体鞋油	4	/	4	/
蓝色耐水洗墨水	5	0.02mm	5	0.02mm
龙胆紫溶液	5	0.04mm	5	0.02mm
甜菜汁	1	/	1	/
葡萄汁	1	/	1	/
口红	1	/	1	/
染发剂	1	/	1	/
碘溶液	5	0.02mm	5	0.02mm
湿茶袋	1	/	1	/
耐污染总值	52			
最大耐污染深度	0.04mm			

备注: ANSI Z124.6-2007 的要求中耐污染总值应≤ 64 和最大污染深度为 0.127mm。根据条款 5.2.1.1~5.2.1.5, 污染评级摘要如下:

- 1- 无污染, 可用自来水擦洗 20 次清洗掉;
- 2- 可用酒精或者石脑油擦洗 20 次清洗掉;
- 3- 可用标准去污粉擦洗 20 次清洗掉;
- 4- 可用标准去污粉额外擦洗 40 次清洗掉;
- 5- 用上述所有的清洗试剂清洗后仍有污迹残留。

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4. 香烟燃烧

测试方法:

参考 ANSI Z124.6-2007 塑料水槽 - 5.4 耐香烟燃烧

样品: 人造石, 100mm×100mm×12mm, 3片, 一面抛光

测试面: 抛光面

测试结果:

经测试, 样品表面有可见污迹, 可用干净棉布和水除去

5. 耐加热测试

测试方法:

参考 ANSI Z124.6-2007 塑料水槽 - 5.6 耐加热测试

试样: 人造石, 250mm×250mm×12mm, 2片, 一面抛光

测试面: 抛光面

测试结果:

测试后, 样品表面均无破裂, 无裂缝, 无起泡, 无颜色变化。

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6. 耐高温性

测试方法:

参考 NEMA LD-3-2005 装饰用高压层压板 - 3.6 耐高温性

样品: 人造石, 200mm×200mm×12mm, 2片, 一面抛光

测试面: 抛光面

测试结果:

样品编号	1	2
测试结果	无影响	无影响

备注:

- a. 无影响 – 表面光泽与颜色均无变化.
- b. 轻微影响 – 表面光泽或颜色仅在某一角度或方向有可见变化.
- c. 中度影响 – 表面光泽或颜色在所有角度和方向均有可见变化, 但样品本身没有改变.
- d. 严重影响 – 表面光泽或颜色产生显著变化, 且样品本身发生改变.

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7. 耐化学药品性

测试方法:

参考 ANSI Z124.6-2007 塑料水槽 - 5.5 耐化学药品测试

样品: 人造石, 100mm×100mm×12mm, 15片, 一面抛光

测试面: 抛光面

测试结果:

试剂	测试结果	
	(加盖)	(未加盖)
石脑油	无影响	无影响
乙醇	有影响	无影响
醋酸戊脂	有影响	无影响
家用氨水 (10% V/V)	无影响	无影响
柠檬酸 (10%)	无影响	无影响
尿素 (6%)	无影响	无影响
双氧水 (3%)	无影响	无影响
次氯酸溶液(有效氯≥8%)	无影响	无影响
甲苯	无影响	无影响
乙酸乙酯	无影响	无影响
碱液 (2% 氢氧化钠溶液)	无影响	无影响
丙酮	无影响	无影响
磷酸三钠溶液 (5%)	无影响	无影响
醋	无影响	无影响
松节油	无影响	无影响

备注: 1. “有影响”: 受到轻度损伤, 但用 600 目号砂纸轻擦即能除去; 损伤程度不会影响板材的使用性, 且易修复至原状。
2. “严重影响”: 损伤严重, 影响板材的使用性, 且不易修复至原状。

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8. 测试项目: 光老化试验-氙灯辐射暴露

样品描述: 见照片

测试方法: 参照 ANSI Z124.6-2007 第 5.1 节 & ASTM D2565-99(2008) & ASTM D2244-16 和客户要求

测试条件:

测试循环:

辐照度: $(0.35 \pm 0.02) \text{ W}/(\text{m}^2 \cdot \text{nm}) @340 \text{ nm}$

光照: 102 min, 黑板温度: $(63 \pm 5) ^\circ\text{C}$

光照和喷淋: 18 min

滤镜: Daylight

暴露时间: 200 小时

测试结果:

样品	外观	ΔE^*_{ab}	ANSI Z124.6-2007 第 5.1.2 节要求	结论
A	无破裂、裂纹、起 泡, 颜色可见变 化, 表面质地无明 显变化	1.1	无破裂、裂纹、起 泡、颜色或表面质 地无明显变化, $\Delta E^*_{ab} \leq 2$	合格

备注: ΔE^*_{ab} 是用球形分光光度计在 D65 标准光源下, 以 10° 观察角进行测量的。结果排除镜面反射
条件, 8mm 孔径

***** 待续*****



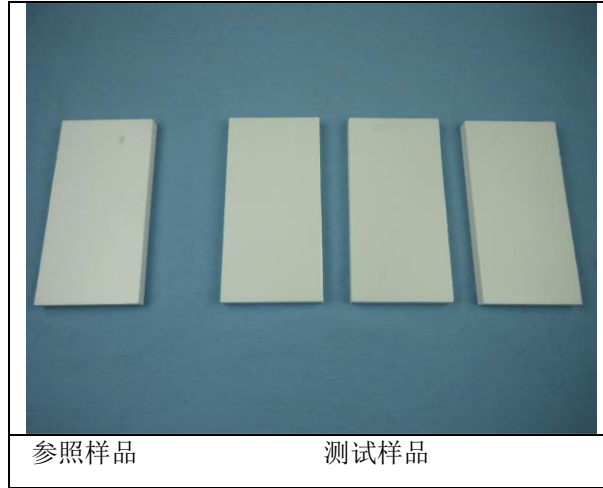
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测试照片:



设备信息:

设备	型号	设备编号	校准日期	下次校准日期
氙灯老化机	Q-Sun Xe-3 HBS	XMML-POL-018	2018-01-24	2019-01-23
积分球分光光度计	SP64	XMML-CON-025	2018-01-03	2019-01-02

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9. 线性热膨胀系数

试验方法:

参考 ASTM D696-16 线性热膨胀系数的标准测试方法 (玻璃硅膨胀计从-30°C 到 30°C)

试验条件:

试验温度: 以 10°C/min 的速率自-30°C扫描至 30°C

通入气体: 氮气(N₂), 纯度 99.999%, 流量 50mL/min

探针: 膨胀

施力: 0.05N

测量方向: X-Y 平面

试验结果结果:

试验项目	试验方法	实验结果
线性热膨胀系数 (1°C)	参考 ASTM D696-16	-30°C ~ 30°C: 29.08×10 ⁻⁶

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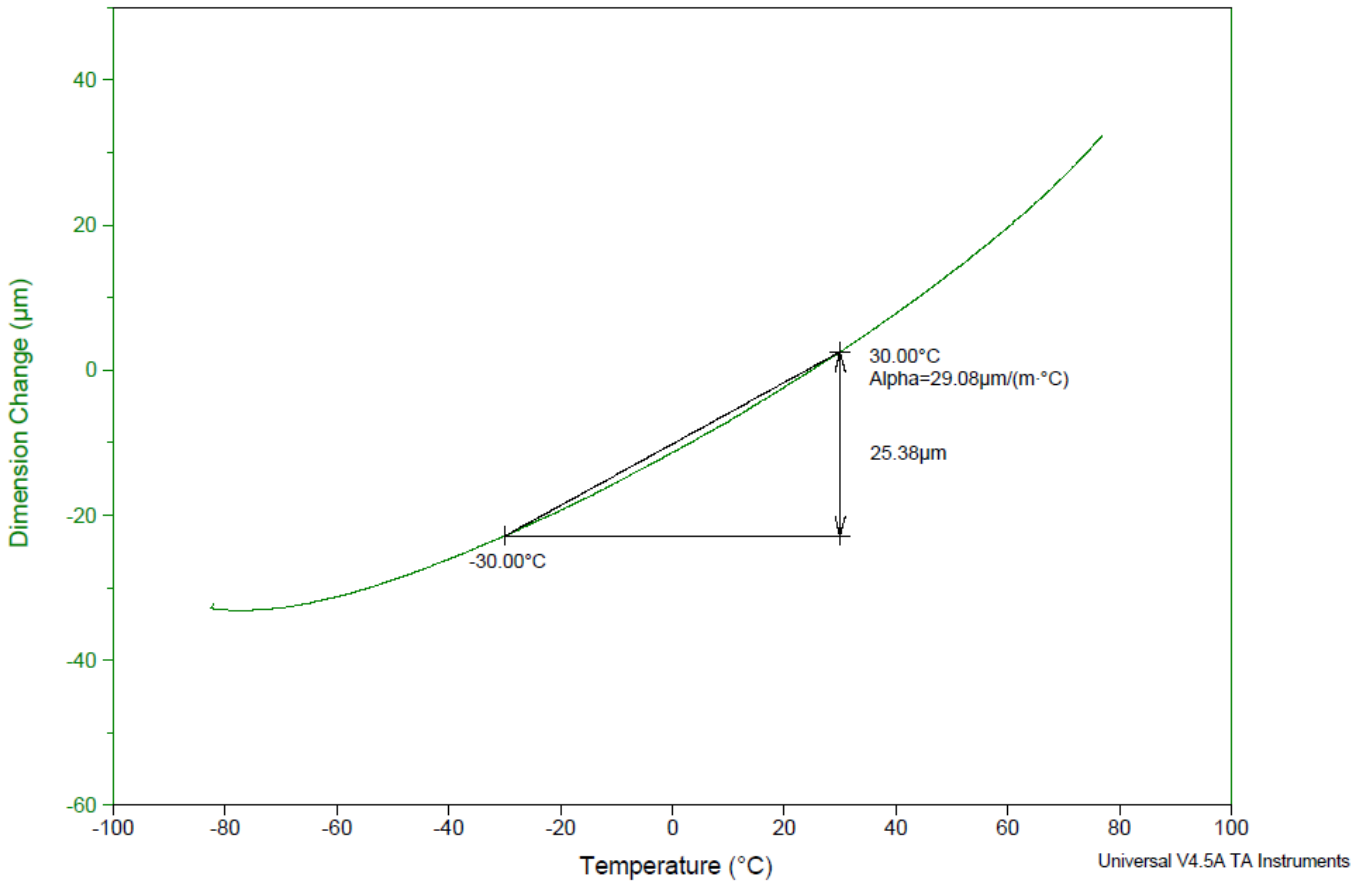
试验图谱

Sample: KV-18-02411
Size: 14.5476 mm

TMA

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Operator: Mina Hsu
Run Date: 26-Mar-2018 11:42
Instrument: TMA Q400 V7.4 Build 93

Comment: XMIN180300438 CCM/ CN



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10. 表面燃烧

检验依据:

依据 ASTM E84-17 建筑材料表面燃烧特性测试方法

介绍:

测试方法依据“ASTM E84-17 建筑材料表面燃烧特性测试”方法进行, 测试用于观察材料在特定条件下的表面燃烧现象。结果表达依据火焰蔓延指数 (FSI) 和烟增长指数 (SDI) 判定。

此测试是通过观察火在样品的蔓延情况进行记录。火焰蔓延指数 (FSI) 和烟增长指数 (SDI) 会被记录, 然而这两个数值不一定存在关系。

测试程序:

预热设备, 通过测量离燃烧器端口 23.25 英尺的地面嵌入式热电偶温度, 达到 150°F 后停止加热, 然后测量 13 英尺的地面嵌入式热电偶温度, 让其降到 105°F 即可。此时升起设备顶盖, 将样品铺在设备炉内模拟成一个 24 英尺长离设备炉底部 12 英寸的天花, 再降下设备顶盖。

燃烧器点燃, 每 15 秒记录火焰传播距离。火焰传播距离和时间将忽略不计其火焰衰退的情况。如果面积在曲线 (A) 里或等于 97.5 min-ft, $FSI=0.515 \cdot A$; 如果大于, $FSI=4900/(195-A)$ 。烟增长指数形成的曲线通过比较红橡木和水泥纤维板区域, 分别任意设定为 0 和 100。

样品描述:

样品厚度:	约 12mm
测试面:	光滑面

预处理:

测试前, 样品在温度 $73.4 \pm 5^\circ\text{F}$ ($23 \pm 2.8^\circ\text{C}$), 相对湿度 $50 \pm 5\%$ 的条件下处理到质量恒定。

测试样品共由 4 块拼接而成。用样品的长度方向接拼样品安装在测试炉支架上, 没有用额外的支持方式。

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测试结果:

测试数据和现象观察:

火焰传播最大距离: 6.5 ft
 火焰传播到最大距离的时间: 581 s
 是否出现掉落物: 是
 测试持续时间: 10 min
 FS*时间面积 (ft*min): 27.3
 产烟面积 (%A*min): 3.3
 红橡木产烟面积 (%A*min): 90.8

结果总结:

FSI (燃烧蔓延指数)	SDI (烟增长指数)
15	5

分级:

在 NFPA 101 生命安全法案手册中, 内部墙壁和天花的分级要求, 根据燃烧蔓延指数和烟增长指数进行分级, 方法按照: NFPA 255, (ASTM E84), 建筑材料表面燃烧特性测试方法。

分级如下:

	燃烧蔓延指数(FSI)	烟增长指数(SDI)
A 级	0 - 25	0 - 450
B 级	26 - 75	0 - 450
C 级	76 - 200	0 - 450

结论:

参考 NFPA 101 生命安全法案手册, 内部墙壁和天花的分级要求, 提交的样品符合 A 级要求。

***** 待续*****



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测试报告

编号: XMIN180300438CCM_CN

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页码: 共15页, 共28页

附录 1-图表:

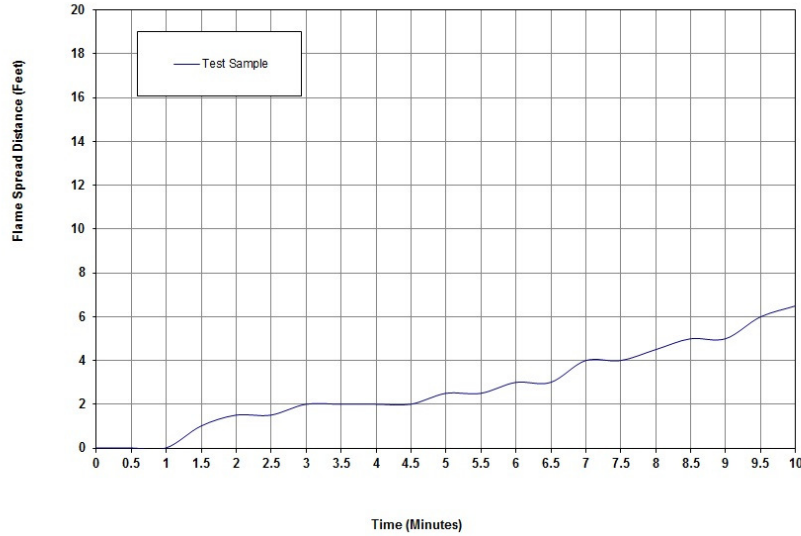


图 1. 燃烧蔓延图

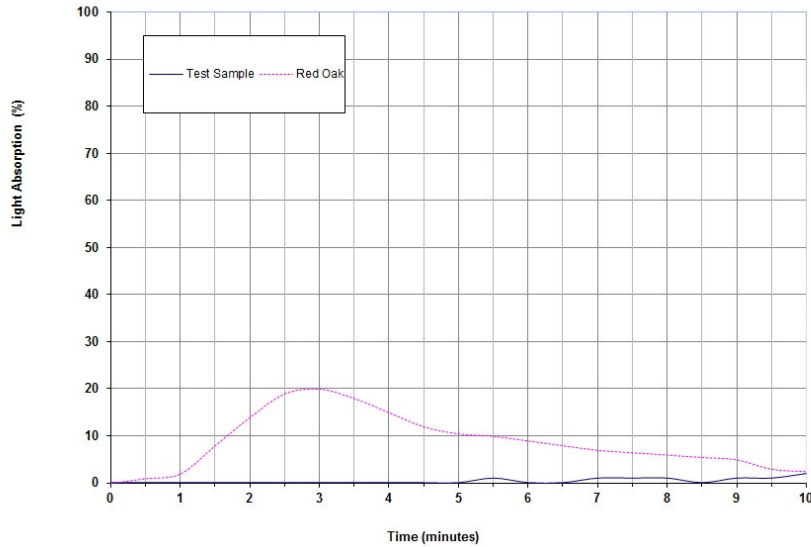


图 2. 烟增长图

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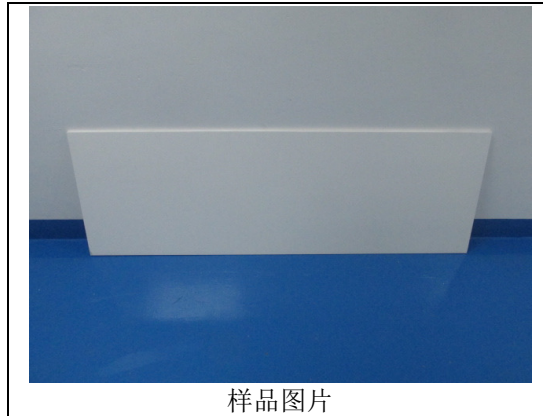
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附录 2-样品图片:



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11. 挥发性有机化合物

测试方法: 参考 SGS 内部方法。称取样品入顶空瓶, 在 100°C 条件下加热 1hr。用顶空-气相色谱/质谱法分析。

测试项目	CAS NO.	单位	MDL	结果
苯	71-43-2	µg/g	5	ND
甲苯	108-88-3	µg/g	5	ND
乙酸丁酯	123-86-4	µg/g	5	ND
乙苯	100-41-4	µg/g	5	ND
苯乙烯	100-42-5	µg/g	5	ND
二甲苯	95-47-6/108-38-3/ 106-42-3	µg/g	5	ND
1, 4-二氯苯	106-46-7	µg/g	5	ND
正十一烷	1120-21-4	µg/g	5	ND
正十四烷	629-59-4	µg/g	5	ND

备注:

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = 检测极限值
- (3) ND = 未检出 (< MDL)
- (4) "-" = 未规定

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12. 测试项目: 巴柯尔硬度

样品描述: 见照片

测试方法: ASTM D2583-13a

测试条件:

试样厚度: 11.96mm

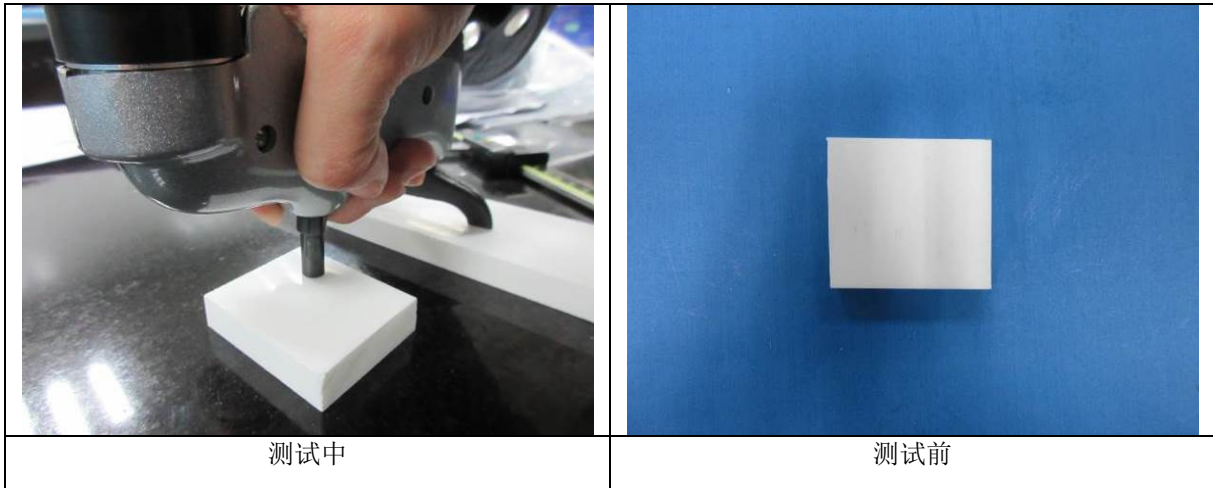
实验室环境条件: 23±2°C, 50±5%RH

测试结果:

测试项目	测试结果
巴柯尔硬度	58

备注: 测试试样从样品中截取。

测试照片:



设备信息:

设备	型号	设备编号	校准日期	下次校准日期
巴氏硬度计	GYZJ-934-1	GZMR-PL-E190	2018-01-02	2019-01-01

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13. 测试项目: 弯曲测试

样品描述: 见照片

测试方法: 参照 ASTM D790-17 程序 A 和客户要求

测试条件:

试样: 127mm×12.01mm×11.65mm

测试速度: 1.4mm/min

跨距: 100mm

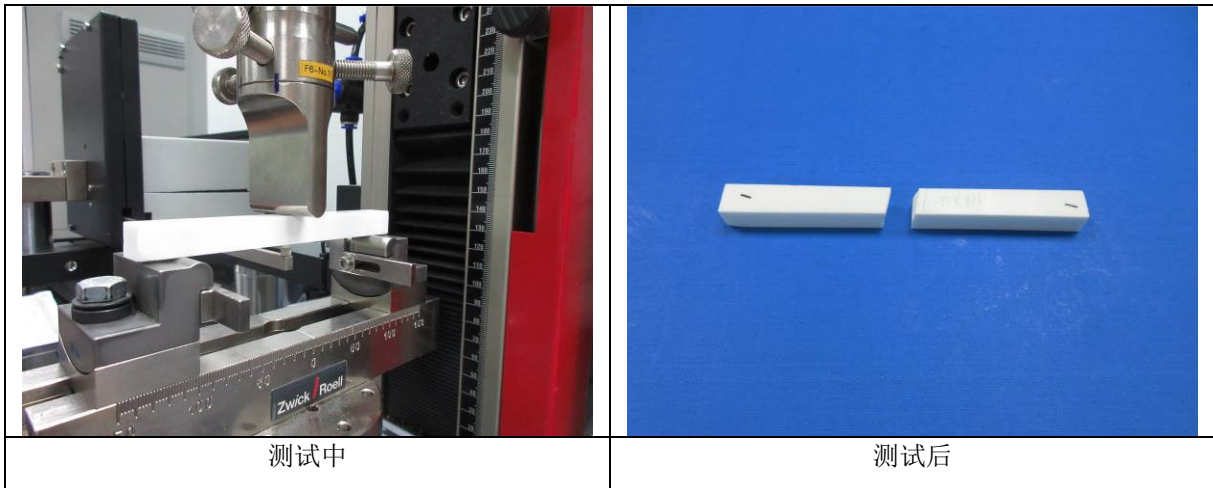
实验室环境条件: (23±2)°C, (50±5)%RH

测试结果:

测试项目	测试结果
弯曲强度	64.3MPa
弯曲模量	9600MPa

备注: 测试面为光滑面。

测试照片:



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设备信息:

设备	型号	设备编号	校准日期	下次校准日期
电子万能材料试验机	Z1.0	GZMR-PL-E168	2017-10-10	2018-10-09

14.测试项目: 洛氏硬度

样品描述: 见照片

测试方法: ASTM D785-08(2015) 程序 A

测试条件:

试样厚度: 11.94mm

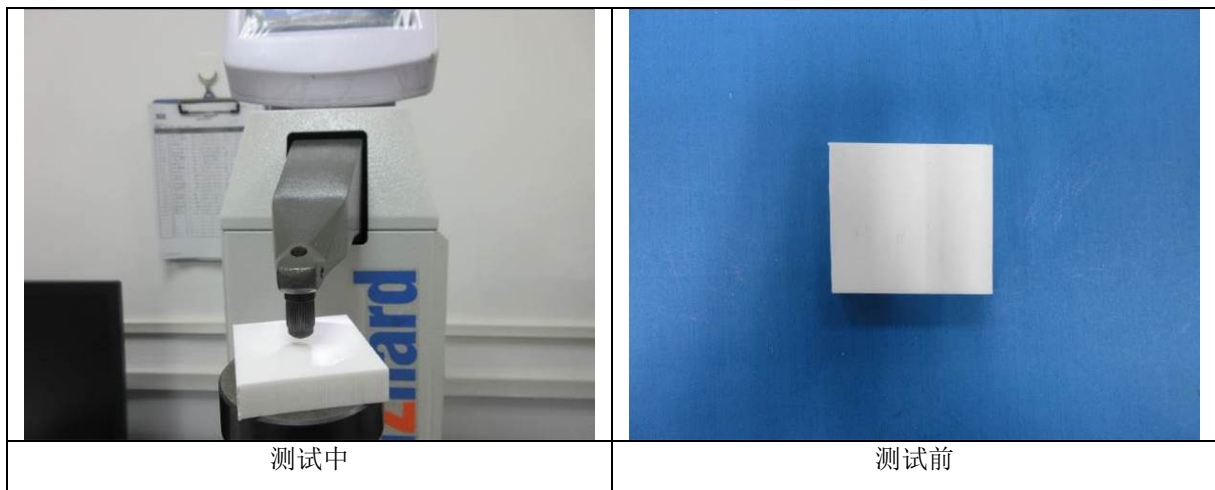
实验室环境条件: 23 ± 2 °C, 50 ± 5 % RH

测试结果:

测试项目	测试结果
洛氏硬度	107L

备注: 测试试样从样品中截取。

测试照片:



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设备信息:

设备	型号	设备编号	校准日期	下次校准日期
洛氏硬度试验机	HR-521	GZMR-MT-E080	2018-01-05	2019-01-04

15. 测试项目: 拉伸模量

样品描述: 见照片

测试方法: ASTM D638-14

测试条件:

试样: I 型

试样厚度: 11.88 mm

测试速度: 5 mm/min

标距: 50 mm

夹头间距: 115 mm

实验室环境条件: 23 ± 2 °C, 50 ± 5 % RH

测试结果:

测试项目	测试结果
拉伸模量	10500MPa

备注: 测试试样从样品中截取。

***** 待续*****



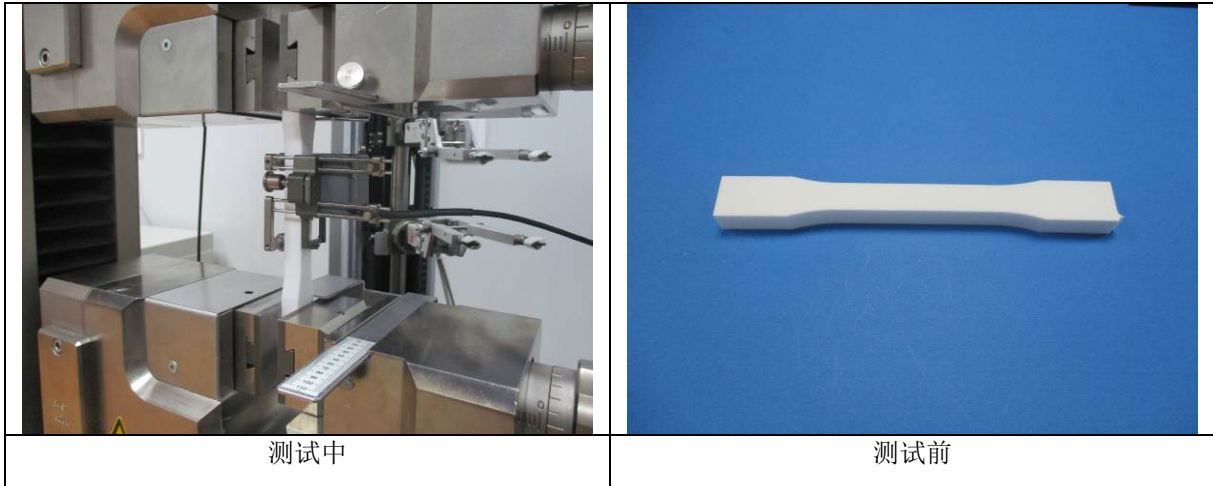
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测试照片:



设备信息:

设备	型号	设备编号	校准日期	下次校准日期
电子万能材料试验机	Z030	GZMR-PL-E140	2017-10-10	2018-10-09

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16. 测试项目: 拉伸强度

样品描述: 见照片

测试方法: ASTM D638-14

测试条件:

试样: I型

试样厚度: 11.88mm

测试速度: 5 mm/min

夹头间距: 115mm

实验室环境条件: 23 ± 2 °C, 50 ± 5 % RH

测试结果:

测试项目	测试结果
拉伸强度	42.5MPa

备注: 测试试样从样品中截取。

***** 待续*****



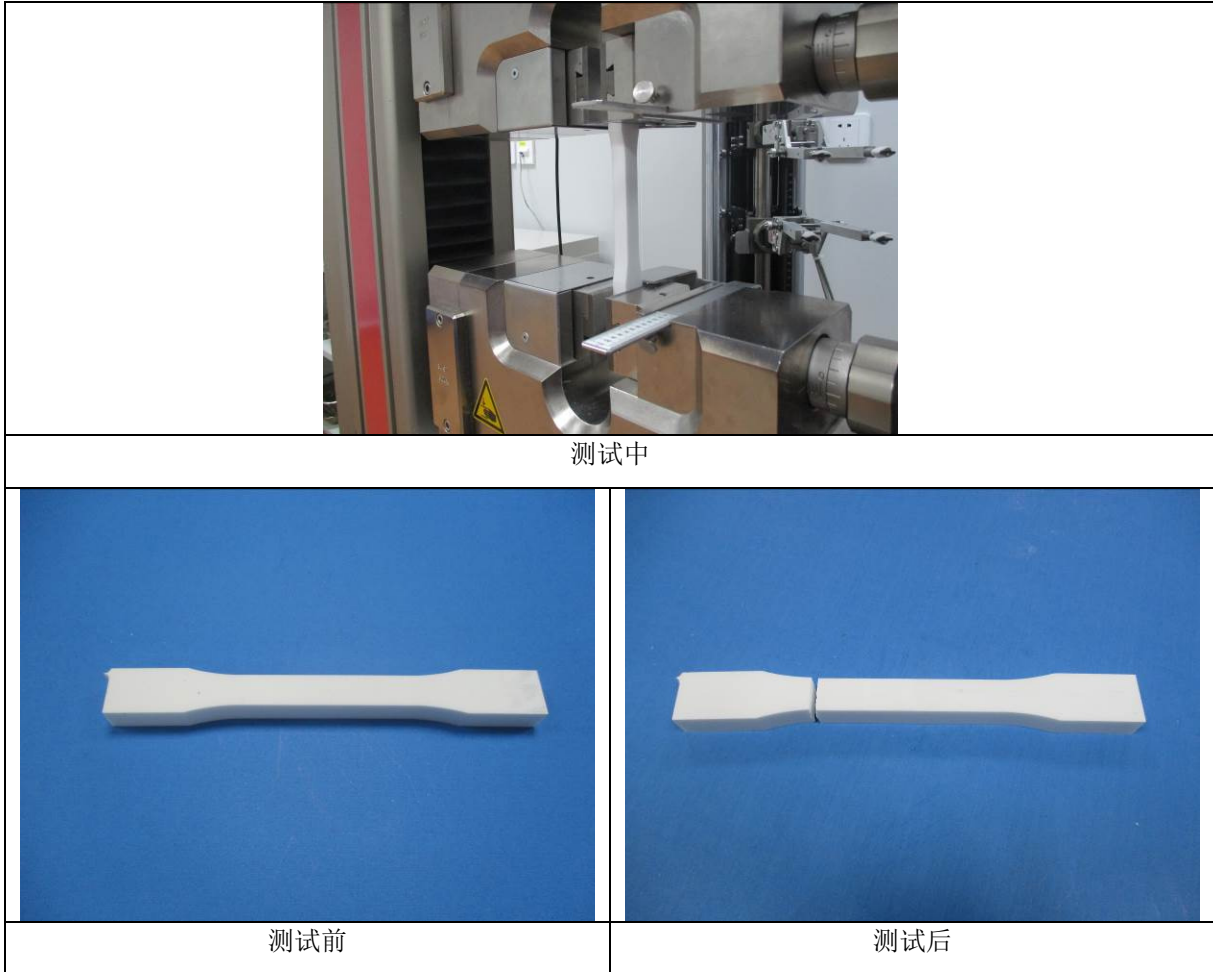
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测试照片:



测试中

测试前

测试后

设备信息:

设备	型号	设备编号	校准日期	下次校准日期
电子万能材料试验机	Z030	GZMR-PL-E140	2017-10-10	2018-10-09

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17. 抗真菌效果实验

测试方法: 参考 ASTM G 21-15

试验菌种: 巴西曲霉^AATCC 9642, 绳状青霉^BATCC 11797, 出芽短梗霉 ATCC 15233, 球毛壳 ATCC 6205, 绿色木霉^CATCC 9645

测试菌种	孢子悬液浓度 (个/mL)	样品表面观察到的生长级别 (28天)
巴西曲霉 ^A ATCC 9642	1.0×10 ⁶	0级*
绳状青霉 ^B ATCC 11797		
出芽短梗霉 ATCC 15233		
球毛壳 ATCC 6205		
绿色木霉 ^C ATCC 9645		

备注:

1. 根据 ASTM G 21-15 合成高分子材料抗真菌性的测定, 样品表面观察到的霉菌生长情况评价如下:

- 0 - 不生长
- 1 - 痕迹生长 (小于 10%)
- 2 - 轻微生长 (10-30%)
- 3 - 中度生长 (30-60%)
- 4 - 严重生长 (60%-全面覆盖)

2. 菌种曾用名

A 曾用名是黑曲霉

B 曾用名是嗜松青霉

C 曾用名是绿色胶霉

3. *该结果由放大倍数为(50 X)的显微镜进行观察确认。

18. 抗菌效果实验

测试方法: 参考 ASTM E 2180-07 (Reapproved 2012)

实验菌种: 金黄色葡萄球菌 ATCC 6538

实验菌种	接种菌液浓度 (cells/mL)	/	"0小时"接触洗脱后的对数平均值的反对数(cfu/mL)	"24小时"接触洗脱后的对数平均值的反对数(cfu/mL)	减少率 (%)
金黄色葡萄球菌 ATCC 6538	3.3 x 10 ⁶	Sample	/	2.2 x 10 ⁴	97.2
		Control Sample	1.2 x 10 ⁶	1.7 x 10 ⁷	

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19. 测试项目: 悬臂梁缺口冲击强度

样品描述: 见照片

测试方法: ASTM D256-10^{e1} 方法 A

测试条件:

试样宽度: 11.86mm (缺口制备: 机械加工)

摆锤能量: 2.75 J

冲击速度: 3.46 m/s

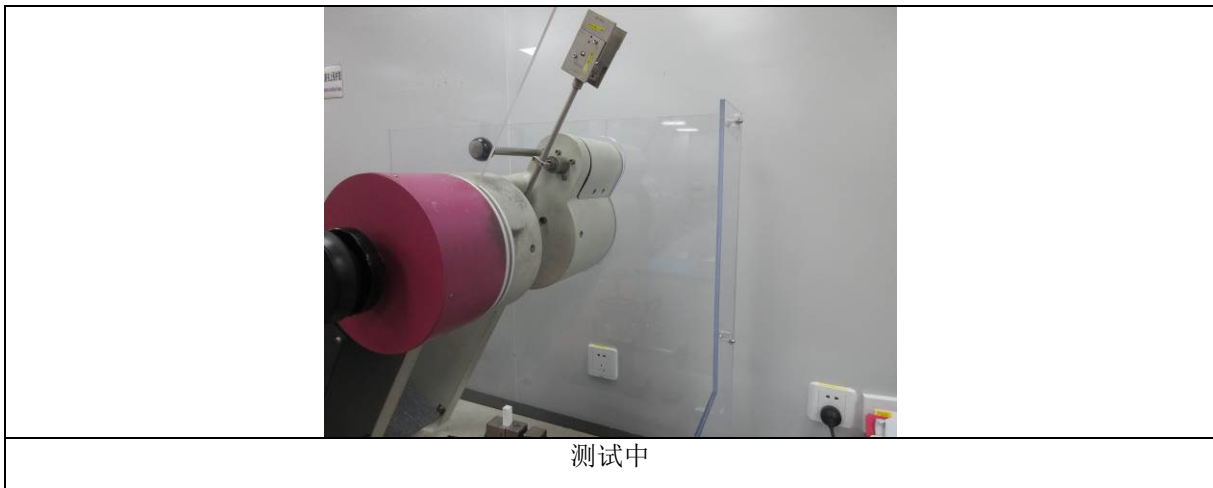
实验室环境条件: 23 ± 2 °C, 50 ± 5 % RH

测试结果:

测试项目	测试结果
悬臂梁缺口冲击强度	18J/m

备注: 测试试样从样品中截取。

测试照片:



测试中

***** 待续*****

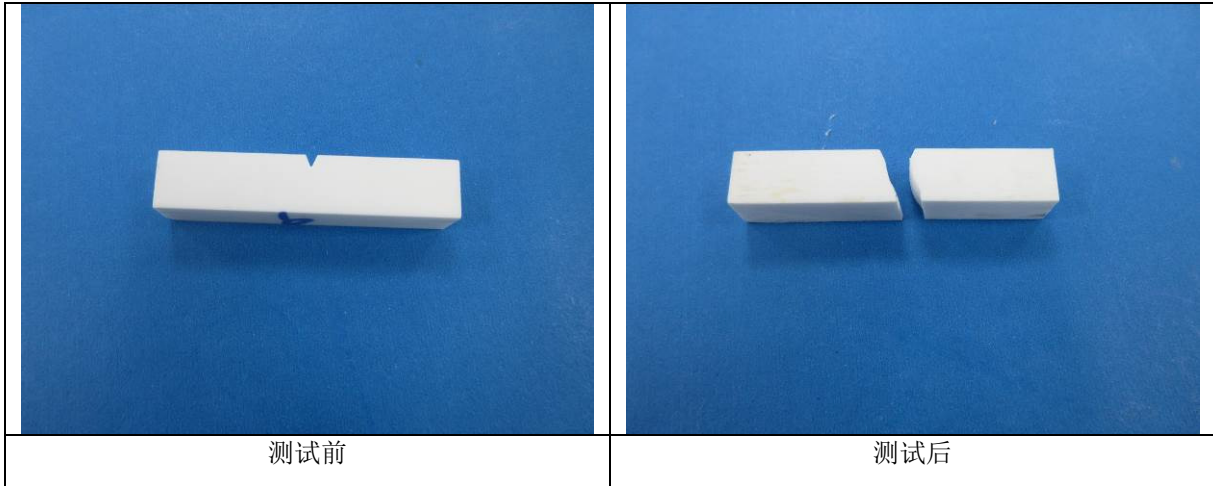


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设备信息:

设备	型号	设备编号	校准日期	下次校准日期
冲击试验仪	6967	GZMR-PL-E008	2017-10-10	2018-10-09

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测试报告

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