鹏孚隆科技 提供不粘涂层卓越解决方案

Professional Manufacturer Of Non-stick Coating

优质生活，科技先行

Innovation, Better Your Life.

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COOKMARK™

PFLUON
NON-STICK COATING

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Http://www.pfluon.com

PFLUON
NON-STICK COATING

目录

Catalogue

一、基本信息

1. 产品系列：
W8602
W8604
W8606

2. 产品体系：
两层水性氟树脂不粘涂料

3. 产品特性：
耐腐蚀性优异；
安全环保；
不粘性优异、易于清洁。

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。

Ⅰ. Basic Information

ⅰ. Product Series:
W8602
W8604
W8606

ⅱ. Product system:
Two-layer water-base fluororesin non-stick coating

ⅲ. Typical properties:
Superior anti-corrosion property;
Safe and environment-friendly;
Fine non-stick performance, easy to clean.

ⅳ. Application field:
Apply to various cookwares and grill apparatus made of aluminum and alloy;
Apply to kinds of kitchen and household appliances.

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二、工艺要求

1. 基材前处理
首先进行表面除油，然后对表面打磨或喷砂处理（可采用80#-120#金刚砂，使基材粗糙度为Ra2.0μ-3.0μ），最后清洗除尘。

2. 涂料预备
（1）涂料的分散
使用前必须将涂料充分地分散，可采用搅拌或滚桶机滚动的方法。
搅拌：低速均匀搅拌（30r/min-50r/min）大约10min，切勿产生气泡。
滚桶机：在滚桶机上以30r/min-50r/min的转速转动40min。
（2）粘度的调节
根据涂料喷涂方法的不同可以适当进行粘度调节，粘度过高可以用适量纯净水稀释。
（3）涂料的过滤
涂料使用前用(100-150)目的不锈钢或尼龙滤网过滤，除去杂质。

Ⅱ. Application Process

ⅰ. Pre-treatment of substrate
First, 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
Fully disperse the coating by stirring or rolling on a ball grinder before operation.
Stirring standard: Give a low-speed and uniform stirring (30r/min~50r/min) for 10 minutes , be sure there is no bubble.
Rolling standard: Roll the coating for 40 minutes at the speed of 30r/min~50r/min on the ball grinder.

ii) Viscosity adjustment
The viscosity can be adjusted according to different spraying methods, dilute the coating with moderate pure water if the viscosity is over high.

iii) Coating filtration
Filtrate the coating with stainless steel or nylon filter net (100mesh~150mesh) before using to get rid of impurities.

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Φ1.2mm-1.5mm，喷头压力1.5kgf/cm²-4.0kgf/cm²。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。

（2）喷涂工艺
喷涂环境应相对干燥、通风良好、严禁烟火。
空压机使用前要进行除油、除水、并安装油水分离器。
喷涂前调整好喷枪的雾化和出油量，喷涂工件要保证清洁平整。
底油喷涂：将处理好的基材预热到35℃左右后，进行喷涂。
底涂膜厚：15μm-18μm；干燥温度：120℃；干燥时间：10min-20min。
面油喷涂：底油烘干冷却到常温，喷涂面油。
面涂膜厚：8μm-12μm；干燥温度：120℃-150℃；干燥时间：10min-15min。
干膜厚度：23μm-30μm。

（3）涂膜固化
干燥箱（或隧道炉）炉温设置在120℃-150℃左右，工件喷涂完后放入保温10min-15min，然后缓慢升至380℃-400℃，保温5min-10min即可。
固化烧结时应根据基材的大小、材料的传热性能适当调整保温时间。

（4）工件的冷却：可选择水冷、自然冷、风冷。

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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 1.2mm~1.5mm, the spray head pressure is 1.5kgf/cm²~4.0kgf/cm². The spray gun should keep a certain distance from workpiece in accordance with the spraying environment and coating properties.

Ii) Spraying process
The spraying environment should be dry, well-ventilated, no smoking and fire.
Air compressor should be degreased, dewatered and equipped with decantor before using.
Adjust atomization and oil pump capacity of the spraying gun, make sure the workpiece is clean and level.
Basecoat spraying: Heat the substrate to about 35℃ before spraying basecoat.
Basecoat film thickness: 15μm~18μm; drying temperature: 120℃; drying time: 10min~20min.
Topcoat spraying: Spraying the topcoat after drying and cooling down the basecoat to normal temperature;
Topcoat film thickness: 8μm~12μm; drying temperature: 120℃~150℃; drying time: 10min~15min.
Film thickness: 23μm~30μm.

iii) Film curing
Set temperature within the drying oven (or tunnel drier) at 120℃~150℃. Keep the sprayed workpiece in for 10min~15min, then slowly increase the temperature to 380℃~400℃ and keep for another 5min~10min.
Adjust the holding time according to the size of substrate and heat-transfer ability of the material during curing or sintering process.

iv) Cool down the workpiece
Water cooling, natural cooling and air cooling are all available.

三、涂料的储存

1. 涂料贮存场地应保持通风、干燥。防止日光直接照射，并应隔绝火源、远离热源。应在10℃-30℃保存。每周在滚桶机上滚匀一次（转速设定为30rpm-50rpm，时间为15min-30min）。冬季时注意不能冻结。

2. 涂料保质期为6个月。

四、典型产品理化指标

型号	底油 W8602-2001	面油 W8602-3002	测试方法
固含量，%	31±1	40±1	220℃×30min
密度，g/mL	1.2±0.1	1.3±0.1	比重杯
粘度，(25℃) CP	400-600	300-500	旋转粘度计
pH值	7-10		pH计
外观	黑色闪光		目视
光泽度	15-20		60°光泽计
膜厚,μm	23-30		涂膜厚度仪
硬度	H		中华铅笔/常温
附着力	100/100		方格100/100/3M胶带
基材	压铸铝		/
烧结温度	380℃×10min		/
耐盐水性	36h		BS 7069

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Ⅲ. Storage of Coating

ⅰ. The storage place should be dry and well-ventilated. Avoid direct sun exposure, and keep away from the source of ignition and heat. The storage temperature should be between 10℃~30℃. Have a weekly shake on the ball grinder (30rpm~50rpm * 15min~30min). Never make it freeze in winter.

ⅱ. The shelf life of the coating is 6 months.

Ⅳ. Typical Product Physico-chemical Index

Model	Basecoat W8602-2001	Topcoat W8602-3002	Test method
Solid content, %	31±1	40±1	220℃×30min
Density, g/mL	1.2±0.1	1.3±0.1	Specific gravity cup
Viscosity, (25℃) CP	400~600	300~500	Rotational viscosimeter
pH value	7~10		pH meter
Appearance	Flash black		Eyeballing
Gloss	15~20		60°gloss meter
Film thickness,μm	23~30		Coating-thickness gauge
Hardness	H		ZHONGHUA pencil normal temperature
Adhesion	100/100		Cross hatch test, 100/100/3M adhesive tape
Substrate	Die-casting aluminum		/
Sintering temperature	380℃×10min		/
Salt water resistance	36h		BS 7069

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380℃x10min烧结，自然冷却后，用60℃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℃-180℃，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。
检测结果	能煎起鸡蛋数≥10个。
二 耐盐水性	
检测方法	1.配置10%NaCl盐水于测试锅(平底压铸锅)内，盐水量不少于容器总容积的1/2。 2.加热使盐水溶液始终保持微沸状态，每半小时补清水一次保证盐水不煮干。 3.连续煮6h为一循环，24h换一次盐水。 4.每次循环后用50℃-70℃洗洁精液(5%)清洗，干布擦干后肉眼观察涂层缺陷。
检测结果	36小时无起泡等缺陷。

V. Coating Performances

Non-stick property	
Test Method	1.Spray the coating on a die-casting pan, sinter the film at 380℃ for 10 minutes, then clean it with about 60℃ detergent water after natural cooling. 2.Heat the workpiece on the induction cooker, keep the temperature between 150℃ to 180℃, 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 Result	The scooped eggs amount to 10 or more.
Salt water resistance	
Test Method	1. Pour 10% NaCl solution into the pan (die-casting pan) , make sure the solution amount is no less than half of the pan's volume. 2. Keep the NaCl solution being boiling, add pure water every 30 minutes to prevent the solution from being boiled dry. 3.Take 6 continuous hours as a cycle, and replace the solution every 24 hours. 4. Wash the pan with detergent solution (50℃~70℃, 5%) after each cycle and wipe dry the pan, then check if there is any defect on the film through eyeballing.
Test Result	There is no bubble appear after boiling for 36 hours.

SGS

Test Report **No: SHFDO110100092FDE** **Date: Jan 11 2011**

Client name: ZHEJIANG PFLUON TECHNOLOGY CO., LTD
Client address: NO. 588 HUATAI ROAD, NEW DISTRICT, JINPAN DEVELOPMENT AREA, JINHUA, ZHEJIANG

The following sample(s) was/were submitted by/ on behalf of the client as（except SGS Reference No. & SGS Job No. & Date of receipt & Testing period）:

Sample Name: W series water-base fluororesin non-stick coating
Batch No./Date: /
Manufacturer: ZHEJIANG PFLUON TECHNOLOGY CO., LTD
SGS Reference No.: SHAFD1100139401
SGS Job No.: SHFDO110100092FD
Date of receipt: Jan 05 2011
Testing period: Jan 05 2011~ Jan 11 2011

TEST(S) REQUESTED:
Selected test(s) as requested by applicant:
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(S):
As specified in FDA 21 CFR 175.300.

TEST RESULT(S):
Please refer to next page

CONCLUSION:
The submitted Black coating part sample said to be used for W series water-base fluororesin non-stick coating comply with the FDA Specifications for determining the amount of extractives from resinous or polymeric coating used as the food-contact surface of articles.

Remark: This test report is in English and maybe translated into other languages, The English version shall prevail.

Signed for and on behalf of SGS

Authorized Signature

PFLUON NON-STICK COATING

SGS

Test Report **No: SHFDO110100092FDE** **Date: Jan 11 2011**

TEST RESULT(S):

Simulant used	Time	Temperature	Total Extractices ($mg/inch^2$)	Maximum Permissible Limit ($mg/inch^2$)
Distilled Water	2hr	250° F	0.1	18
n-Heptane	2hr	150° F	< 0.1	18

SAMPLE DESCRIPTION: Black coating part

*** End of Report***

SGS

Test Report No. NGBEC1100001803 Date: 07 Jan 2011 Page 1 of 5

ZHEJIANG PELUON TECHNOLOGY CO.,LTD

NO.588 HUATAI ROAD,NEW DISTRICT,JINPAN DEVELOPMENT AREA,JINHUA,ZHEJIANG

The following sample(s) was/were submitted and identified on behalf of the clients as : W series water-base fluororesin non-stick coating

SGS Job No. :	NP11-000003 - NB
Date of Sample Received :	04 Jan 2011
Testing Period :	04 Jan 2011 - 07 Jan 2011
Test Requested :	Selected test(s) as requested by client.
Test Method :	Please refer to next page(s).
Test Results :	Please refer to next page(s).
Conclusion :	Based on the performed tests on submitted samples, the results comply with the RoHS Directive 2002/95/EC and its subsequent amendments.

Signed for and on behalf of
SGS-CSTC Ltd.

Wang Wei, Terry
Approved Signatory

PFLUON
NON-STICK COATING

SGS

Test Report No. NGBEC1100001803 Date: 07 Jan 2011 Page 2 of 5

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
1	NGB11-000018.002	Black liquid

Remarks :

(1) 1 mg/kg = 1 ppm = 0.0001%
(2) MDL = Method Detection Limit
(3) ND = Not Detected (< MDL)
(4) "-" = Not Regulated

RoHS Directive 2002/95/EC

Test Method : With reference to IEC 62321:2008
(1) Determination of Cadmium by ICP-OES.
(2) Determination of Lead by ICP-OES.
(3) Determination of Mercury by ICP-OES.
(4) Determination of Hexavalent Chromium by Colorimetric Method using UV-Vis.
(5) Determination of PBBs / PBDEs content by GC-MS.

Test Item(s)	Limit	Unit	MDL	*002*
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	ND
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (CrVI)	1,000	mg/kg	2	ND
Sum of PBBs	1,000	mg/kg	-	ND
Monobromobiphenyl	-	mg/kg	5	ND
Dibromobiphenyl	-	mg/kg	5	ND
Tribromobiphenyl	-	mg/kg	5	ND
Tetrabromobiphenyl	-	mg/kg	5	ND
Pentabromobiphenyl	-	mg/kg	5	ND
Hexabromobiphenyl	-	mg/kg	5	ND
Heptabromobiphenyl	-	mg/kg	5	ND
Octabromobiphenyl	-	mg/kg	5	ND
Nonabromobiphenyl	-	mg/kg	5	ND
Decabromobiphenyl	-	mg/kg	5	ND
Sum of PBDEs	1,000	mg/kg	-	ND
Monobromodiphenyl ether	-	mg/kg	5	ND

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Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755)83071443, or email: CN.Doccheck@sgs.com
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Ningbo Branch Service Center and Laboratory | 中国·宁波·国家高新区浪士路1177号浪士产业园4号楼西1-2,5层 邮编: 315040 HL: (86-574) 89070209 HL: (86-574)87768122 e sgs.china@sgs.com
Member of the SGS Group (SGS SA)

Test Item(s)	Limit	Unit	MDL	*002*
Dibromodiphenyl ether	-	mg/kg	5	ND
Tribromodiphenyl ether	-	mg/kg	5	ND
Tetrabromodiphenyl ether	-	mg/kg	5	ND
Pentabromodiphenyl ether	-	mg/kg	5	ND
Hexabromodiphenyl ether	-	mg/kg	5	ND
Heptabromodiphenyl ether	-	mg/kg	5	ND
Octabromodiphenyl ether	-	mg/kg	5	ND
Nonabromodiphenyl ether	-	mg/kg	5	ND
Decabromodiphenyl ether	-	mg/kg	5	ND

Notes :

(1) The maximum permissible limit is quoted from the document 2005/618/EC amending RoHS directive 2002/95/EC

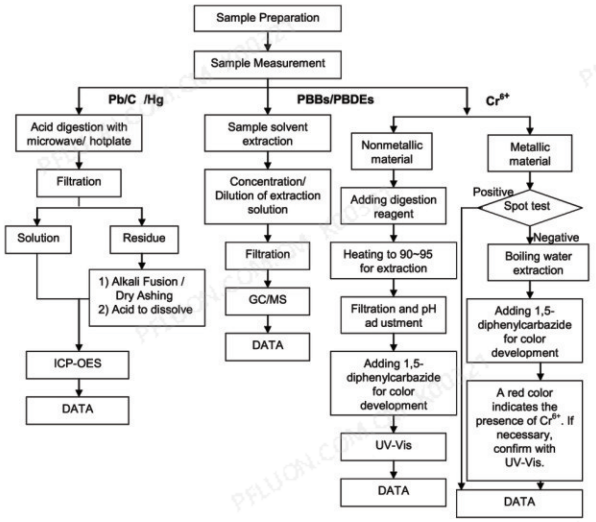
(2) Result shown is of the total weight of wet sample

PFLUON NON-STICK COATING

ATTACHMENTS

RoHS Testing Flow Chart

1) Name of the person who made testing: Tyler Jia/ Rock Hu / Take Guan/ Claire Bao
2) Name of the person in charge of testing: Sharon Liu /Gavin Zhou
3) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr^{6+} and PBBs/PBDEs test method excluded)



Sample photo:

NGB11-000018.002

SGS authenticate the photo on original report only

End of Report

PFLUON NON-STICK COATING

ZHEJIANG PELUON TECHNOLOGY CO.,LTD
NO.588 HUATAI ROAD,NEW DISTRICT,JINPAN DEVELOPMENT AREA,JINHUA,ZHEJIANG

The following sample(s) was/were submitted and identified on behalf of the clients as : W series water-base fluororesin non-stick coating

SGS Job No. :	NP11-000003 - NB
Date of Sample Received :	04 Jan 2011
Testing Period :	04 Jan 2011 - 12 Jan 2011
Test Requested :	Selected test(s) as requested by client.
Test Method :	Please refer to next page(s).
Test Results :	Please refer to next page(s).
Conclusion :	When tested as specified, the submitted sample comply with the permissible safety limit as specified in LFGB, Section 30 and 31.

Signed for and on behalf of
SGS-CSTC Ltd.

Wang Wei, Terry
Lab Manager

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
1	NGB11-000019.006	Black coating
2	NGB11-000019.010	Black pan

Overall migration

Test Requested : In accordance with German Food, Articles of Daily Use and Feed Code of September 1, 2005 (LFGB), Section 30 and 31, BfR recommendation.
For material: Polymer coating for cooking purpose -Overall migration

Test Method : With reference to EN1186-1:2002 for selection of conditions and test method;
EN1186-9:2002 aqueous food simulants by article filling method;
EN 1186-14:2002 substitute test.

Simulant Used	Time	Temperature	Max. Permissible Limit	Result of 006 Overall Migration
Deionized Water	2.0hr	100℃	60mg/kg	<20mg/kg
3% Acetic Acid (W/V) Aqueous Solution	2.0hr	100℃	60mg/kg	<20mg/kg
95% Ethanol (V/V) Aqueous Solution (Rectified Oliver Oil Substitute)	3.5hr	60℃	60mg/kg	<20mg/kg
Isooctane (Rectified Oliver Oil Substitute)	1.5hr	60℃	60mg/kg	<20mg/kg
50% Ethanol (V/V) Aqueous Solution	2.0hr	100℃	60mg/kg	<20mg/kg

Notes :
(1) mg/kg = milligram per kilogram
(2) ℃=degree Celsius
(3) < = less than
(4) Analytical tolerance of aqueous simulants is 6mg/kg
(5) Analytical tolerance of fatty food simulants is 20mg/kg
(6) Test condition & simulant were specified by client.

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

Test Requested : In accordance with German Food, Articles of Daily Use and Feed Code of September 1, 2005

(LFGB), Section 30 and 31, BfR recommendation.
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)

Test Method : 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.

Test Item(s)	Limit	*006*
Phenolic substance (as phenol), mg/dm²	0.05	<0.05
Extractable Formaldehyde, mg/dm²	2.5	<1.0
Extractable Aromatic Amine, mg/kg	Absent	Absent
Extractable Chromium (VI), mg/L	Absent	Absent
Extractable Chromium (III), mg/L	0.02	<0.02

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

Sensorial examination odour and taste test

Test Requested : In accordance with German Food, Articles of Daily Use and Feed Code of September 1, 2005 (LFGB), Section 30 and 31, BfR recommendation.
Sensorial examination odour and taste test

Test Method : Robinson`s test with reference to DIN 10955:1983 (2004).
Odour test condition: 23℃ 24 hours;
Taste test condition: 100℃ 2hours;
Test media:Distilled water;
No. of panelist: 5

Test Item(s)	Limit	*010*
Sensorial examination odour (Point scale)	2.5	0
Sensorial examination taste (Point scale)	2.5	0

Notes :
Scale evaluation:

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

Extractable PFOA

Test Requested : In accordance with German Food, Articles of Daily Use and Feed Code of September 1, 2005 (LFGB), Section 30 and 31, BfR recommendation.
For material: Polymer coating for cooking purpose - Extractable PFOA Content

Test Method : Sample extracted in 3% acetic acid at 95 deg. Celsius for 90 minutes, followed by analysis using HPLC-MS.

Test Item(s)	Limit	Unit	MDL	*006*
Extractable PFOA	0.005	mg/dm²	0.005	ND

Notes :
(1) 1mg/kg=1ppm=0.0001%
(2) ND = Not detected
(3) MDL = Method Detection Limit
(4) mg/dm²=milligram per square decimeter

Sample photo:

NGB11-000019.006

NGB11-000019.010

SGS authenticate the photo on original report only

End of Report