

RoHS TEST REPORT

NO.: B-R160911180

Date: Oct. 09, 2016

Page 1 of 5

Customer: Yangzhou Jingdu Brush Co., Ltd.

Address: South Industrial Park, GuoCun Town, Jiangdu District, Yangzhou City, Jiangsu Province, China

Client No.: 05144618



Report on the submitted sample said to be:

Sample name: Filament

Model No.: JD-FWS, JD-FYS, JD-FYH

Sample Model: JD-FWS

Manufacturer: Yangzhou Jingdu Brush Co., Ltd.

Address: South Industrial Park, GuoCun Town, Jiangdu District, Yangzhou City, Jiangsu Province, China

Sample received date: Oct. 02, 2016

Testing period: From Oct. 02, 2016 to Oct. 09, 2016



Company No. 07113834

Testing method:

With reference to IEC 62321:2008 Ed 1.0, IEC 62321:2013 Ed 1.0

(1) Section 6: Screening by X-ray Fluorescence Spectrometry (XRF)

(2) Chemical test:

Testing Item	Pretreatment method	Measuring instrument	MQL
Lead (Pb)	IEC 62321-5:2013 Ed 1.0, section 7.3	ICP-OES	2mg/kg
Cadmium (Cd)	IEC 62321-5:2013 Ed 1.0, section 7.3	ICP-OES	2 mg/kg
Mercury (Hg)	IEC 62321-4:2013 Ed 1.0, section 7.2	ICP-OES	2 mg/kg
Chromium (Cr VI)	IEC 62321:2008 Ed 1.0, Annex C	UV-VIS	2 mg/kg 0.02 mg/kg*
PBBs/ PBDEs	IEC 62321:2008 Ed 1.0, Annex A	GC-MS	5 mg/kg

Note:*0.02mg/kg refers to the MQL of sample extraction liquid.

Conclusion

Tested samples: Screening components of submitted samples

Standard.....: Screening by XRF spectroscopy and chemical confirmation test for RoHS directive (2011/65/EU)

Result.....: Pass

*****FOR FURTHER DETAILS, PLEASE REFER TO THE FOLLOWING PAGE(S)*****

Written by: _____

(Anna)

Inspected by: _____

(Joseph)

Approved by: _____



(Robert)

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RoHS TEST REPORT

NO.: B-R160911180

Date: Oct. 09, 2016

Page 2 of 5

Test Results:

Part No.	Sample Name	XRF Results(mg/kg)		Chemical Confirmation Result(mg/kg)
1	Filament	Pb	N.D.	---
		Cd	N.D.	
		Hg	N.D.	
		Cr	2.0654	
		Br	N.D.	

Remark:

N.D. = Not Detected

N.A. = Not Applicable

-Specimens, which requested to determine Cadmium, Mercury and Lead Content by chemical test, have been dissolved completely.

- mg/kg = ppm

(#1) = The screening result was found in the region of inconclusive (See Table B) and further chemical tests were suggested.

(#2) = Cr or Br were detected above the screening Limit (See Table B) and further chemical tests were suggested.

(#3) = Exceeded Screening Limit but if sample is electronic component. The lead content in glass of electronic components is exempted from the requirement of RoHS Directive (2011/65/EU)

(#4) = Exceeded Screening Limit but if sample is copper alloy. The lead content which is under 4% (40000ppm) is exempted from the requirement of RoHS Directive (2011/65/EU)

OL= OVER LIMIT

BL=BELOW LIMIT

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RoHS TEST REPORT

NO.: B-R160911180

Date: Oct. 09, 2016

Page 3 of 5

Remark:

(A) "BELOW LIMIT" (BL) or "OVER LIMIT" (OL) determination will be set at 30 % (50 % for composite materials) less than or greater than the limit, respectively. The margins of safety have been agreed upon based on the experience of many experts and practitioners in the industry. Further explanation for this approach to estimating uncertainty.

-The symbol "X" marks the region, where further investigation is necessary.

-LOD means Limit of Detection.

-The term "3σ" expresses the repeatability of the analyzer at the action level.

(B) XRF Screening Limit in mg/kg for regulated elements in various matrices.

Polymer materials	Metallic materials	Composite materials
$BL \leq (70 - 3\sigma) < X < (130 + 3\sigma) \leq OL$	$BL \leq (70 - 3\sigma) < X < (70 + 3\sigma) \leq OL$	$LOD < X < (150 + 3\sigma) \leq OL$
$BL \leq (700 - 3\sigma) < X < (1300 + 3\sigma) \leq OL$	$BL \leq (700 - 3\sigma) < X < (1300 + 3\sigma) \leq OL$	$BL \leq (500 - 3\sigma) < X < (1500 + 3\sigma) \leq OL$
$BL \leq (700 - 3\sigma) < X < (1300 + 3\sigma) \leq OL$	$BL \leq (700 - 3\sigma) < X < (1300 + 3\sigma) \leq OL$	$BL \leq (500 - 3\sigma) < X < (1500 + 3\sigma) \leq OL$
$BL \leq (700 - 3\sigma) < X$	$BL \leq (700 - 3\sigma) < X$	$BL \leq (500 - 3\sigma) < X$
$BL \leq (300 - 3\sigma) < X$	Not Applicable	$BL \leq (250 - 3\sigma) < X$

(C) RoHS Requirement

Restricted substances	Limits
Lead (Pb)	0.1% (1000 ppm)
Cadmium (Cd)	0.01% (100 ppm)
Mercury (Hg)	0.1% (1000 ppm)
Chromium(VI) (Cr ⁶⁺)	0.1% (1000 ppm)
Polybrominated biphenyls (PBBs)	0.1% (1000 ppm)
Polybrominated diphenyl ethers (PBDEs)	0.1% (1000 ppm)

The above limits were quoted from 2011/65/EU.

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RoHS TEST REPORT

NO.: B-R160911180

Date: Oct. 09, 2016

Page 4 of 5

Remark:

-Chemical confirmation tests were conducted to verify the inconclusive results, Chromium (VI) (Cr^{6+}), Polybrominated biphenyls(PBBs) and Polybrominated diphenyl ethers(PBDEs) content.

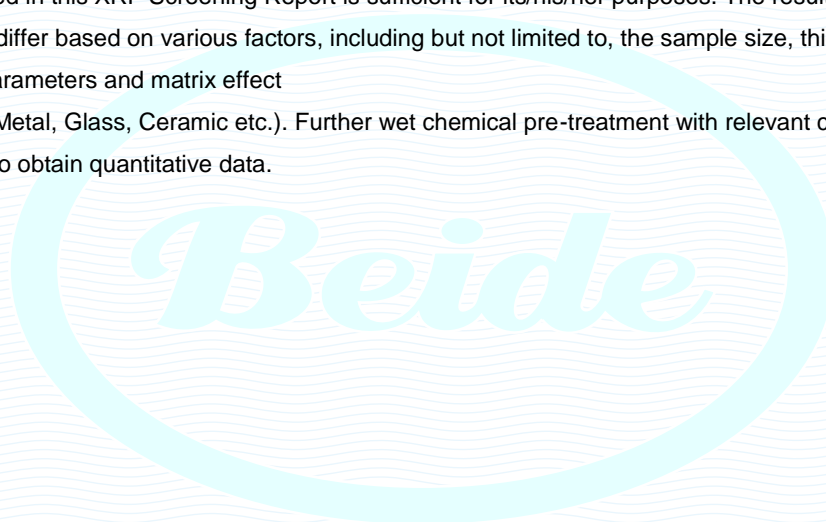
-As requested by the applicant, only components shown in this report were screened by XRF spectroscopy for 2011/65/EU, other components were not screened included in this report.

Disclaimers:

This XRF Screening Report is for reference purposes only. The applicant shall make its/his/her own judgment as to whether the information provided in this XRF Screening Report is sufficient for its/his/her purposes. The results shown in this XRF Screening Report will differ based on various factors, including but not limited to, the sample size, thickness, area, surface flatness, equipment parameters and matrix effect

(e.g. Plastic, Rubber, Metal, Glass, Ceramic etc.). Further wet chemical pre-treatment with relevant chemical equipment analysis are required to obtain quantitative data.

- Photos are included.



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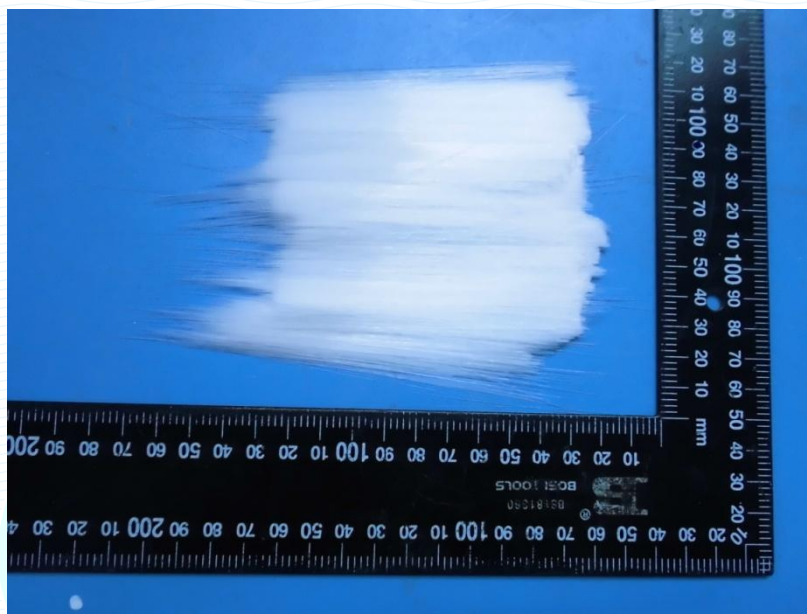
RoHS TEST REPORT

NO.: B-R160911180

Date: Oct. 09, 2016

Page 5 of 5

Photographs of Samples



End of Report

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