

Test Report

Number: GZHH00278907

Applicant: GUANGZHOU JIURONG PACKAGING CO LTD
RM A1008,BOFENG BLDG.,NO.816-818,
CONGYUN RD.,BAIYUN DIST.,GUANGZHOU

Date: May 07, 2018

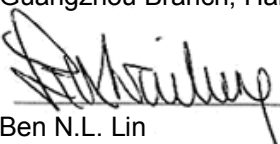
Sample Description:
One (1) submitted sample said to be **Water Based Ink**
Country of Origin : China



Tests conducted:
As requested by the applicant, refer to attached page(s) for details.

To be continued

Authorized by:
For Intertek Testing Services Shenzhen Ltd.
Guangzhou Branch, Hardlines


Ben N.L. Lin
General Manager




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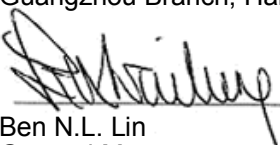
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Conclusion:

<u>Tested Sample</u>	<u>Standard</u>	<u>Result</u>
Tested component of submitted sample	94/62/EC and amendment 2004/12/EC & 2005/20/EC & 2013/2/EU & (EU) 2015/720 Directive (packaging waste) on toxic elements test	See Comment
	U.S. CFR Title 16 Part 1303 total Lead content	Pass
	U.S. Consumer Product Safety Improvement Act 2008 Title I, Section 101 for total Lead content in surface coating	Pass
	EN71-3:2013+A1:2014 on migration of certain elements	See Comment
	EN71-3:2013+A1:2014 on migration of certain elements (excluding lead migration) & lead migration of EU 2017/738 amending 2009/48/EC(effective from Oct 28,2018)	See Comment
	EN71-3:2013+A2:2017 on migration of certain elements	See Comment
	EN71-3:2013+A2:2017 on migration of certain elements (excluding lead migration) & lead migration of EU 2017/738 amending 2009/48/EC(effective from Oct 28,2018)	See Comment
	U.S. ASTM F963-17 on heavy elements test	See Comment
	US 16 CFR Part 1307 for Prohibition of Children's Toys and Child Care Articles Containing Specified Phthalates	See Comment
	US Consumer Product Safety Improvement Act 2008 Title I, Sec 108 requirement on phthalate	See Comment
	Restriction of the use of certain hazardous substance in electrical and electronic equipment (RoHS Directive 2011/65/EU and amendment Commission Delegated Directive (EU) 2015/863 with effective from 22 July 2019)	Pass

Comment: The testing scope of the following standard was not applicable to the submitted samples. However, the test results of the samples met the related requirements as stated in this report.

Authorized by:
For Intertek Testing Services Shenzhen Ltd.
Guangzhou Branch, Hardlines


Ben N.L. Lin
General Manager



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Tests Conducted

1 Toxic Elements Analysis

As per 94/62/EC and amendment 2004/12/EC & 2005/20/EC & 2013/2/EU & (EU) 2015/720 Directive on packaging and packaging waste, Hexavalent Chromium was used alkaline digestion method and determined by UV-Visible Spectrophotometry; Lead, Cadmium and Mercury was used acid digestion method and determined by Inductively Coupled Argon Plasma Spectrometry.

Element	Result (ppm)		Reporting limit (ppm)	Limit (ppm)
	Tested component			
	(1) ^Δ			
Lead (Pb)	ND		5	--
Cadmium (Cd)	ND		5	--
Mercury (Hg)	ND		5	--
Chromium VI (Cr (VI))	ND		1	--
Sum of Pb, Cd, Hg and Cr (VI)	ND		--	100

ppm = part per million = mg/kg
 ND = Not detected (less than reporting limit)
 Δ = The result is based on dry weight of testing sample

Tested Component(s) : (1) Red wet paint.

Date sample received: Apr 20, 2018
 Testing period: Apr 20, 2018 to Apr 28, 2018

2 Total Lead (Pb) Content in Surface Coating

As per Standard Operating Procedure for Determining Lead (Pb) in paint and other similar surface coatings, test method CPSC-CH-E1003-09.1 was used and total Lead content was determined by Inductively Coupled Argon Plasma Spectrometry.

Element	Result (ppm)		Reporting Limit (ppm)	Limit (ppm)
	Tested Component			
	(1) ^Δ			
Lead (Pb)	ND ^Δ		10	90

ppm = parts per million = mg/kg
 ND = Not detected (less than reporting limit)
 Δ = The result is based on dry weight of testing sample

Tested Component(s) : (1) Red wet paint.

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3 19 Toxic Element Migration Test

(A) Test Result

As per EN71-3:2013+A1:2014 and followed by Inductively Coupled Plasma Atomic Emission Spectrometry, Ion Chromatography.

Category (III): Scraped-off toy material

Element	Result (mg/kg)	Reporting Limit (mg/kg)	Limit (mg/kg)
	Tested Component		
	(1) [∇]		
Aluminium (Al)	ND	300	70000
Antimony (Sb)	ND	10	560
Arsenic (As)	ND	10	47
Barium (Ba)	22	10	18750
Boron (B)	ND	50	15000
Cadmium (Cd)	ND	5	17
Chromium (III) (Cr III) **	ND	10	460
Chromium (VI) (Cr VI) **	ND [#]	0.1	0.2
Cobalt (Co)	ND	10	130
Copper (Cu)	ND	10	7700
Lead (Pb)	ND	10	160/23 [∅]
Manganese (Mn)	ND	10	15000
Mercury (Hg)	ND	10	94
Nickel (Ni)	ND	10	930
Selenium (Se)	ND	10	460
Strontium (Sr)	5681	100	56000
Tin (Sn)	ND	2.5	180000
Organic tin **	ND	2.0	12
Zinc (Zn)	ND	100	46000

Remark : mg/kg = milligram per kilogram

++ = Unless the test results were marked with "#" or "Δ", Chromium (III) & Chromium (VI) and Organic tin contents were not directly determined and were derived from migration results of total chromium and tin respectively.

- Organic tin test result was expressed as tributyl tin.

ND = Not detected (less than reporting limit)

∅ = The new lead migration limit [(2.0mg/kg for Category (I), 0.5mg/kg for category (II) and 23 mg/kg for Category (III)] were quoted from directive (EU) 2017/738 amending 2009/48/EC effective from 28 October 2018.

= Confirmation of Chromium (VI) test was performed on the tested component. And the reported value of migration of Chromium (III) = migration value of total Chromium – migration value of Chromium(VI).

∇ = The result is based on dry weight of testing sample



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Tested Component(s) : (1) Red wet paint.

(B) Categories of various toy materials

Category I: Dry, brittle, powder like or pliable

Solid toy material from which powder-like material is released during playing and semi-solid materials that may also leave residues on the hands during play. The material can be ingested. Contamination of the hands with the material may contribute to the oral exposure of the material. (e.g. the cores of colouring pencils, chalk, crayons, modelling clays and plaster).

Category II: Liquid or sticky

Fluid or viscous toy material, which can be ingested or to which dermal exposure may occur during playing. (e.g. liquid paints, finger paints, liquid ink in pens, glue sticks, slimes, bubble solution).

Category III: Scraped-off

Solid toy material with or without a coating, which can be ingested as a result of biting, tooth scraping, sucking or licking. (e.g. coatings, lacquers, plastics, paper, textiles, glass, ceramic, metallic, wooden, bone, leather and other materials).

Date sample received: Apr 20, 2018

Testing period: Apr 20, 2018 to Apr 28, 2018



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Tests Conducted

4 19 Toxic Element Migration Test

(A) Test Result

As per EN71-3:2013+A2:2017 and followed by Inductively Coupled Plasma Atomic Emission Spectrometry, Ion Chromatography.

Category (III): Scraped-off toy material

Element	Result (mg/kg)	Reporting Limit (mg/kg)	Limit (mg/kg)
	Tested Component		
	(1) [∇]		
Aluminium (Al)	ND	300	70000
Antimony (Sb)	ND	10	560
Arsenic (As)	ND	10	47
Barium (Ba)	22	10	18750
Boron (B)	ND	50	15000
Cadmium (Cd)	ND	5	17
Chromium (III) (Cr III) **	ND	10	460
Chromium (VI) (Cr VI) **	ND [#]	0.1	0.2
Cobalt (Co)	ND	10	130
Copper (Cu)	ND	10	7700
Lead (Pb)	ND	10	160/23 [∅]
Manganese (Mn)	ND	10	15000
Mercury (Hg)	ND	10	94
Nickel (Ni)	ND	10	930
Selenium (Se)	ND	10	460
Strontium (Sr)	5681	100	56000
Tin (Sn)	ND	2.5	180000
Organic tin **	ND	2.0	12
Zinc (Zn)	ND	100	46000

Remark : mg/kg = milligram per kilogram

++ = Unless the test results were marked with "#" or "Δ", Chromium (III) & Chromium (VI) and Organic tin contents were not directly determined and were derived from migration results of total chromium and tin respectively.

- Organic tin test result was expressed as tributyl tin.

ND = Not detected

∅ = The new lead migration limit [(2.0mg/kg for Category (I), 0.5mg/kg for category (II) and 23 mg/kg for Category (III)] were quoted from directive (EU) 2017/738 amending 2009/48/EC effective from 28 October 2018.

= Confirmation of Chromium (VI) test was performed on the tested component. And the reported value of migration of Chromium (III) = migration value of total Chromium – migration value of Chromium(VI).

∇ = The result is based on dry weight of testing sample



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Tests Conducted

Tested Component(s) : (1) Red wet paint.

(B) Categories of various toy materials

Category I: Dry, brittle, powder like or pliable

Solid toy material from which powder-like material is released during playing and semi-solid materials that may also leave residues on the hands during play. The material can be ingested. Contamination of the hands with the material may contribute to the oral exposure of the material. (e.g. the cores of colouring pencils, chalk, crayons, modelling clays and plaster).

Category II: Liquid or sticky

Fluid or viscous toy material, which can be ingested or to which dermal exposure may occur during playing. (e.g. liquid paints, finger paints, liquid ink in pens, glue sticks, slimes, bubble solution).

Category III: Scraped-off

Solid toy material with or without a coating, which can be ingested as a result of biting, tooth scraping, sucking or licking. (e.g. coatings, lacquers, plastics, paper, textiles, glass, ceramic, metallic, wooden, bone, leather and other materials).

Date sample received: Apr 20, 2018
Testing period: Apr 20, 2018 to Apr 28, 2018

5 Heavy Elements Analysis

As per Section 4.3.5 and Section 8.3.2 to 8.3.5 of the ASTM Standard Consumer Safety Specification on Toy Safety F963-17, heavy elements migration content were determined by Inductively Coupled Argon Plasma Spectrometry.

Element	Result (ppm)	Reporting limit (ppm)	Limit (ppm)
	Tested component		
	(1) ^Δ		
Sol. Barium (Ba)	22	5	1000
Sol. Lead (Pb)	ND	5	90
Sol. Cadmium (Cd)	ND	5	75
Sol. Antimony (Sb)	ND	5	60
Sol. Selenium (Se)	ND	5	500
Sol. Chromium (Cr)	ND	5	60
Sol. Mercury (Hg)	ND	5	60
Sol. Arsenic (As)	ND	2.5	25

Sol. = Soluble
ppm = part per million = mg/kg
ND = Not detected
Δ = The result is based on dry weight of testing sample



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Tests Conducted

Tested Component(s) : (1) Red wet paint.

Date sample received: Apr 20, 2018
 Testing period: Apr 20, 2018 to Apr 28, 2018

6 Total Lead (Pb) Content

As per Section 4.3.5 of the ASTM Standard Consumer Safety Specification on Toy Safety F963-17, test method CPSC-CH-E1001-08.3, CPSC-CH-E1002-08.3 or/and CPSC-CH-E1003-09.1 were used and total Lead content was determined by Inductively Coupled Argon Plasma Spectrometry.

Surface coating

Element	Result (ppm)		Reporting Limit (ppm)	Limit (ppm)
	Tested Component			
	(1) ^Δ			
Lead (Pb)	ND		10	90

ppm = part per million = mg/kg
 Δ = The result is based on dry weight of testing sample
 ND = Not detected

Tested Component(s) : (1) Red wet paint.

Date sample received: Apr 20, 2018
 Testing period: Apr 20, 2018 to Apr 28, 2018

7 Phthalate Content

With reference to CPSC-CH-C1001-09.3, by Gas Chromatographic-Mass Spectrometric (GC-MS) analysis.

Test item	CAS No.	Result (%)		Reporting limit (%)	Limit (%)
		Tested component			
		(1) ^Δ			
Dibutyl phthalate (DBP)	84-74-2	ND		0.01	0.1
Di-(2-ethyl hexyl) phthalate (DEHP)	117-81-7	ND		0.01	0.1
Benzyl butyl phthalate (BBP)	85-68-7	ND		0.01	0.1
Di-iso-nonyl phthalate (DINP)	28553-12-0	ND		0.01	0.1
Diisobutyl phthalate (DIBP)	84-69-5	ND		0.01	0.1
Di-n-pentyl Phthalate (DPENP)	131-18-0	ND		0.01	0.1
Di-n-hexyl Phthalate (DHEXP)	84-75-3	ND		0.01	0.1
Dicyclohexyl Phthalate (DCHP)	84-61-7	ND		0.01	0.1

The above limit was quoted according to US 16 CFR Part 1307 for Prohibition of Children's Toys and Child Care Articles Containing Specified Phthalates.



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ND = Not detected(less than reporting limit)
Δ = The result is based on dry weight of testing sample

Tested Component(s) : (1) Red wet paint.

Date sample received: Apr 20, 2018
Testing period: Apr 20, 2018 to Apr 26, 2018

8 **Phthalate Content**

With reference to CPSC-CH-C1001-09.3, by Gas Chromatographic-Mass Spectrometric (GC-MS) analysis.

For 6 phthalate

Test item	CAS No.	Result (%)	Reporting Limit (%)	Limit (%)
		Tested component (1) ^Δ		
Dibutyl phthalate (DBP)	84-74-2	ND	0.01	0.1
Di-(2-ethyl hexyl) phthalate (DEHP)	117-81-7	ND	0.01	0.1
Benzyl butyl phthalate (BBP)	85-68-7	ND	0.01	0.1
Di-iso-nonyl phthalate (DINP)	28553-12-0/ 68515-48-0	ND	0.01	0.1
Di-n-octyl phthalate (DNOP)	117-84-0	ND	0.01	0.1
Di-iso-decyl phthalate (DIDP)	26761-40-0/ 68515-49-1	ND	0.01	0.1

The above limit was quoted according to US Consumer Product Safety Improvement Act 2008 for prohibition on sale of certain products containing specified phthalates.

ND = Not detected (less than reporting limit)
Δ = The result is based on dry weight of testing sample

Tested Component(s) : (1) Red wet paint.

Date sample received: Apr 20, 2018
Testing period: Apr 20, 2018 to Apr 26, 2018



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Tests Conducted

9 RoHS Chemical Test

(A) Test Result Summary:

<u>Test item</u>	<u>Result</u>
	(1) ^Δ
Cadmium (Cd) Content (mg/kg)	ND
Lead (Pb) Content (mg/kg)	ND
Mercury (Hg) Content (mg/kg)	ND
Chromium (VI)(Cr ⁶⁺) Content (mg/kg)	ND
Polybrominated Biphenyls (PBBs)(mg/kg)	
Monobromobiphenyl (MonoBB)	ND
Dibromobiphenyl (DiBB)	ND
Tribromobiphenyl (TriBB)	ND
Tetrabromobiphenyl (TetraBB)	ND
Pentabromobiphenyl (PentaBB)	ND
Hexabromobiphenyl (HexaBB)	ND
Heptabromobiphenyl (HeptaBB)	ND
Octabromobiphenyl (OctaBB)	ND
Nonabromobiphenyl (NonaBB)	ND
Decabromobiphenyl (DecaBB)	ND
Polybrominated Diphenyl Ethers (PBDEs)(mg/kg)	
Monobromodiphenyl Ether (MonoBDE)	ND
Dibromodiphenyl Ether (DiBDE)	ND
Tribromodiphenyl Ether (TriBDE)	ND
Tetrabromodiphenyl Ether (TetraBDE)	ND
Pentabromodiphenyl Ether (PentaBDE)	ND
Hexabromodiphenyl Ether (HexaBDE)	ND
Heptabromodiphenyl Ether (HeptaBDE)	ND
Octabromodiphenyl Ether (OctaBDE)	ND
Nonabromodiphenyl Ether (NonaBDE)	ND
Decabromodiphenyl Ether (DecaBDE)	ND

Non-toys:

<u>Test item</u>	<u>Result</u>
	(1) ^Δ
Dibutyl phthalate (DBP) (mg/kg)	ND
Di-(2-ethyl hexyl) phthalate (DEHP) (mg/kg)	ND
Benzyl butyl phthalate (BBP) (mg/kg)	ND
Di-(iso-butyl) phthalate (DIBP) (mg/kg)	ND

ND = Not detected

Δ = The result is based on dry weight of sample



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Tested Component(s) : (1) Red wet paint.

(B) RoHS Requirement:

Restricted Substances	Limits
Cadmium (Cd)	0.01% (100 mg/kg)
Lead (Pb)	0.1% (1000 mg/kg)
Mercury (Hg)	0.1% (1000 mg/kg)
Chromium (VI) (Cr ⁶⁺)	0.1% (1000 mg/kg)
Polybrominated Biphenyls (PBBs)	0.1% (1000 mg/kg)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000 mg/kg)
Dibutyl phthalate (DBP)	0.1% (1000 mg/kg)
Di-(2-ethyl hexyl) phthalate (DEHP)	0.1% (1000 mg/kg)
Benzyl butyl phthalate (BBP)	0.1% (1000 mg/kg)
Di-(iso-butyl) phthalate (DIBP)	0.1% (1000 mg/kg)

The above limits were quoted from Directive 2011/65/EU and amendment Commission Delegated Directive (EU) 2015/863 for homogeneous material.

(C) Test Method:

Testing Item	Testing Method	Reporting Limit
Mercury (Hg) Content	With reference to IEC 62321-4 Edition 1.0:2013+AMD1:2017, by acid digestion and determined by ICP - OES	2 mg/kg
Cadmium (Cd) Content	With reference to IEC 62321-5 Edition 1.0:2013, by acid digestion and determined by ICP - OES	2 mg/kg
Lead (Pb) Content	With reference to IEC 62321-5 Edition 1.0:2013, by acid digestion and determined by ICP - OES	2 mg/kg
Polybrominated Biphenyls (PBBs) & Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321-6 Edition 1.0:2015, by solvent extraction and determined by GC/MS and further HPLC confirmation when necessary	5 mg/kg
Chromium (VI)(Cr ⁶⁺) Content	With reference to IEC 62321-7-2 Edition 1.0:2017, Hexavalent chromium – Determination of hexavalent chromium (Cr(VI) in polymers and electronics by the colorimetric method	10 mg/kg
Dibutyl phthalate (DBP) & Di-(2-ethyl hexyl) phthalate (DEHP) & Benzyl butyl phthalate (BBP) & Di-(iso-butyl) phthalate (DIBP)	With reference to IEC 62321-8 Edition 1.0:2017, by Gas Chromatographic-Mass Spectrometric (GC-MS) analysis	100mg/kg

Date sample received: Apr 20, 2018

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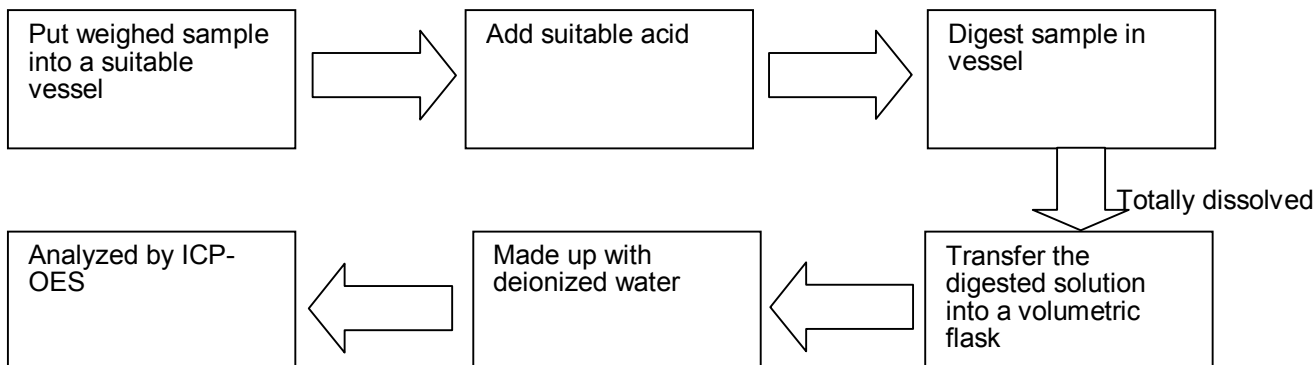
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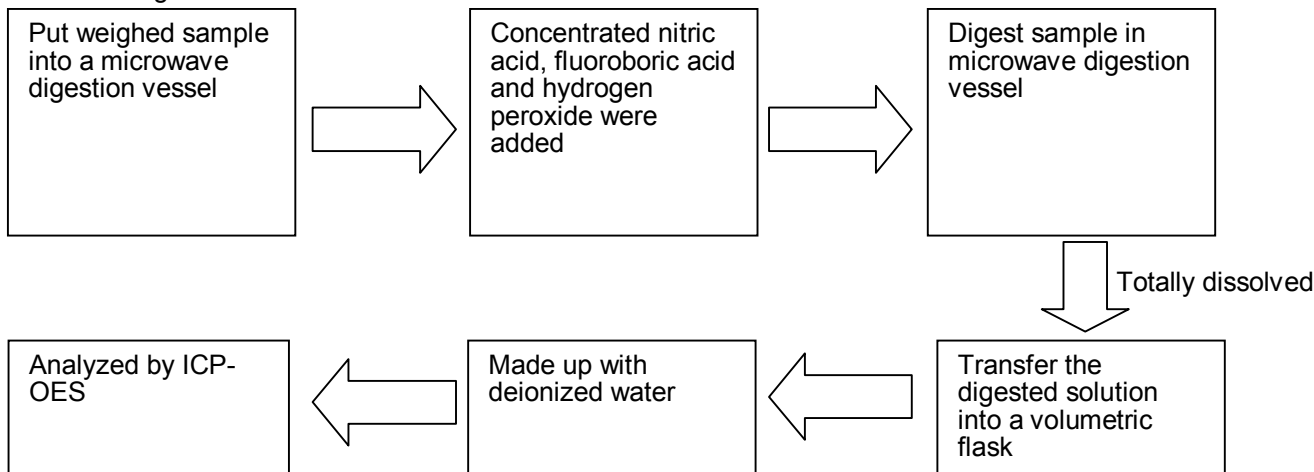
Tests Conducted

(D) Measurement Flowchart:

1. Test for Cd/Pb Contents



2. Test for Hg Content



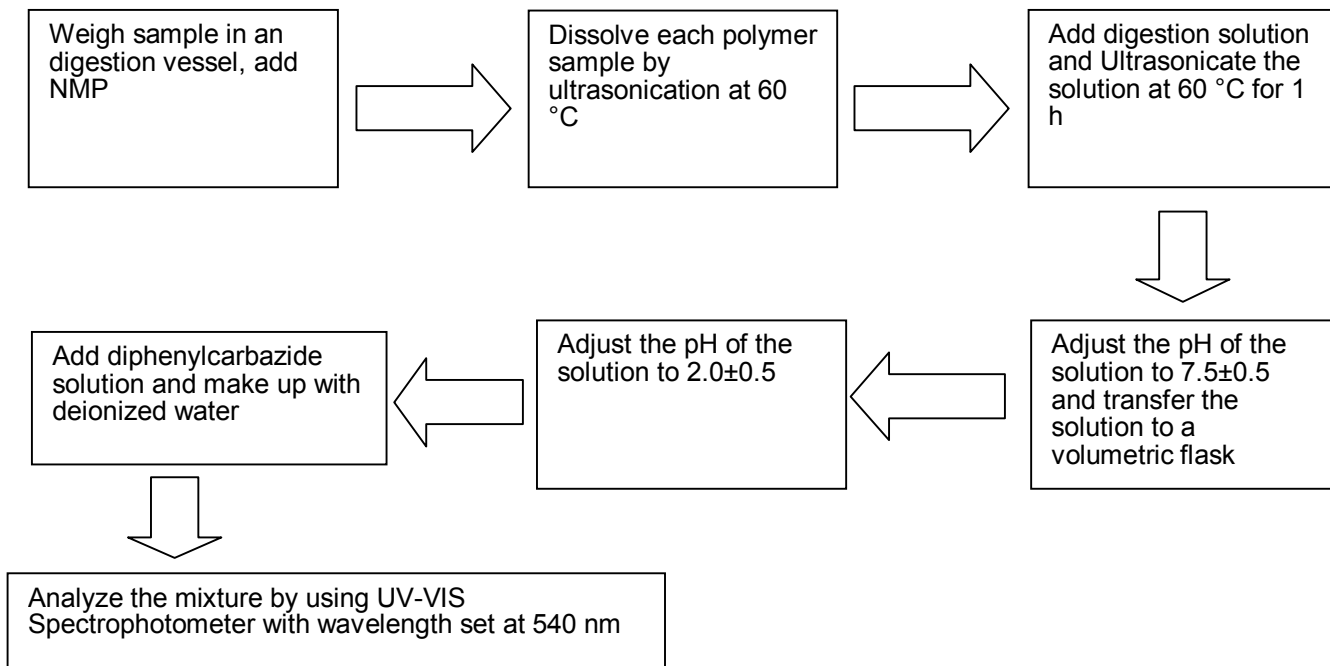


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3. Test for Chromium (VI) (Cr^{6+}) Content Soluble polymers



4. Test for PBBs/PBDEs Contents

