



Test Report

Number : TWNC0027452202

Applicant: Sigma Ink Corporation  
674 Via De La Valle Ste 100,  
Solana Beach, CA 92075

Date : Sep 25, 2012

Sample Description:

One (1) group of submitted samples said to be :  
Sample Description : Sigma MP Black Ink  
Country of Origin : U.S.A.  
Date Sample Received : Sep 03, 2012  
Date Test Started : Sep 05, 2012

Test Conducted :

As requested by the applicant, for details please refer to attached pages.

Conclusion:

<u>Tested Sample</u>	<u>Standard</u>	<u>Result</u>
Submitted Samples	Restriction Of Hazardous Substances (RoHS) Test	Pass
	- As Per Applicant's Request With Reference To 2011/65/EU	
	Phthalate Content	Pass
	- As Per Applicant's Request With Reference To Annex XVII Items 51 & 52 Of The REACH Regulation (EC) No. 1907/2006 (Formerly Known As Directive 2005/84/EC)	
	Toxic Elements Analysis	Pass
	- As Per Applicant Request With Reference To EN 71 Part 3: 1994 And Amendment A1: 2000/ AC: 2002	
	Total Lead (Pb) Content In Surface Coating	Pass
	- As Per Applicant's Request With Reference To U.S. Consumer Product Safety Improvement Act 2008, Title I, Section 101	

Authorized By:

On Behalf Of Intertek Testing Services  
Taiwan Limited



K. Y. Liang  
Director

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## Test Conducted

1. Restriction Of Hazardous Substances (RoHS) Test

## (I) Test Result Summary :

Test Item	Result (ppm)	Limit
	Black Ink	(ppm)
<b>Heavy Metal</b>		
Cadmium (Cd) content	ND	100
Lead (Pb) content	ND	1000
Mercury (Hg) content	ND	1000
Chromium VI (Cr <sup>6+</sup> ) content	ND	1000
<b>Polybrominated Biphenyls (PBBs)</b>		
Monobrominated Biphenyls (MonoBB)	ND	--
Dibrominated Biphenyls (DiBB)	ND	--
Tribrominated Biphenyls (TriBB)	ND	--
Tetrabrominated Biphenyls (TetraBB)	ND	--
Pentabrominated Biphenyls (PentaBB)	ND	--
Hexabrominated Biphenyls (HexaBB)	ND	--
Heptabrominated Biphenyls (HeptaBB)	ND	--
Octabrominated Biphenyls (OctaBB)	ND	--
Nonabrominated Biphenyls (NonaBB)	ND	--
Decabrominated Biphenyl (DecaBB)	ND	--
<b>Sum of above PBBs</b>	ND	1000
<b>Polybrominated Diphenyl Ethers (PBDEs)</b>		
Monobrominated Diphenyl Ethers (MonoBDE)	ND	--
Dibrominated Diphenyl Ethers (DiBDE)	ND	--
Tribrominated Diphenyl Ethers (TriBDE)	ND	--
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND	--
Pentabrominated Diphenyl Ethers (PentaBDE)	ND	--
Hexabrominated Diphenyl Ethers (HexaBDE)	ND	--
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND	--
Octabrominated Diphenyl Ethers (OctaBDE)	ND	--
Nonabrominated Diphenyl Ethers (NonaBDE)	ND	--
Decabrominated Diphenyl Ether (DecaBDE)	ND	--
<b>Sum of above PBDEs</b>	ND	1000

Remarks: ppm = parts per million based on dry weight of tested sample  
= mg/kg  
ND = Not Detected

The above limits were quoted from Annex II of 2011/65/EU for homogeneous material.

## Test Conducted

## (II) Test Method:

<u>Test Item</u>	<u>Test Method</u>	<u>Reporting Limit</u>
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr <sup>6+</sup> ) content	With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
Polybrominated Biphenyls (PBBs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MS and further HPLC-DAD confirmation when necessary.	5 ppm
Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MS and further HPLC-DAD confirmation when necessary.	5 ppm

Remark: Reporting Limit = Quantitation limit of analyte in sample

## Test Conducted

2. Phthalate Content

With reference to EN 14372:2004, by solvent extraction and determined by Gas Chromatographic-Mass Spectrometric (GC-MS).

## I. Plasticised Material In Toys And Childcare Articles:

<u>Compound</u>	<u>Result (%)</u> <u>Black Ink</u>	<u>Limit (%)</u>
Diethyl Hexyl Phthalate (DEHP)	ND	--
Dibutyl Phthalate (DBP)	ND	--
Benzyl Butyl Phthalate (BBP)	ND	--
Sum Of DEHP, DBP & BBP	ND	0.1

## II. Plasticised Material In Toys And Childcare Articles Which Can Be Placed In The Mouth By Children:

<u>Compound</u>	<u>Result (%)</u> <u>Black Ink</u>	<u>Limit (%)</u>
Di-(Iso-Nonyl) Phthalate (DINP)	ND	--
Di-(Iso-Decyl) Phthalate (DIDP)	ND	--
Di-(N-Octyl) Phthalate (DNOP)	ND	--
Sum Of DINP, DIDP & DNOP	ND	0.1

Remarks: The above limit was quoted according to Annex XVII Items 51 & 52 of the REACH regulation (EC) No. 1907/2006 (formerly known as directive 2005/84/EC) for phthalate content in toys and children articles.

% = Percentage based on dry weight of tested sample

ND = Not detected

Detection limit = 0.005% (for each compound)

## Test Conducted

3. Toxic Elements Analysis

As per applicant request with reference to European standard on safety of toys EN71 part3: 1994, amendment A1: 2000/ AC: 2002, acid extraction method was used and toxic elements content were determined by inductively coupled plasma-optical emission spectrometer (ICP-OES).

<u>Element</u>	<u>Result (mg/kg)</u>	<u>Limit (mg/kg)</u>
	<u>Black Ink</u>	
Sol. Lead (Pb)	<1	90
Sol. Cadmium (Cd)	<1	75
Sol. Antimony (Sb)	<1	60
Sol. Chromium (Cr)	<1	60
Sol. Barium (Ba)	<1	1000
Sol. Mercury (Hg)	<1	60
Sol. Selenium (Se)	<1	500
Sol. Arsenic (As)	<1	25

Remarks: mg/kg = Milligram per kilogram based on dry weight of sample

Sol. = Soluble

< = Less than

The Analytical Results Were Adjusted By Subtracting Analytical Correction Factor.

4. Total Lead (Pb) Content In Surface Coating

According to CPSIA Test Method: CPSC-CH-E1003-09, by acid digestion method and Inductively Coupled Argon Plasma Spectrometry analysis.

<u>Tested Component</u>	<u>Result (ppm)</u>	<u>Limit (ppm)</u>
Black Ink	ND	90

Remarks: ppm = Parts per million = mg/kg

ND = Not detected

Detection limit = 10 ppm

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End of Report

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Test Conducted

**Photo**

