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检测
TESTING
CNAS L7472

TEST REPORT

检测报告



Report No./报告号: A2112058-C01-R04

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Applicant: Shenzhen Esun Industrial Co., Ltd.
申请商: 深圳光华伟业股份有限公司
Address: Wuhan University Building A403-I and A901, No.6 Yuexing 2 Road, Nanshan District, Shenzhen, China
地址: 深圳市南山区粤兴二道 6 号武汉大学深圳产学研大楼 A403-I 及 A901

The following sample(s) and sample information was/were submitted and identified by/on the behalf of the client/以下测试之样品及样品信息由申请者提供并确认:

Sample Name eVacuum
样品名称
Sample Received Date December 06, 2021
样品接收日期 2021 年 12 月 06 日
Testing Period December 06 - 29, 2021
检测日期 2021 年 12 月 06 日至 2021 年 12 月 29 日
Test Method & Test Result Please refer to following pages.
检测依据和检测结果 请参考下一页

Test Requested/检测要求

As specified by client, according to RoHS Directive 2011/65/EU with amendment (EU) 2015/863 to test Lead (Pb), Cadmium (Cd), Mercury (Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs), Phthalates (Dibutyl phthalate(DBP), Benzylbutyl phthalate(BBP), Di-2-ethylhexyl phthalate(DEHP), Diisobutyl phthalate(DIBP)) in the tested materials of the submitted sample(s).

根据客户要求, 依据指令 2011/65/EU 及修订指令(EU) 2015/863 对所提交样品检测材料中的铅(Pb), 镉(Cd), 汞(Hg), 六价铬(Cr(VI)), 多溴联苯(PBBs), 多溴二苯醚(PBDEs), 邻苯二甲酸酯(邻苯二甲酸二丁酯(DBP)、邻苯二甲酸丁基苯酯(BBP)、邻苯二甲酸二乙基己基酯(DEHP)、邻苯二甲酸二异丁酯(DIBP))进行检测。

Result/结果

Pass /合格

Tested by:
主 检: Anne Zhao

Approved by:
签 发:

Reviewed by:
审 核: Tony Gmy

Date of issue: December 30, 2021
签发日期: 2021年12月30日



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Test Method/检测依据

(1) XRF Screening limits for regulated elements according to IEC 62321-3-1:2013 (Unit:mg/kg)/
IEC 62321-3-1:2013 对管控元素的 XRF 筛选限值 (单位: mg/kg)

| Element/ 测试元素 | Polymers / 聚合物 | Metals/ 金属 | Composite material/ 合成材料 |
|------------------|---|---|---|
| Pb | $BL \leq (700-3\sigma) < X$ $< (1300+3\sigma) \leq OL$ | $BL \leq (700-3\sigma) < X$ $< (1300+3\sigma) \leq OL$ | $BL \leq (500-3\sigma) < X$ $< (1500+3\sigma) \leq OL$ |
| Cd | $BL \leq (70-3\sigma) < X < (130+3\sigma)$ $\leq OL$ | $BL \leq (70-3\sigma) < X < (130+3\sigma)$ $\leq OL$ | $LOD < X < (150+3\sigma) \leq OL$ |
| Hg | $BL \leq (700-3\sigma) < X$ $< (1300+3\sigma) \leq OL$ | $BL \leq (700-3\sigma) < X$ $< (1300+3\sigma) \leq OL$ | $BL \leq (500-3\sigma) < X$ $< (1500+3\sigma) \leq OL$ |
| Cr | $BL \leq (700-3\sigma) < X$ | $BL \leq (700-3\sigma) < X$ | $BL \leq (500-3\sigma) < X$ |
| Br | $BL \leq (300-3\sigma) < X$ | N/A | $BL \leq (250-3\sigma) < X$ |

(2) Chemical screening limits for Phthalates/邻苯二甲酸酯的筛选限值

| Test Item(s)/ 测试项目 | Screening limits(Unit: mg/kg) 筛选限值 (单位: mg/kg) |
|--|---|
| Dibutyl phthalate(DBP) 邻苯二甲酸二正丁酯(DBP) | $BL \leq 600 < IN$ |
| Benzylbutyl phthalate(BBP) 邻苯二甲酸丁基苄酯(BBP) | $BL \leq 600 < IN$ |
| Di-2-ethylhexyl phthalate(DEHP) 邻苯二甲酸二(2-乙基己基)酯(DEHP) | $BL \leq 600 < IN$ |
| Diisobutyl phthalate(DIBP) 邻苯二甲酸二异丁酯(DIBP) | $BL \leq 600 < IN$ |

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(4). Chemical Test/化学测试

| Tested Item(s) 测试项目 | Test Method 测试方法 | Measured Equipment(s) 测试仪器 | MDL 方法检出限 | Limit 限值 |
|---|---|-------------------------------|---------------------------------|---|
| Lead (Pb) 铅(Pb) | IEC 62321-5:2013 | ICP-OES | 2 mg/kg | 1000 mg/kg |
| Cadmium (Cd) 镉(Cd) | IEC 62321-5:2013 | ICP-OES | 2 mg/kg | 100 mg/kg |
| Mercury (Hg) 汞(Hg) | IEC 62321-4: 2013+AMD1:2017 | ICP-OES | 2 mg/kg | 1000 mg/kg |
| Hexavalent Chromium (Cr(VI)) 六价铬(Cr(VI)) | IEC 62321-7-2:2017 and/or determination of Total Chromium by IEC 62321-5: 2013 | UV-Vis | 8 mg/kg | 1000 mg/kg |
| | IEC 62321-7-1:2015 | | 0.10µg/cm ² (LOQ) | 1000 mg/kg |
| Polybrominated Biphenyls (PBBs) 多溴联苯(PBBs) | IEC 62321-6:2015 | GC-MS | 5mg/kg | 1000 mg/kg |
| Polybrominated Diphenyl Ethers (PBDEs) 多溴二苯醚(PBDEs) | IEC 62321-6:2015 | GC-MS | 5mg/kg | 1000 mg/kg |
| (DBP, BBP, DEHP, DIBP) 邻苯二甲酸酯/ Phthalates | IEC 62321-8:2017 | GC-MS | 50 mg/kg | 单项 1000 mg/kg/ 1000 mg/kg for each |

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Tested Material Description

测试材料描述

| No. 序号 | Description 描述 | No. 序号 | Description 材料描述 |
|--------|---|--------|---|
| 1 | Light green silicone nozzle of extraction pump /抽气泵嫩绿色硅胶抽气嘴 | 9 | White plastic barrel of of extraction pump/抽气泵白色塑料筒 |
| 2 | Transparent plastic cover of nozzle/抽气嘴透明塑料盖 | 10 | Blue plastic sealing strip valve of vacuum bag/真空袋蓝色塑胶密封条 |
| 3 | Black seal ring of extraction pump port/抽气泵端口黑色密封圈 | 11 | Dark blue plastic exhaust valve of vacuum bag/真空袋深蓝色塑胶排气阀 |
| 4 | Light green plastic port of extraction pump/抽气泵嫩绿色塑料端口 | 12 | Transparent double-sided adhesive paper of exhaust valve(vacuum bag)/真空袋排气阀透明双面胶纸 |
| 5 | Green silicon pad of extraction pump port/抽气泵端口绿色硅胶密封垫 | 13 | Clear plastic vacuum bag/透明塑胶真空袋 |
| 6 | Black plastic piston of push-pull rod /推拉杆黑色塑料活塞 | 14 | White plastic sealing clip/白色塑料密封夹 |
| 7 | Black plastic sealing ring of push-pull rod/推拉杆活塞黑色密封圈 | 15 | Transparent packaging bag of desiccant/干燥剂透明包装袋 |
| 8 | Light green push-pull rod of extraction pump/抽气泵嫩绿色塑料推拉杆 | 16 | Purple translucent desiccant particles/紫色半透明干燥剂颗粒 |

Test result /检测结果

(1) Screening Result/筛选结果

| Tested Item(s)/测试项目 | Screening Result/筛选结果 (mg/kg) | | | | | | | | | |
|--|-------------------------------|----|----|----|----|----|----|----|----|----|
| | 1 | 2 | 3 | 4 | 5# | 6 | 7 | 8 | 9 | 10 |
| Lead (Pb)/ 铅(Pb) | BL | BL | BL | BL | BL | BL | BL | BL | BL | BL |
| Cadmium (Cd)/ 镉(Cd) | BL | BL | BL | BL | BL | BL | BL | BL | BL | BL |
| Mercury (Hg)/ 汞(Hg) | BL | BL | BL | BL | BL | BL | BL | BL | BL | BL |
| Total Chromium (Cr)/总铬 | BL | BL | BL | BL | BL | BL | BL | BL | BL | BL |
| Total Bromine (PBBs & PBDEs) 总溴(PBBs & PBDEs) | BL | BL | BL | BL | BL | X | BL | BL | BL | BL |
| Dibutyl phthalate(DBP) 邻苯二甲酸二丁酯(DBP) | BL | BL | BL | BL | BL | BL | BL | BL | BL | BL |
| Benzylbutyl phthalate(BBP) 邻苯二甲酸丁基苯酯(BBP) | BL | BL | BL | BL | BL | BL | BL | BL | BL | BL |
| Di-2-ethylhexyl phthalate(DEHP) 邻苯二甲酸二乙基己基酯(DEHP) | BL | BL | BL | BL | BL | IN | BL | BL | BL | BL |
| Diisobutyl phthalate(DIBP) 邻苯二甲酸二异丁酯(DIBP) | BL | BL | BL | BL | BL | BL | BL | BL | BL | BL |

Shenzhen Alpha Product Testing Co., Ltd./ 深圳阿尔法商品检验有限公司

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(1) Screening Result/筛选结果

| Tested Item(s)/测试项目 | Screening Result/筛选结果 (mg/kg) | | | | | |
|--|-------------------------------|----|----|----|----|----|
| | 11 | 12 | 13 | 14 | 15 | 16 |
| Lead (Pb)/ 铅(Pb) | BL | BL | BL | BL | BL | BL |
| Cadmium (Cd)/ 镉(Cd) | BL | BL | BL | BL | BL | BL |
| Mercury (Hg)/ 汞(Hg) | BL | BL | BL | BL | BL | BL |
| Total Chromium (Cr)/总铬 | BL | BL | BL | BL | BL | BL |
| Total Bromine (PBBs & PBDEs) 总溴(PBBs & PBDEs) | BL | BL | BL | BL | BL | BL |
| Dibutyl phthalate(DBP) 邻苯二甲酸二丁酯(DBP) | BL | BL | BL | BL | BL | BL |
| Benzylbutyl phthalate(BBP) 邻苯二甲酸丁基苯酯(BBP) | BL | BL | BL | BL | BL | BL |
| Di-2-ethylhexyl phthalate(DEHP) 邻苯二甲酸二乙基己基酯(DEHP) | BL | BL | BL | BL | BL | BL |
| Diisobutyl phthalate(DIBP) 邻苯二甲酸二异丁酯(DIBP) | BL | BL | BL | BL | BL | BL |

(2) Test result for Chemical Confirmation

化学测试结果

(A) The test result of PBBs, PBDEs/ PBBs 和 PBDEs 的测试结果

| Testing item/ 测试项目 | Result/结果 (mg/kg) |
|--|-------------------|
| | 6 |
| Polybrominated biphenyls (PBBs) / 多溴联苯(PBBs) | N.D |
| Polybrominated diphenyl ethers (PBDEs) / 多溴二苯醚(PBDEs) / | N.D |

(B) The test result of Di-2-ethylhexyl phthalate(DEHP) //邻苯二甲酸二乙基己基酯(DEHP)的测试结果

| Testing item/ 测试项目 | Result/结果 (mg/kg) |
|--|-------------------|
| | 6 |
| Di-2-ethylhexyl phthalate(DEHP) 邻苯二甲酸二乙基己基酯(DEHP) | 704 |

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Remark: N.D. = Not Detected (<MDL or LOQ)/ 未检出 (小于方法检出限或定量限)
备注: MDL = Method Detection Limit/方法检出限
BL = Below the screening limit/低于筛选限值
OL = Over the screening limit/高于筛选限值
IN= Inconclusive/不确定性, 需要进一步测试
X = The range of needing to do further testing/需要做进一步测试的范围
* = The screened result was found and further chemical test/筛选样品进一步化学测试确认
N/A= Not applicable/不适合
3σ= The reproducibility of analytical instruments/表明分析仪器的重现性
LOD =Limit of detection/检测限
LOQ = Limit of Quantification, The LOQ of Hexavalent chromium is 0.10 µg/cm²/
定量限, 六价铬的定量限为 0.10 µg/cm²
When conducting the test for PBBs&PBDEs, XRF was introduced to screen Br exclusively,
and then chemical screening was conducted if the XRF result is X.
对于多溴联苯 (PBBs) 和多溴二苯醚 (PBDEs), XRF 筛选时其结果显示为 X 时
将 XRF 结果进一步化学 Br 筛选测试
When conducting the test for Hexavalent Chromium, XRF was introduced to screen
Chromium exclusively; 对于六价铬, XRF 筛选时其结果显示的是总铬含量
mg/kg = ppm = parts per million/百万分之一
#:Resubmitted date: December 28, 2021/重新送样日期: 2021 年 12 月 28 日

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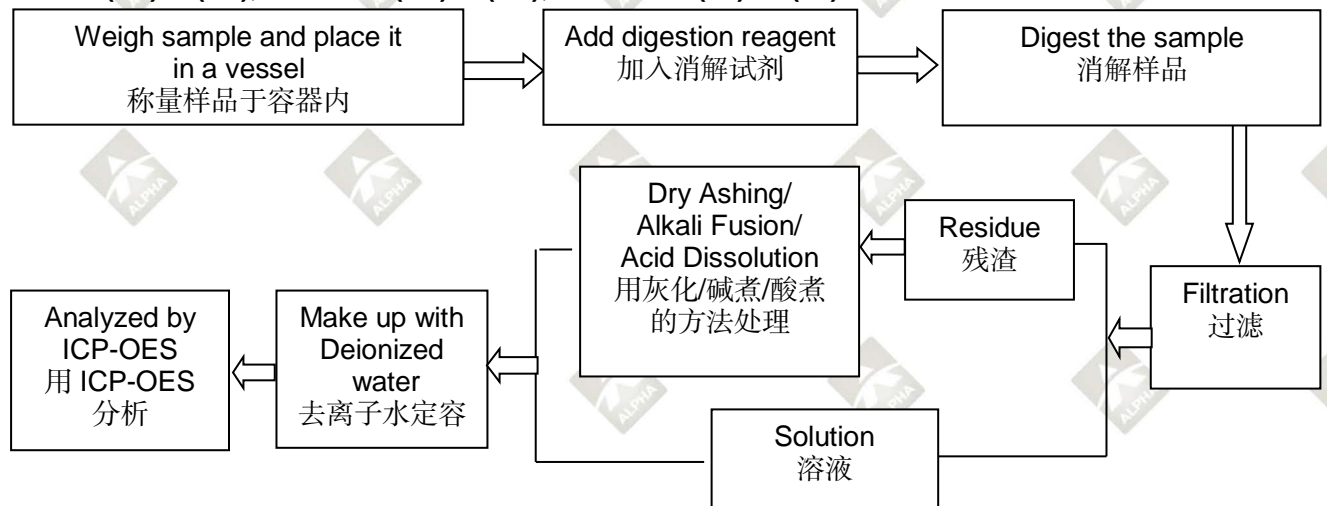


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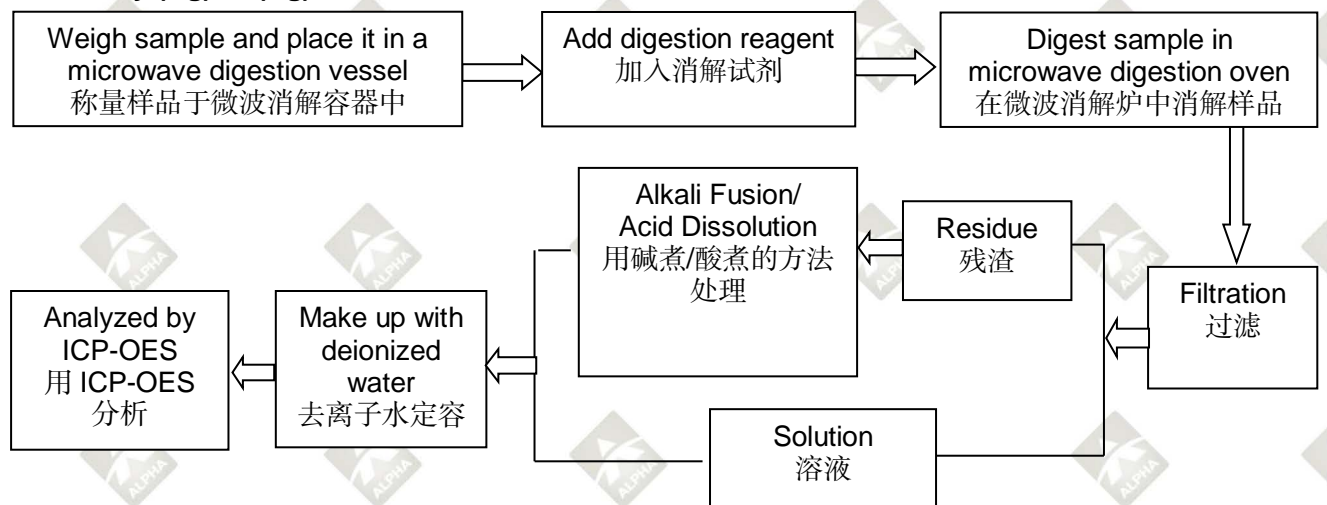
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Test Process /检测流程

1. Lead(Pb)/铅(Pb), Cadmium(Cd)/镉(Cd), Chromium(Cr) /铬(Cr)

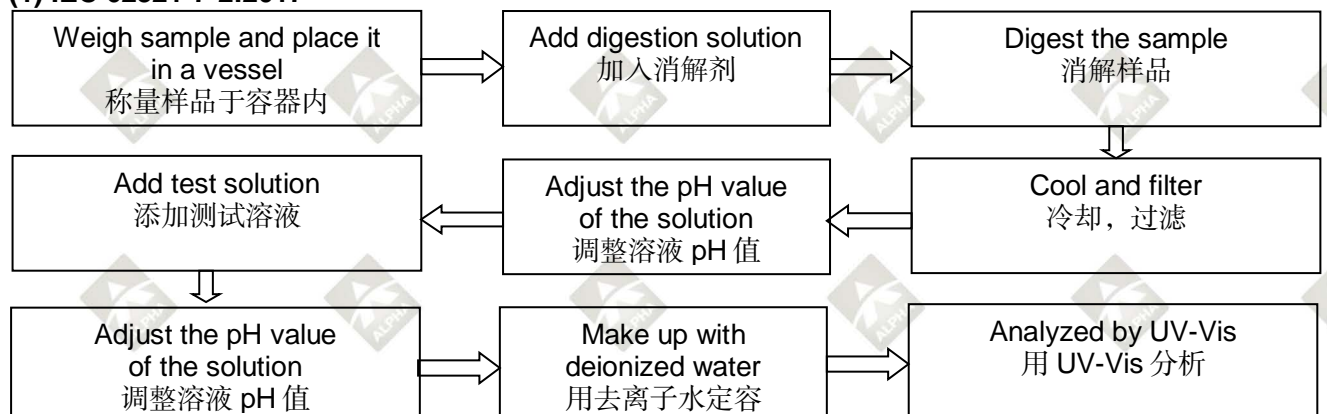


2. Mercury (Hg)/ 汞(Hg)



3. Hexavalent Chromium (Cr(VI))/六价铬(Cr(VI))

(1) IEC 62321-7-2:2017



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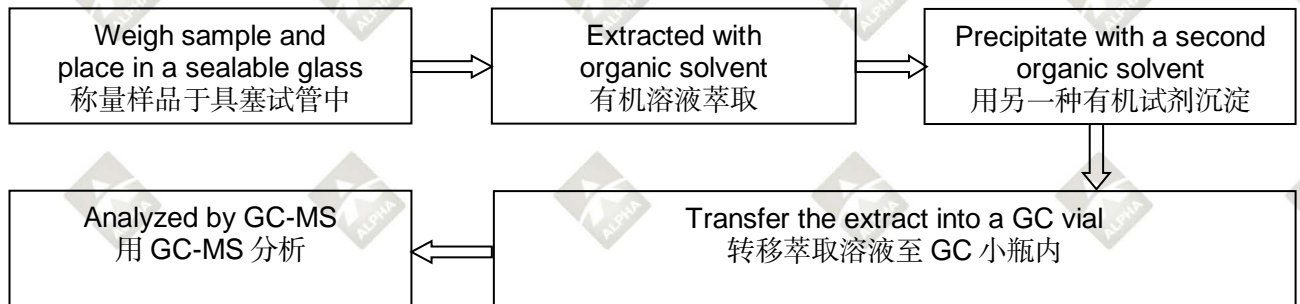
(2) IEC 62321-7-1:2015



4. Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs)/ 多溴联苯(PBBs), 多溴二苯醚(PBDEs)



5. Phthalates/邻苯二甲酸酯 (DBP, BBP, DEHP, DIBP)



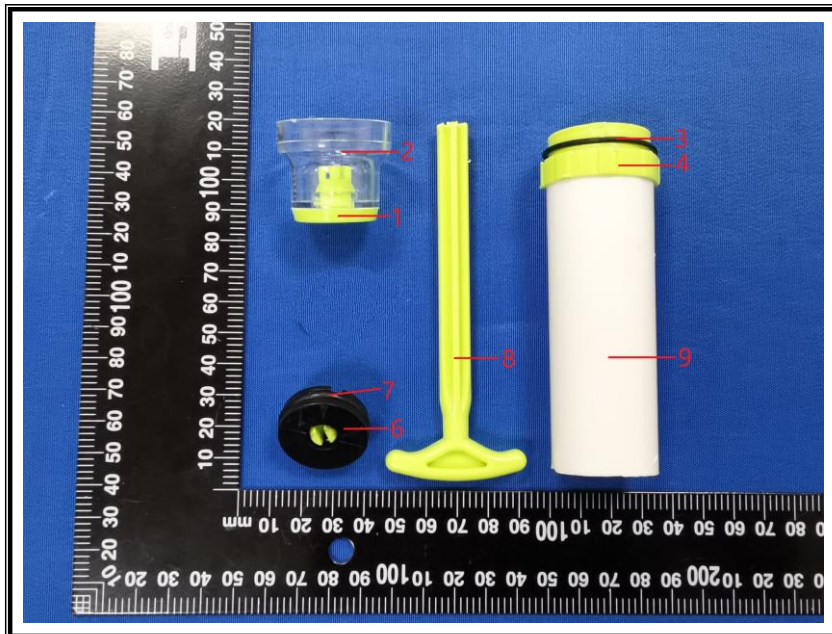
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Tested sample photo(s)/检测样品图片



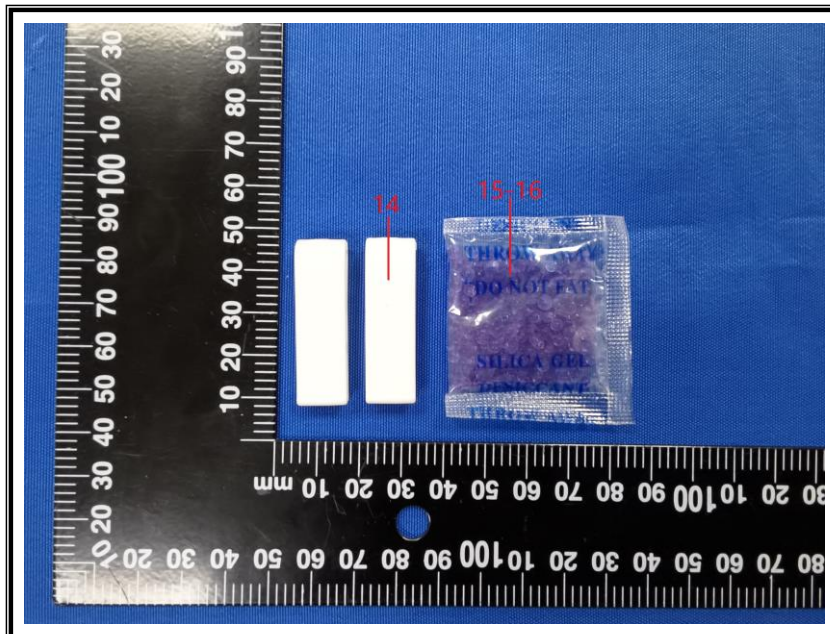
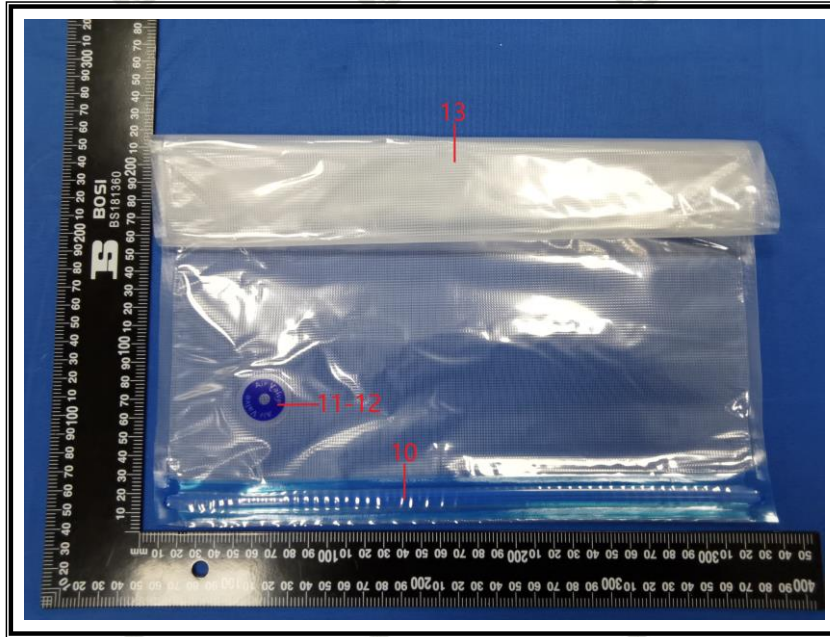
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Tested sample photo(s)/检测样品图片



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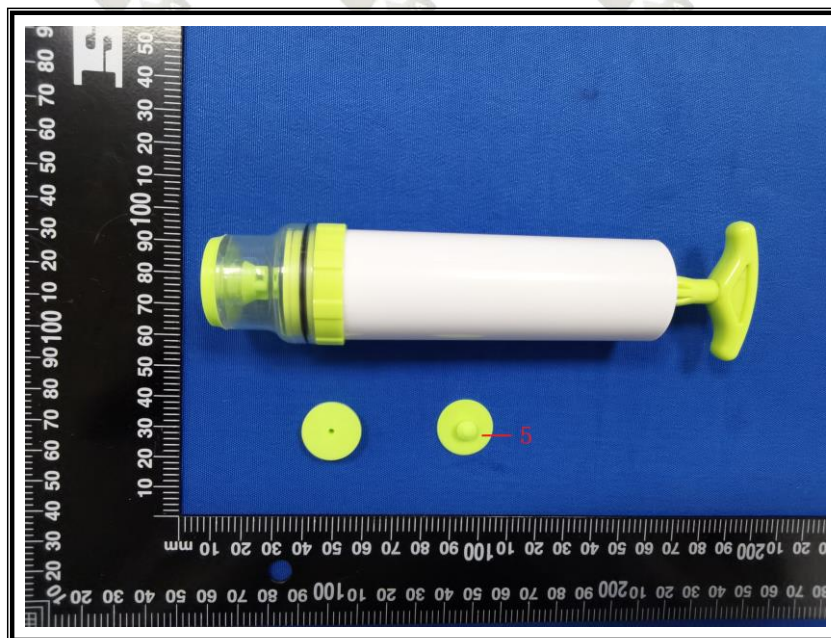
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Tested sample photo(s)/检测样品图片



--- End of report /报告结束 ---

Statement/声明:

1. The sample(s) and sample Information was/were provided by the client who should be responsible for the authenticity which ALPHA hasn't verified;
样品及样品信息由申请者提供, 申请者应对其真实性负责, ALPHA 未核实其真实性;
2. The result(s) shown in this report refer(s) only to the sample(s) tested;
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