

TEST REPORT

Date of Report: 2/8/2019
Project ID / Job Number: 2341004469
Client: **Applied Technical Services, Inc.**
Address: **1049 Triad Court
Marietta, GA 30062 USA**
Model Identification: 9ESI012K0108, 9ESI006BY0104, 9ESI014M0104,
9ESI011YM0104, 9ESI013C0116
Item Description: **5 Liquid Samples**
Number of Samples Submitted: 5
Additional Information: None
Test Parameters: Migration of Certain Elements – Toy Safety Directive (2009/48/EC)
Date Received: 2/6/2019
Testing Period: 2/7/2019 – 2/8/2019
Delivery Condition: *Apparent Good*
Testing Location: TÜV Rheinland of North America
2709 SE Otis Corley Dr, Suite 11
Bentonville, AR 72712 USA
Other Aspects: N/A

Test Report Compiled by:



Cody Carson / Senior Chemist

Test Report Reviewed by:



Mark Smith / Laboratory Manager

Test result is drawn according to the kind and extent of tests performed. This test report is not permitted to be duplicated in extracts without permission of the test facility. This test report does not entitle any safety mark on this or similar products.

Test Parameters:

Test Specification
1. Migration of Certain Elements – Toy Safety Directive (2009/48/EC)

Test Results:**Material Breakdown List - Chemical Testing**

See Attachment

Material No.	Material	Color	Component / Location
1	Paint	ECO SOLVENT BLACK	9ESI012K0108
2	Paint	ECO SOLVENT BLACK	9ESI006BY0104
3	Paint	ECO SOL MAG	9ESI014M0104
4	Paint	ECO SOLV MUST YELLOW	9ESI011YM0104
5	Paint	ECO SOLV CYAN	9ESI013C0116

RESULTS**1. MIGRATION OF CERTAIN ELEMENTS IN SUBSTRATE MATERIALS:**

The product shall comply with the requirements of The Toy Safety Directive (2009/48/EC) which specifies maximum migration limits for three categories of *toy materials*. The limits for the migration of certain elements are expressed in milligram per kilogram *toy material* and are detailed in Table 2.

Element	Category 1 - mg/kg	Category 2 - mg/kg	Category 3 - mg/kg
Aluminium – Al	5 625	1 406	70 000
Antimony – Sb	45	11,3	560
Arsenic – As	3,8	0,9	47
Barium – Ba	1 500	375	18 750
Boron – B	1 200	300	15 000
Cadmium - Cd	1,3	0,3	17
Chromium (III)*	37,5	9,4	460
Chromium (VI)*	0,02	0,005	0,2
Cobalt – Co	10,5	2,6	130
Copper – Cu	622,5	156	7 700
Lead – Pb	13,5	3,4	160
Manganese - Mn	1 200	300	15 000
Mercury - Hg	7,5	1,9	94
Nickel – Ni	75	18,8	930
Selenium – Se	37,5	9,4	460
Strontium – Sr	4 500	1 125	56 000
Tin – Sn	15 000	3 750	180 000
Organic tin**	0,9	0,2	12
Zinc - Zn	3 750	938	46 000

*Reference elemental chromium (Cr) results

**Reference elemental tin (Sn) results

Test Method: Samples were prepared according to EN71-3:2013 and analyzed by Inductively coupled plasma - mass spectrometer for elemental content. Where noted, the material was evaluated by analysis of total element content screening to preclude the need for additional soluble analysis.

Test No.	Material	Al mg/kg	Sb mg/kg	As mg/kg	Ba mg/kg	B mg/kg	Cd mg/kg	Cr mg/kg	Co mg/kg	Pass/Fail Category 3
1	1	4	<1	<1	<1	<1	<1	<0.2	<1	Pass
2	2	1	<1	<1	<1	<1	<1	<0.2	<1	Pass
3	3	13	<1	<1	1	2	<1	<0.2	<1	Pass
4	4	5	<1	<1	<1	<1	<1	<0.2	<1	Pass
5	5	1	<1	<1	<1	<1	<1	<0.2	<1	Pass

Test No.	Material	Cu mg/kg	Pb mg/kg	Mn mg/kg	Hg mg/kg	Ni mg/kg	Se mg/kg	Sr mg/kg	Sn mg/kg	Zn mg/kg	Pass/Fail Category 3
1	1	<1	<1	<1	<1	<1	<1	<1	<1	6	Pass
2	2	<1	<1	<1	<1	<1	<1	<1	<1	2	Pass
3	3	<1	<1	<1	<1	<1	<1	<1	<1	4	Pass
4	4	<1	<1	<1	<1	1	<1	<1	<1	3	Pass
5	5	9	<1	<1	<1	<1	<1	<1	<1	3	Pass

Abbreviation: mg/kg denotes milligram per kilogram (ppm)

Sample Photos:



Material 1



Material 2



Material 3



Material 4

Test Report No.: 319G0577.001



Material 5

Test Article(s)

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