



TEST REPORT

Technical Report: (5214)225-0965

September 30, 2014

Date Received: August 13, 2014

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Mr Marcus Knopp
LeitOn GmbH
Gottlieb-Dunkel-Str 47/48, 12099 Berlin, Germany

Sample Description: Sample(s) received is/are stated to be:
Flexible printed circuit board

Color:	Amber	Style No(s):	/
Order No.:	/	PO No.:	/
Age Grade:	/	Product End Use:	Electronics industry
Vendor:	/	Retest No.:	/
Manufacturer:	/	Supplier Reference:	/
Buyer:	/	Country of Origin:	China
Test Period:	August 26, 2014 – September 30, 2014	Country of Destination:	Europe
Fiber Content:	/		
Material Composition:	Polyimide, copper, epoxy adhesive		
Care Instruction:	/		

SUMMARY OF TEST RESULTS

TEST REQUESTED	CONCLUSION	REMARK
Materials in Contact with Foodstuffs – § 30 and 31 LFGB	PASS	

EC

REMARK

If there are questions or concerns on this report, please contact:

(852) 2331 0330
analytical-enquiry@hk.bureauveritas.com

BUREAU VERITAS HONG KONG LIMITED

DR. ALEX HUI
MANAGER, CHEMICAL AND ANALYTICAL SERVICES



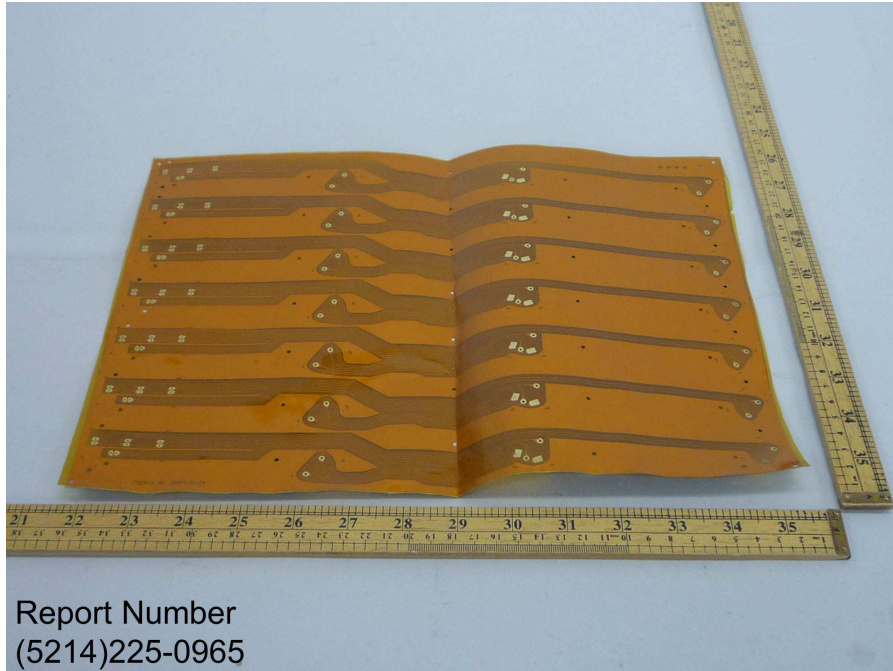
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Photo of the Submitted Sample



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**TEST RESULT****Materials in Contact with Foodstuffs – § 30 and 31 LFGB**

Test Item	Description	Client Claimed Material
1	Dull yellow plastic with coppery metal (circuit board)	polyamide & copper

For material: Metal**1 Sensory Test (Odour and Taste) for Materials in Contact with Foodstuffs – EC No. 1935/2004 and § 30 and 31 LFGB and BfR Recommendation**

Parameter	Result	Maximum Allowable Limit
	1	
Odour	0	2.5 Scale
Taste transfer into foodstuff through simulant, Mineral Water	0	2.5 Scale
Conclusion	PASS	-

Note: Scale: 0 = no perceptible off-odour (or taste transfer);
1 = off-odour (or taste transfer) just perceptible (but still difficult to define);
2 = slight off-odour (or taste transfer);
3 = distinct off-odour (or taste transfer);
4 = strong off-odour (or taste transfer)

Method: DIN 10955: 2004-06



TEST RESULT

Materials in Contact with Foodstuffs – § 30 and 31 LFGB

For material: Metal

2 Migration of Heavy Metals Contents for Metal in Contact with Foodstuffs

Test Condition: Artificial tap water: 40 °C, 10 days

Parameter	Unit	Result			Seven Times of Maximum Specific Release Limit(s) (SRLs) ^[a, b]
		1			
		1st Migrate	2nd Migrate	Sum of 1st & 2nd Migrate ^[b]	
Food contact surface area	dm ²	0.003	0.003	-	-
Volume of stimulant used	mL	125	125	-	-
Aluminum (Al)	mg/kg	<0.1	<0.1	<0.1	35
Antimony (Sb)	mg/kg	<0.004	<0.004	<0.004	0.28
Chromium (Cr)	mg/kg	<0.1	<0.1	<0.1	1.75
Cobalt (Co)	mg/kg	<0.005	<0.005	<0.005	0.14
Copper (Cu)	mg/kg	<0.5	<0.5	<0.5	28
Iron (Fe)	mg/kg	<5	<5	<5	280
Magnesium (Mg)	mg/kg	<0.5	<0.5	<0.5	-
Manganese (Mn)	mg/kg	<0.1	<0.1	<0.1	12.6
Molybdenum (Mo)	mg/kg	<0.01	<0.01	<0.01	0.84
Nickel (Ni)	mg/kg	<0.02	0.022	0.022	0.98
Silver (Ag)	mg/kg	<0.01	<0.01	<0.01	0.56
Tin (Sn)	mg/kg	<5	<5	<5	700
Titanium (Ti)	mg/kg	<0.5	<0.5	<0.5	-
Vanadium (V)	mg/kg	<0.002	<0.002	<0.002	0.07
Zinc (Zn)	mg/kg	<1	<1	<1	35
Arsenic (As)	mg/kg	<0.001	<0.001	<0.001	0.014
Barium (Ba)	mg/kg	<0.1	<0.1	<0.1	8.4
Beryllium (Be)	mg/kg	<0.001	<0.001	<0.001	0.07
Cadmium (Cd)	mg/kg	<0.001	<0.001	<0.001	0.035
Lead (Pb)	mg/kg	<0.002	<0.002	<0.002	0.07
Lithium (Li)	mg/kg	<0.01	<0.01	<0.01	0.336
Mercury (Hg)	mg/kg	<0.0004	<0.0004	<0.0004	0.021
Thallium (Tl)	mg/kg	<0.00005	<0.00005	<0.00005	0.0007
Conclusion	-	-	-	PASS	-

TEST RESULT

Materials in Contact with Foodstuffs – § 30 and 31 LFGB

For material: Metal

2. Migration of Heavy Metals Contents for Metal in Contact with Foodstuffs

Test Condition: Artificial tap water: 40 °C, 10 days

Parameter	Unit	Result	Maximum Specific Release Limit(s) (SRLs) ^[a]
		1 3rd Migrate	
Food contact surface area	dm ²	0.003	-
Volume of stimulant used	mL	125	-
Aluminum (Al)	mg/kg	<0.1	5
Antimony (Sb)	mg/kg	<0.004	0.04
Chromium (Cr)	mg/kg	<0.1	0.25
Cobalt (Co)	mg/kg	<0.005	0.02
Copper (Cu)	mg/kg	<0.5	4
Iron (Fe)	mg/kg	<5	40
Magnesium (Mg)	mg/kg	<0.5	-
Manganese (Mn)	mg/kg	<0.1	1.8
Molybdenum (Mo)	mg/kg	<0.01	0.12
Nickel (Ni)	mg/kg	<0.02	0.14
Silver (Ag)	mg/kg	<0.01	0.08
Tin (Sn)	mg/kg	<5	100
Titanium (Ti)	mg/kg	<0.5	-
Vanadium (V)	mg/kg	<0.002	0.01
Zinc (Zn)	mg/kg	<1	5
Arsenic (As)	mg/kg	<0.001	0.002
Barium (Ba)	mg/kg	<0.1	1.2
Beryllium (Be)	mg/kg	<0.001	0.01
Cadmium (Cd)	mg/kg	<0.001	0.005
Lead (Pb)	mg/kg	<0.002	0.01
Lithium (Li)	mg/kg	<0.01	0.048
Mercury (Hg)	mg/kg	<0.0004	0.003
Thallium (Tl)	mg/kg	<0.00005	0.0001
Conclusion	-	PASS	-

Note: “<” = less than
mg/dm² = milligram per square decimeter

Method: With reference to Metals and Alloys used in Food Contact Materials and articles - A Practical Guide to Manufacturers and Regulators (2013 1st Edition) published by European Directorate for the Quality of Medicines and HealthCare (EDQM), Chapter 3.



- Remark:
- 1) ^[a] denotes as this (these) maximum specific release limit(s) was (were) referenced from Metals and Alloys used in Food Contact Materials and articles - A Practical Guide to Manufacturers and Regulators (2013 1st Edition) published by European Directorate for the Quality of Medicines and HealthCare (EDQM), Chapter 1, Article 4, Tables 1 and 2.
 - 2) Appropriate test condition(s) was (were) selected according to Guidelines on Testing Conditions for Articles in Contact with Foodstuffs (With a Focus on Kitchenware) (2009 1st Edition) published by European Commission Joint Research Center (JRC).
 - 3) Artificial tap water was prepared according to German Standard DIN 10531: 2011-06.
 - 4) ^[b] denotes as the sum of the results of the first and second migrates should not be exceed seven times the SRL
 - 5) For article intended for repeated use, the migration tests are carried out three times on the same test sample and the third test result is shown in result table.

TEST RESULT

Materials in Contact with Foodstuffs – § 30 and 31 LFGB

For material: Polyamides

1 Sensory Test (Odour and Taste) for Materials in Contact with Foodstuffs – EC No. 1935/2004 and § 30 and 31 LFGB and BfR Recommendation

Parameter	Result	Maximum Allowable Limit
	1	
Odour	0	2.5 Scale
Taste transfer into foodstuff through simulant, Mineral Water	0	2.5 Scale
Conclusion	PASS	-

Note: Scale: 0 = no perceptible off-odour (or taste transfer);
 1 = off-odour (or taste transfer) just perceptible (but still difficult to define);
 2 = slight off-odour (or taste transfer);
 3 = distinct off-odour (or taste transfer);
 4 = strong off-odour (or taste transfer)

Method: DIN 10955: 2004-06

2 Overall Migration Test for Plastic Materials in Contact with Foodstuffs – Commission Regulation (EU) No. 10/2011 and Its Amendments

Test Condition: Distilled water: 40 °C, 10 days

Simulant Used	Unit	Result	Maximum Allowable Limit	Analytical Tolerance
		1		
Food contact surface area	dm ²	1.36	-	-
Volume of stimulant used	mL	136	-	-
Distilled water	mg/dm ²	<5	10	+2
Conclusion	-	PASS	-	-

Note: “<” = less than
 mg/dm² = milligram per square decimetre

Method: EN 1186-1: 2002.

Remark: 1) The migration test is carried out according to EC Regulation No. 10/2011 and the corresponding regulatory statutes.
 2) For article intended for repeated use, the migration tests are carried out three times on the same test sample and the third test result is shown in result table.

TEST RESULT

Materials in Contact with Foodstuffs – § 30 and 31 LFGB

For material: Polyamides

3 Phthalate Contents for Plastic Materials in Contact with Foodstuffs – Commission Regulation (EU) No. 10/2011 and Its Amendments

Parameter	Unit	Result	Maximum Allowable Limit
		1	
Butyl benzyl phthalate (BBP)	%	<0.005	0.1
Dibutyl phthalate (DBP)	%	<0.005	0.05
Di-2-ethylhexyl phthalate (DEHP)	%	<0.005	0.1
Di-iso-decyl phthalate (DIDP)	%	<0.005	0.1
Di-iso-nonyl phthalate (DINP)	%	<0.005	0.1
Conclusion	-	PASS	-

Note: “<” = less than

Method: Solvent extraction and analysis by Gas Chromatograph Mass Spectrometer (GC-MS) or Liquid Chromatograph Mass Spectrometer (LC-MS).

4 Specific Migration of Phthalates for Plastic Materials in Contact with Foodstuffs – Commission Regulation (EU) No. 10/2011 and Its Amendments

Test Condition: Distilled water: 40 °C, 10 days

Parameter	Simulant Used	Unit	Result	Maximum Allowable Limit
			1	
Food contact surface area	-	dm ²	1.36	-
Volume of stimulant used	-	mL	227	-
Butyl benzyl phthalate (BBP)	Distilled water	mg/kg	<0.3	30
Dibutyl phthalate (DBP)	Distilled water	mg/kg	<0.3	0.3
Di-2-ethylhexyl phthalate (DEHP)	Distilled water	mg/kg	<0.3	1.5
Di-iso-decyl phthalate (DIDP) and Di-iso-nonyl phthalate (DINP)	Distilled water	mg/kg	<0.6	9
Conclusion	-	-	PASS	-

Note: “<” = less than
mg/kg = milligram per kilogram

Method: EN 13130-1: 2004 and analysis by Liquid Chromatograph Mass Spectrometer (LC-MS).

Remark: 1) The migration test is carried out according to EC Regulation No. 10/2011 and the corresponding regulatory statutes.
2) For article intended for repeated use, the migration tests are carried out three times on the same test sample and the third test result is shown in result table.

TEST RESULT

Materials in Contact with Foodstuffs – § 30 and 31 LFGB

For material: Polyamides

5. Specific Migration of Heavy Metals for Plastic Materials in Contact with Foodstuffs – Commission Regulation (EU) No. 10/2011 and Its Amendments

Test Condition: Distilled water: 40 °C, 10 days

Parameter	Simulant Used	Unit	Result	Maximum Allowable Limit
			1	
Food contact surface area	-	dm ²	1.36	-
Volume of stimulant used	-	mL	227	-
Barium (Ba)	Distilled water	mg/kg	<0.1	1
Cobalt (Co)	Distilled water	mg/kg	<0.005	0.05
Copper (Cu)	Distilled water	mg/kg	<0.5	5
Iron (Fe)	Distilled water	mg/kg	<5	48
Lithium (Li)	Distilled water	mg/kg	<0.1	0.6
Manganese (Mn)	Distilled water	mg/kg	<0.1	0.6
Zinc (Zn)	Distilled water	mg/kg	<3	25
Conclusion	-	-	PASS	-

Note: “<” = less than
mg/kg = milligram per kilogram

Method: EN 13130-1: 2004 and analysis by Inductively Coupled Argon Plasma Spectrometer (ICP).

Remark: 1) The migration test is carried out according to EC Regulation No. 10/2011 and the corresponding regulatory statutes.
2) For article intended for repeated use, the migration tests are carried out three times on the same test sample and the third test result is shown in result table.

6. Peroxides Value for Plastic Materials in Contact with Foodstuffs – § 30 and 31 LFGB and BfR Recommendation

Parameter	Result	Maximum Allowable Limit
	1	
Peroxides	Absent	Absent
Conclusion	PASS	-

Method: European Pharmacopeia 5.0, Ph. Eur. Method 2.5.5.

Remark: The limit refers to BfR Recommendation X.

TEST RESULT

Materials in Contact with Foodstuffs – § 30 and 31 LFGB

For material: Polyamides

7. Specific Migration of Primary Aromatic Amines for Materials in Contact with Foodstuffs – Commission Regulation (EU) No. 10/2011 and Its Amendments

Test Condition: Distilled water: 40 °C, 10 days

Parameter	Simulant Used	Unit	Result	Maximum Allowable Limit
			1	
Food contact surface area	-	dm ²	1.36	-
Volume of stimulant used	-	mL	227	-
Primary Aromatic Amines	Distilled water	mg/kg	<0.01	0.01
Conclusion	-	-	PASS	-

Note: “<” = less than
mg/kg = milligram per kilogram

Method: EN 13130-1:2004, LC-MS/ LC-MS/MS analysis.

Remark: 1) The migration test is carried out according to EC Regulation No. 10/2011 and the corresponding regulatory statutes.
2) For plastic kitchenware made by polyamide, declaration shall be provided for every consignment of polyamide plastic kitchenware originating in or consigned from the People’s Republic of China and Hong Kong Special Administrative Region, China. Please refer to Annex I for details.

8. Specific Migration of Caprolactam for Plastic Materials in Contact with Foodstuffs – Commission Regulation (EU) No. 10/2011 and Its Amendments

Test Condition: Distilled water: 40 °C, 10 days

Parameter	Simulant Used	Unit	Result	Maximum Allowable Limit
			1	
Food contact surface area	-	dm ²	1.36	-
Volume of stimulant used	-	mL	227	-
Caprolactam	Distilled water	mg/kg	<5	15
Conclusion	-	-	PASS	-

Note: “<” = less than
mg/kg = milligram per kilogram

Method: EN 13130-1:2004 and prCEN/TS 13130-16: 2004.

Remark: 1) The migration test is carried out according to EC Regulation No. 10/2011 and the corresponding regulatory statutes.
2) For article intended for repeated use, the migration tests are carried out three times on the same test sample and the third test result is shown in result table.

ANNEX I

In accordance of Article 3 of Commission Regulation (EU) No. 284/2011 – Declaration should be provided for every consignment of polyamide and melamine plastic kitchenware originating in or consigned from the People’s Republic of China and Hong Kong Special Administrative Region, China, confirming that the consignment meets the requirements concerning the release of primary aromatic amines and formaldehyde laid down in Commission Regulation (EU) No. 10/2011 and its amendments, when polyamide and melamine plastic kitchenware shall be imported into the Member States.

The importer submits to the competent authority for each consignment a declaration accompanied with a laboratory report. And the competent authority shall indicate in the declaration, whether the goods are acceptable or not for release into free circulation.

The declaration shall be drawn up in the official language, or in one of the official languages, of the Member State in which the consignment is imported. The following is an example of declaration template.

DECLARATION OF CONFORMITY

Natural/ Legal person issuing this declaration:

<Contact Person>
<Company Name>
<Address>

Business operator(s) which manufacture(s) the plastic kitchenware of the consignment:

E-mail: <Email Address>
Tel. No.: <Tel. No.>
<Contact Person>
<Company Name>
<Address>

Business operator which is responsible for the first introduction in the Union of the consignment:

E-mail: <Email Address>
Tel. No.: <Tel. No.>
<Contact Person>
<Company Name>
<Address>

Identification code of the consignment:

<Identification Code>

Type of articles in the consignment:

<Type of Article>

Number of articles in the consignment:

<No. of Article>

Place of Testing:

<BV Location Name, Address, and Tel. No.>

Reference No.:

<BV Report No.>

Date of Testing:

The following requirements were tested for the article(s) in the consignment, and the attached testing report(s) showing that the consignment meets the requirements concerning the release of primary aromatic amines and/ or formaldehyde laid down in Commission Regulation (EU) No. 10/2011 and its amendments.

<Delete if inappropriate>

- Polyami - Analytical tests have been carried out demonstrating that the articles do not release
de primary aromatic amines in a quantity exceeding 0.01 mg/kg food simulants.
- Melami - Analytical tests have been carried out demonstrating that the articles do not release
ne formaldehyde in a quantity exceeding the SML of 15 mg/kg.

Importer:

<Place and Date>

<Name of Signatory>

<Signature>

E-mail: <Email Address>

Tel. No.: <Tel. No.>

**Declaration of the competent authority on
the consignment:**

Acceptable for release into free circulation:

Conforms

Does not conform

Place and date:

Name of Signatory:

Signature:

Full address:

E-mail:

Tel. No.:

END