



鹏孚隆科技 提供不粘涂层卓越解决方案

*Professional Manufacturer Of
Non-stick Coating*

CERAMICAL™



PFLUON
NON-STICK COATING

鹏孚隆科技 提供不粘涂层卓越解决方案
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一、基本信息

1. 典型产品型号：

C9850-093A，C9850-093B，C9850-093C

2. 产品体系：

单层水性陶瓷涂料

3. 产品特性：

醇、水为溶剂，环保涂料；
高硬度（6H以上），高温硬度优异；
优异的耐温性，耐磨损性；
优异的耐水性，耐化学性；
固化温度低，不粘附易清洁。



4. 适用领域：

适用于各种铝、合金制品的炊具及煎烤器具；
适用于各类厨房电器及小家电产品；
适用于各种耐高温部件。

I . Basic Information

i . Typical product model:

C9850-093A，C9850-093B，C9850-093C

ii. Product system:

Single-layer water-base ceramic coating

iii. Typical properties:

- Environment-friendly alcohol-base or water-base ceramic coating;
- High hardness (higher than 6H), superior hot hardness;
- Excellent heat-endurance and abrasion resistance;
- Fine corrosion resistance, good anti-water performance and anti-chemical property;
- Low curing temperature, good non-stick performance and easily cleaning property.

iv. Application field:

Apply to various cookwares and grill apparatus made of aluminum and alloy;
Apply to kinds of kitchen and household appliances;
Apply to kinds of heat-resistant units.



二、工艺要求

1. 基材前处理

本系列产品适用基材为铝、不锈钢、铜等金属基材，此涂料对基材和前处理要求严格。首先进行表面除尘、除油和喷砂处理（可采用80#-120#金刚砂，使基材粗糙度Ra2.0μ-3.0μ），最后清洗除尘。

2. 涂料预备

此陶瓷涂料属三液型。

（1）A组分的分散

A组分使用前充分滚动或搅拌，滚动速度120rpm-200rpm，时间30min以上，使其无沉降物为止。

（2）涂料的混合

把B组分加到A组分中混合，进行滚动熟化。滚动速度为120rpm，环境温度22°C-30°C滚动3h-9h，环境温度14°C-21°C滚动6h-12h，环境温度5°C-13°C滚动9h-15h，再加入C组分滚动10min后即可。混合过程中会有热量产生，所以要经常开口释放气体，避免产生压力。开口时小心气体或液体喷出。单层涂料及双层涂料底油A、B、C三组分混合比例为10：5：1。双层涂料面油A、B、C三组分混合比例为10：5：5。涂料混合完后请在保质期内用完（参阅以下涂料的保存），避免涂料过期，建议在24小时内用完，所以在使用前要计算使用量再混。

（3）涂料过滤

单层涂料或双层涂料底油用(300-400)目滤网过滤，双层涂料面油用(100-200)目滤网过滤。涂料直接喷涂，无需稀释。

II. Application Process

i . Pre-treatment of substrate

This series of products are applied to aluminum, stainless steel, copper such kinds of metal substrates etc. This coating is strict with substrate and pre-treatment.

First, dedust and degrease the surface, and then apply rubbing or sandblasting treatment to the surface with corundum (80#~120#) to make the surface roughness in the range of Ra2.0μ~3.0μ. The last step is to clean and dedust.

ii. Preparation of coating

i) Dispersion of component A

Ceramic coating belongs to three components products.

Before using, please fully stir or roll A component at a speed of 120rpm~200rpm for more than 30 minutes until there is no settling matter.

ii) Coating mixing

Mix B component and A component, and apply the maturation step through rolling at a speed of 120rpm. Keep the rolling time in the range of 3h~9h at a temperature of 22°C~30°C, 6h~12h at 14°C~21°C, 9h~15h at 5°C~13°C, then add C component and roll for another 10min to finish the maturation step.

Deflate the air to avoid pressure since there are heat generated during the mixing process. Watch out the gas or liquid may get sprayed.

Please kindly note that A, B, C components of single layer coating and the primer of two-layer coating should be in a mixing ratio of 10:5:1 respectively. The topcoat of two layer coating should be in a mixing ratio of 10:5:5.

Use the coating within its warranty (refer to the storage of coating). Preventing the coating from expiring, we recommend using it within 24 hours and calculating the needed amount before mixing the components.

iii) Coating Filtration

Filtrate single layer coating and the primer of two-layer coating with 300mesh-400mesh and topcoat of two-layer coating with 200mesh filter net respectively before using to get rid of impurities. The coating could be sprayed directly without dilution.

3. 涂料喷涂

(1) 喷涂方式

可采用压缩空气喷涂方式，普通喷枪（重力式、压力式、虹吸式）都可以使用。使用的喷嘴口径为 $\Phi 0.8\text{mm}$ - 1.5mm ，喷头压力 1.5kgf/cm^2 - 4.0kgf/cm^2 。喷枪和工件表面应根据喷涂环境和涂料物性保持在一定的距离范围。涂料可用指定溶剂（醇类）或水清洗，建议使用专用喷枪。

(2) 喷涂工艺

涂料使用前滚动30min-60min，确保涂料均匀。喷涂环境应相对干燥，通风，无尘，降低因环境因素影响到喷涂的质量。单层涂喷涂：基材在40°C-80°C预热后再喷涂（根据实际情况调整预热温度），喷涂后工件在55°C-80°C保温流平烘干10min，慢慢升温到280°C-300°C，保温10min，控制干膜厚度 $(40\pm 7)\mu\text{m}$ 。双层涂喷涂：基材在40°C-80°C预热后再喷涂底油（根据实际情况调整预热温度），然后再直接喷涂面油（即湿碰湿的方式喷涂面油），喷涂后工件在55°C-80°C保温流平烘干10min，慢慢升温到280°C-300°C，保温10min，控制干膜厚度 $(45\pm 8)\mu\text{m}$ 。

(3) 涂膜固化

喷涂时要注意涂膜均匀、平整、涂膜厚度，过薄则遮盖不好，过厚则易流挂，起泡。干燥箱（或隧道炉）开始炉温不能过高，升温不能太快。烧结时应根据基材的大小和材料的传热性，适当调整保温时间。

(4) 工件的冷却：可选择自然冷、风冷。



iii. Spraying of coating

i) Spraying method

Compressed air spraying is available. All general spray guns (pressure feed type, gravity feed type and siphon type) could be used. The caliber of spray nozzle is Φ 0.8mm~1.5mm, the spray head pressure is $1.5\text{kgf/cm}^2 \sim 4.0\text{kgf/cm}^2$. The spray gun should keep a certain distance from workpiece in accordance with the spraying environment and coating properties. The coating should be washed by designated solvent (alcohol) or water, it is suggested to use dedicated spray gun.

ii) Spraying process

Rolling the coating for 30min~60min to ensure the coating is well-distributed.

The spraying environment should be dry, well-ventilated and no dust. Reduce the impact on spraying quality caused by spraying environmental factors.

For single layer coating: Preheating the substrate to $40^\circ\text{C} \sim 80^\circ\text{C}$ before spraying (adjust the preheating temperature according to actual situation). Dry the sprayed workpiece from $55^\circ\text{C} \sim 80^\circ\text{C}$ for 10min, increase the temperature to $280^\circ\text{C} \sim 300^\circ\text{C}$ gradually for 10min. Keep the dry film thickness in the range of $40\mu\text{m} \pm 7\mu\text{m}$.

For two-layer coating : Preheating the substrate to $40^\circ\text{C} \sim 80^\circ\text{C}$ before spraying the primer (adjust the preheating temperature according to actual situation), then spray the topcoat directly, after that holding the temperature to $55^\circ\text{C} \sim 80^\circ\text{C}$ for 10min, increase the temperature to $280^\circ\text{C} \sim 300^\circ\text{C}$ gradually for another 10min. Keep the dry film thickness in the range of $45\mu\text{m} \pm 8\mu\text{m}$.

iii) Film curing

Pay attention to the uniformity and thickness of film during spraying. Both over high beginning temperature and rapid temperature increasing could lead to blister.

Adjust the holding time according to the size of substrate and heat conductivity of the material during curing process.

iv) Cool down the workpiece

Both natural cooling and air cooling are available.

三、涂料的储存

- 1.涂料混合前应密封保存在阴凉、干燥、通风、远离火源的环境中，5℃-25℃可保存3个月，禁止高于30℃或低于0℃保存。
- 2.涂料混合后5℃-15℃可保存36h。保存温度在15℃-30℃时，保质期会缩短至24h，保存温度在5℃左右时，保质期会延长到72h(建议将混合后未使用完的涂料放置在5℃左右的环境中保存),禁止高于30℃或低于0℃保存。
- 3.A组分混合前长时间不用应每2天滚动一次(时间60min以上)，滚动速度为120rpm-200rpm，避免色料沉淀、变质、结粒。

四、理化参数

型号	C9850-093A/B/C	测试方法
固含量，%	51.5±2.0%	300℃×10min
密度，g/mL	1.18±0.1g/ml	比重杯
粘度，(25℃) CP	9-15S	T4杯
外观	白色	目视
光泽度	40-70	60°光泽计
基材	压铸铝	/
烧结温度	300℃×10min	/
膜厚,μ	40±7	涂膜厚度仪
硬度	≥ 6H	中华铅笔/常温
附着力	一级	方格100/100/3M胶带



III. Storage of Coating

i . The storage place should be shady, dry, well-ventilated, and should keep away from the source of ignition and heat. It can be stored for 3 months at the temperature of 5°C~25°C. Be stored at a temperature above 30°C or below 0°C is forbidden.

ii. After mixing, the coating can be stored at 5°C~15°C for 36 hours, at 15°C~30°C for 24 hours, and at about 5°C for 72 hours (we suggest the unused coating being stored at about 5°C). Be stored at a temperature above 30°C or below 0°C is forbidden.

iii. Rolling the A component every two days for 60 min if it does not use for a long

IV. Physico-chemical Parameters

Product model	C9850-093A/B/C	Test method
Solid content , %	51.5±2.0%	300°C×10min
Density , g/mL	1.18±0.1g/ml	Specific gravity cup
Viscosity , (25°C) CP	9 S ~15S	Ford cup, #4 cup
Appearance	White	Eyeballing
Gloss	40~70	60°gloss meter
Substrate	Die-casting alluminum	/
Sintering temperature	300°C×10min	/
Film thickness , μ	40±7	Coating-thickness gauge
Hardness	≥ 6H	ZHONGHUA pencil /normal temperature
Adhesion	First class	Cross hatch test, 100/100/3M adhesive tape

五、涂层性能

一 不粘性	
检测方法	1.将涂料喷于平底压铸铝锅后，用300°Cx10min烧结，自然冷却后，用60°C左右含洗洁精的温水洗净擦干。 2.将测试锅放在电磁炉上加热，温度控制在150°C-180°C，将鸡蛋打入锅内，待鸡蛋凝固后，用小铲将鸡蛋铲起，蛋白完好，无黏附物。 3.同一位置重复上述操作10次，详细记录。
检测记录	能轻松煎起10个鸡蛋。
检测结果	不粘性好，能煎起鸡蛋数≥10个。
二 耐盐水性	
检测方法	1.将涂料喷于平底压铸铝锅后，300°C×10min烧结，加入10%NaCl盐水的量不少于容器总容积的1/2。 2.加热使盐水始终保持微沸状态，每半小时补纯净水一次保证水不煮干。 3.连续煮6h为一个循环。 4.每个循环后用50°C-70°C左右洗洁精液清洗，干布擦干后肉眼观察涂层缺陷。 5.煮水直至测试锅涂层出现起泡或其他缺陷为止，详细记录。
检测结果	24小时无异样。



V. Coating Performances

Non-stick property	
Test Method	<ol style="list-style-type: none"> 1.Spray the coating on a die-casting pan, sinter the film at 300°C for 10 minutes, then clean it with about 60°C detergent water after natural cooling. 2.Heat the workpiece on the induction cooker, keep the temperature between 150°C to 180°C, put the shelled egg into the pan, then scoop up the caky egg with a scoop, the egg white is in good condition, and not attached with the pan. 3.Fry 10 eggs on the same position and keep detailed records.
Test Record	10 eggs could be scooped up easily.
Test Result	Fine non-stick performance, the scooped eggs amount to 10 or more.
Salt water resistance	
Test Method	<ol style="list-style-type: none"> 1. Pour 10%Nacl into a sprayed die-casting pan and make sure the solution amount is no less than half of the pan's volume. 2. Keep the solution being boiling, add water every 30 minutes to prevent the solution from being boiled dry. 3. Take 6 continuous hours as a cycle. 4. Wash the pan with detergent solution (50°C~70°C) after each cycle and wipe dry the pan, then check if there is any defect on the film through eyeballing. 5. Stop testing until bubbles or other failures appear on the film, and keep detailed records.
Test Result	There is no any defect on the film after boiling for 24 hours.

六、认证报告 Certification Reports



Test Report

No. SH8185633/CHEM

Date: Dec. 19, 2008

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JINHUA PFLUON TECHNOLOGY CO., LTD
NO.588, HUATAI ROAD, JINPAN NEW DISTRICT OF DEPARTMENT ZONE

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

Sample Name : CERAMIC COATING
SGS Ref No. : 11497115

Sample Receiving Date : Dec.15, 2008
Testing Period : Dec.15 - 18, 2008

Test Requested : As specified for client, for compliance with Food and Drug Administration Regulations for determining the amount of extractives from resinous or polymeric coating.

Test Method : As specified in FDA 21 CFR 175.300

Test Results

Extractants and Conditions	Metal bowl inner with black coating amount of Extractives (mg/inch ²)	Maximum permissible Limit (mg/inch ²)
1. Distilled Water fill boiling water cool to 100 °F	<1	18
2. n-Heptane at 120°F for 15 minutes	<1	18

Conclusion : The submitted metal bowl inner with black coating sample said to be used CERAMIC COATING complies with the FDA Specifications for determining the amount of extractives from resinous or polymeric coating used as the food-contact surface of articles.

Signed for and on behalf of
SGS-CSTC Chemical Laboratory

Sandy Hao

Sandy Hao
Lab Manager

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Test Report

No. SH8185633/CHEM

Date: Dec. 19, 2008

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Sample Photo:



SGS authenticate the photo on original report only

*** End of Report ***

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Test Report

No. SH9230719/CHEM

Date: Dec. 9, 2009

Page 1 of 4

ZHEJIANG PFLUON TECHNOLOGY CO., LTD
NO. 588, HUATAI ROAD, JINPAN NEW DISTRICT OF DEPARTMENT ZONE

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

Sample Name : CERAMIC COATING
SGS Ref No. : 10068276

Sample Receiving Date : Dec. 03, 2009
Testing Period : Dec. 03- 09, 2009

Test Requested : In accordance with German Food, Articles of Daily Use and Feed Code of September 1, 2005 (LFGB), Section 30 and 31, Council of European Resolution AP (2004) 1 and BfR recommendation Section LI 2006APR 1.
1) Sensorial examination odour and taste test
2) For material: Polymer coating for cooking purpose - Overall migration
3) For material: Polymer coating for cooking purpose -
a) Phenolic substance (as phenol)
b) Extractable Formaldehyde
c) Extractable Aromatic Amine
d) Extractable Chromium (VI)
e) Extractable Chromium (III)
4) For material: Polymer coating for cooking purpose - Extractable PFOA Content
5) For material: Polymer coating for cooking purpose - Perfluorooctane Sulfonates (PFOS) Content

Test Method / Test Results : Please refer to next page.

Conclusion : When tested as specified, the submitted sample complies with the permissible safety limit as specified in AP (2004) 1 & BfR recommendation Section LI 2006APR 1 and hence comply with LFGB, Section 30 and 31.

Signed for and on behalf of
SGS-CSTC Chemical Laboratory

Sandy Hao

Sandy Hao
Lab Manager

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PFLUON
NON-STICK COATING

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Test Report

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Test Method

- 1) Robinson's test with reference to DIN 10955:1983 (2003)
Test condition: 100°C 2 hours
Test media: Distilled water
No. of panelist: 5
- 2) With reference to EN1186-1:2002 for selection of conditions and test methods;
EN1186-9:2002 aqueous food simulants by article filling method;
EN 1186-14:2002 substitute test
- 3) a-d) Sample extracted in 3% acetic acid at 95 deg. Celsius for 90 minutes,
followed by analysis using UV-vis Spectrophotometer
e) Sample extracted in 3% acetic acid at 95 deg. Celsius for 90 minutes,
followed by analysis using ICP-OES.
- 4-1) Sample extracted in 3% acetic acid at 100 deg. Celsius for 120 minutes,
followed by analysis using HPLC/MS.
- 4-2) Sample extracted in Olive oil at 175 deg. Celsius for 120 minutes, followed by
analysis using HPLC/MS.
- 5) With reference to EPA 3550C: 2007.
Analysis was performed by High Performance Liquid Chromatograph-Mass
Spectrometer (HPLC-MS).

Test Results

1) Sensorial examination odour and taste test

Test Items	Result	Maximum Permissible Limit
	CERAMIC COATING	
Sensorial examination odour (Point scale)	0	2.5
Sensorial examination taste (Point scale)	0	2.5

Scale evaluation:

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

2) Overall migration

Simulant used	Test condition	Overall Migration (mg/dm ²)	Maximum permissible Limit (mg/dm ²)
		1	
Deionized Water	8 hours at 100 °C	<3.0	10
3% Acetic Acid (W/V) Aqueous Solution	8 hours at 100 °C	<3.0*	10
10% Ethanol (V/V) Aqueous Solution	8 hours at 100 °C	<3.0	10
Fatty food substitute			
95% Ethanol (V/V) Aqueous Solution	6 hours at 60 °C	<3.0	10
Isooctane	4 hours at 60 °C	<3.0	10

- Note: 1. Analytical tolerance of aqueous simulants is 1 mg/dm².
2. Analytical tolerance of fatty food simulants is 3 mg/dm².
3. * The result was got from the third extraction duration

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Test Report

No. SH9230719/CHEM

Date: Dec. 9, 2009

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3) Phenolic substance (as phenol), Extractable Formaldehyde, Extractable Aromatic Amine, Extractable Chromium (VI) and Extractable Chromium (III)

Test Items	Result	Maximum Permissible Limit
	1	
Phenolic substance (as phenol), mg/dm ²	<0.05	0.05
Extractable Formaldehyde, mg/dm ²	<1.0	2.5
Extractable Aromatic Amine, mg/kg	Absent	Absent
Extractable Chromium (VI), mg/L	Absent	Absent
Extractable Chromium (III), mg/L	<0.02	0.02

Note : 1. Detection Limit for Extractable Aromatic Amine is 0.02mg/kg
2. Detection Limit for Extractable Chromium (VI) is 0.02mg/L

4-1) Extractable PFOA

Test Items	Result	Maximum Permissible Limit
	1	
Extractable PFOA, mg/dm ²	<0.005	0.005

4-2) Extractable PFOA

Test Items	Result	Maximum Permissible Limit
	1	
Extractable PFOA, mg/dm ²	<0.005	0.005

5) Perfluorooctane Sulfonates (PFOS) Content

Test Items	Result	Maximum Permissible Limit
	1	
Perfluorooctane Sulfonates (PFOS), µg/m ²	<1	1

Test Part Description:

1. Metal with white coating

Note:

1. mg/dm² = milligram per square decimeter
2. °C = degree Celsius
3. < = less than

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Test Report
Sample Photo:

No. SH9230719/CHEM

Date: Dec. 9, 2009

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Test Report (SVHC)

No. SH9083283/CHEM

Date: May. 11, 2009 Page 1 of 6

JINHUA PFUJON TECHNOLOGY CO., LTD
NO.588, HUATAI ROAD, JINPAN NEW DISTRICT OF DEPARTMENT ZONE

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

Sample Name : NANOCOMPOSITE COATING
SGS Ref No. : 11811206

Sample Receiving Date : May.06, 2009
Testing Period : May.06-09, 2009

Test Requested : (1)Fifteen (15) Substances of Very High Concern (SVHC) screening
Based on the SVHC candidate list published by European Chemicals Agency
(ECHA) on 2008 October 28, regarding Regulation (EC) No 1907/2006 concerning
REACH.
(2) In accordance with the RoHS Directive 2002/95/EC, and its amendment
directives

Test Method : (1)Please refer to next pages
(2-1) With reference to IEC 62321:2008 for Cadmium content.
Analysis was performed by ICP.
(2-2) With reference to IEC 62321:2008 for Lead content.
Analysis was performed by ICP.
(2-3) With reference to IEC 62321:2008 for Mercury content.
Analysis was performed by ICP.
(2-4) With reference to IEC 62321:2008 for Hexavalent Chromium by
Colorimetric Method.
(2-5) With reference to IEC 62321:2008 for PBBs / PBDEs content.
Analysis was performed by GC/MS.

Test Result(s) : Please refer to next page(s).

Summary : (1)According to the specified scope and analytical technique, concentrations of all 15
SVHC are <0.1% in the submitted sample(s).

Signed for and on behalf of
SGS-CSTC Chemical Laboratory

Sandy Hao

Sandy Hao
Lab Manager

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**Test Report
(SVHC)**

No. SH9083283/CHEM

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(1)SVHC

Remark:

1. Definition of classification is listed in **Appendix A** of this report in accordance with 67/548/EEC and Regulation (EC) No 1907/2006.

Test Method:

SGS In-house method:

- Acid digestion and analyzed by ICP-AES ;
- Solvent extraction and analyzed by GC/MS and GC/ECD

Remarks:

1. The chemical analysis of 15 SVHC is performed by means of currently available analytical techniques against the SVHC candidate list published by ECHA on 2008 October 28, and shall refer to http://echa.europa.eu/chem_data/candidate_list_table_en.asp. This list is under evaluation by ECHA and may subject to change in the future.
2. In accordance with Regulation (EC) No 1907/2006, any producer or importer of articles shall notify ECHA, in accordance with paragraph 4 of Article 7, if a substance meets the criteria in Article 57 and is identified in accordance with Article 59(1) of the Regulation, if (a) the substance is present in those articles in quantities totaling over one tonne per producer or importer per year; and (b) the substance is present in those articles above a concentration of 0.1% weight by weight (w/w).
3. Article 33 of Regulation (EC) No 1907/2006 requires supplier of an article containing a substance meeting the criteria in Article 57 and identified in accordance with Article 59(1) in a concentration above 0.1% weight by weight (w/w) shall provide the recipient of the article with sufficient information, available to the supplier, to allow safe use of the article including, as a minimum, the name of that substance.
4. If a SVHC is found over the reporting limit, client is suggested to identify the component which contains the SVHC and the exact concentration of the SVHC by requesting further quantitative analysis from the laboratory.

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Test Report (SVHC)

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Test Result:

Substance Name	CAS number	Concentration 1 (%)	Reporting Limit (%)	Classification
Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins)	85535-84-8	ND	0.01	PBT
Anthracene	120-12-7	ND	0.005	PBT
Benzyl butyl phthalate	85-68-7	ND	0.005	Toxic to Reproduction Category 2
Bis (2-ethylhexylphthalate) (DEHP)	117-81-7	ND	0.005	Toxic to Reproduction Category 2
Bis(tributyltin)oxide*	56-35-9	ND	0.005	PBT
Cobalt dichloride*	7646-79-9	ND	0.005	Carcinogen Category 2
4,4-Diaminodiphenylmethane	101-77-9	ND	0.005	Carcinogen Category 2
Diarsenic pentaoxide*	1303-28-2	ND	0.005	Carcinogen Category 1
Diarsenic trioxide*	1327-53-3	ND	0.005	Carcinogen Category 1
Dibutyl phthalate	84-74-2	ND	0.005	Toxic to Reproduction Category 2
Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified (α - HBCDD, β-HBCDD, γ- HBCDD)	25637-99-4 and 3194-55-6 (134237-51-7, 134237-50-6, 134237-52-8)	ND	0.005	PBT
Lead hydrogen arsenate*	7784-40-9	ND	0.005	Carcinogen Category 1; Toxic to Reproduction Category 1
Sodium dichromate*	10588-01-9	ND	0.005	Carcinogen Category 2; Mutagen Category 2; Toxic to Reproduction Category 2
5-tert-butyl-2,4,6-trinitro-m- xylene (musk xylene)	81-15-2	ND	0.005	vPvB
Triethyl arsenate*	15606-95-8	ND	0.005	Carcinogen Category 1

Remark:

- *Calculated concentration of cobalt dichloride is based on the identified cobalt by ICP-AES and the identified chloride by IC method.
Calculated concentration of diarsenic pentaoxide, diarsenic trioxide, dihydrate, lead hydrogen arsenate and triethyl arsenate are based on the identified heavy metal result (i.e. Arsenic, Lead)
Calculated concentrations of sodium dichromate are based on the identified sodium by ICP-AES and the identified chromium(VI) by spectroscopic method. The test result is reported as sodium dichromate (CAS number 10588-01-9). Please note that sodium dichromate dihydrate (CAS number 7789-12-0) is no longer classified as SVHC according to the latest amendment of 67/548/EEC (31th Adaptation to Technical progress).
Calculated concentration of bis(tributyltin)oxide TBTO is based on the identified tin by ICP-AES and TLC.

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(SVHC)

Identity of above metal substances present in the article has to be further confirmed.

RL is evaluated for element (i.e. tin, cobalt, chloride, arsenic, lead, sodium, chromium (VI) respectively)

2. ND = Not detected (lower than Reporting Limit)
3. RL = Reporting Limit
4. All RL is based on homogenous material

(2) Cadmium, Lead, Mercury, Hexavalent Chromium, PBBs (Polybrominated biphenyls) and PBDEs (Polybrominated biphenyl ethers) Content (Unit: mg/kg)

Test Item(s):	Method (refer to)	1	MDL	RoHS Limit
Cadmium (Cd)	(2-1)	ND	2	100
Lead (Pb)	(2-2)	ND	2	1000
Mercury (Hg)	(2-3)	ND	2	1000
Hexavalent Chromium (CrVI)	(2-4)	ND	2	1000
Sum of PBBs	(2-5)	ND	-	1000
Monobromobiphenyl		ND	5	-
Dibromobiphenyl		ND	5	-
Tri bromobiphenyl		ND	5	-
Tetrabromobiphenyl		ND	5	-
Pentabromobiphenyl		ND	5	-
Hexabromobiphenyl		ND	5	-
Heptabromobiphenyl		ND	5	-
Octabromobiphenyl		ND	5	-
Nonabromobiphenyl		ND	5	-
Decabromobiphenyl		ND	5	-
Sum of PBDEs		ND	-	1000
Monobromodiphenyl ether		ND	5	-
Dibromodiphenyl ether		ND	5	-
Tri bromodiphenyl ether		ND	5	-
Tetrabromodiphenyl ether		ND	5	-
Pentabromodiphenyl ether		ND	5	-
Hexabromodiphenyl ether		ND	5	-
Heptabromodiphenyl ether		ND	5	-
Octabromodiphenyl ether		ND	5	-
Nonabromodiphenyl ether		ND	5	-
Decabromodiphenyl ether##		ND	5	-

(Result shown is of the total weight of liquid sample)

Note:

- (1) mg/kg = ppm
- (2) ND = Not Detected
- (3) MDL = Method Detection Limit

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- (4) ##=The exemption of DecaBDE in polymeric application according 2005/717/EC was overruled by the European Court of Justice by its decision of 01.04.2008. Subsequently DecaBDE is included in the sum of PBDE after 01.07.2008.
- (5) "-" = Not Regulated
- (6) The maximum permissible limit is quoted from the document 2005/618/EC amending RoHS directive 2002/95/EC

Test Part Description:

1. Black liquid

Sample photo:



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Test Report
(SVHC)
Appendix A

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Carcinogen Category 1:	<u>Substances known to be carcinogenic to man.</u> There is sufficient evidence to establish a causal association between human exposure to a substance and the development of cancer.
Carcinogen Category 2:	<u>Substances which should be regarded as if they are carcinogenic to man.</u> There is sufficient evidence to provide a strong presumption that human exposure to a substance may result in the development of cancer. Generally on the basis of: - appropriate long-term animal studies - other relevant information.
Mutagen Category 1:	<u>Substances known to be mutagenic to man.</u> There is sufficient evidence to establish a causal association between human exposure to a substance and heritable genetic damage.
Mutagen Category 2:	<u>Substances which should be regarded as if they are mutagenic to man.</u> There is sufficient evidence to provide a strong presumption that human exposure to the substance may result in the development of heritable genetic damage, generally on the basis of: - appropriate animal studies, - other relevant information.
Toxic to Reproduction Category 1:	<u>Substances known to impair fertility in humans.</u> There is sufficient evidence to establish a causal relationship between human exposure to the substance and impaired fertility. <u>Substances known to cause developmental toxicity in humans.</u> There is sufficient evidence to establish a causal relationship between human exposure to the substance and subsequent developmental toxic effects in the progeny.
Toxic to Reproduction Category 2:	<u>Substances which should be regarded as if they impair fertility in humans.</u> There is sufficient evidence to provide a strong presumption that human exposure to the substance may result in impaired fertility on the basis of: - clear evidence in animal studies of impaired fertility in the absence of toxic effects, or, evidence of impaired fertility occurring at around the same dose levels as other toxic effects but which is not a secondary nonspecific consequence of the other toxic effects, - other relevant information. <u>Substances which should be regarded as if they cause developmental toxicity to humans.</u> There is sufficient evidence to provide a strong presumption that human exposure to the substance may result in developmental toxicity, generally on the basis of: - clear results in appropriate animal studies where effects have been observed in the absence of signs of marked maternal toxicity, or at around the same dose levels as other toxic effects but which are not a secondary non-specific consequence of the other toxic effects, - other relevant information.
PBT & vPvB:	Substances which are persistent, bioaccumulative and toxic (PBT) or very persistent and very bioaccumulative (vPvB) pose a particular challenge to the chemicals safety management. For these substances a "safe" concentration in the environment cannot be established with sufficient reliability.

*** End of Report ***



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