

Test Report No.: 244504508a2 001

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Client: Zhejiang Carote Ind&Trd Co., Ltd.
Shangbai Road 666, Baiyun Industrial Zone, Mazhulin Village, Jiangnan Street,
Yongkang City, 321300 Zhejiang P.R. China

Test item(s): Cosy Series

Identification / Model No(s): n.a.

Sample obtaining method: Sending by customer

Condition at delivery: Test item complete and undamaged.

Sample Receiving date: 2023-03-30

Testing Period: 2023-03-30 to 2023-04-07

Place of testing: Chemical laboratory Shanghai

Test specification:

Performed parameter(s) for the compliance with the following regulations concerning materials in contact with foodstuff:

- German §31 LFGB (Lebensmittel-, Bedarfsgegenstände- und Futtermittelgesetzbuch)

Other Information:

Not available

Test conclusion:

PASS

Sample Photo

(For detailed sample picture please refer to last page)

For and on behalf of TÜV Rheinland (Shanghai) Co., Ltd.



2023-04-25

Freya Zhang/ Project Engineer

Date

Name / Position



Sample information is provided by customer. Test result is drawn according to the kind and extent of tests performed.

This test report relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.

"Decision Rule" document announced in our website (<https://www.tuv.com/landingpage/en/qm-gcn/>) describes the statement of conformity and its rule of enforcement for test results are applicable throughout this test report.

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Indication: Food contact
Product: Commodity, contact with foodstuff
§ 2 (6) No. 1, German Food, Commodities and Animal Feed Code of Law (LFGB)

Description of test specimen

Item

1 Cosy Series

1 Material List:

Sample No.	Material	Color	Location
1	Whole Product	Multi	Pot with lid
1A	Coating, PTFE coating	Grey	Internal coating

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2 Overall Results:

Test No.	Tested Item	Conclusion
1	Sensorial examination	PASS
2	Global Migration from Coating	PASS
3	Specific Release of Metals	PASS
4	Specific Migration of Primary Aromatic Amines	PASS
5	Specific Migration of Formaldehyde	PASS
6	Specific Migration of Organic Nitrogen	PASS
7	Specific Migration of Bisphenol A	PASS
8	Specific Migration of Polycyclic Aromatic Hydrocarbons (PAHs)	PASS
9	Colourfastness	PASS
10	Specific Migration of Perfluoroalkenyl-Oxybenzene Sulfonic Acid (PFOS) from PTFE coating	PASS

3 Results

3.1 Sensorial examination

Test method: It is examined to the extent of food simulant being used, which comes into contact with the product, undergoes detectable changes in taste and smell.

For this purpose, the food simulant was stored in the product under the below mentioned time and temperature. Afterwards, the food simulant was examined by an appropriate number of tasters with regard to any divergence in smell and taste. Another test sample, which was used as a reference, was treated by the same way except that it had no contact with the product to be tested.

Before testing, the product had been cleaned according to the product's instruction manual or in the absence of such manual, by normal household cleaning.

The test is carried out on the basis of DIN 10955:2004 by paired comparison test:

Evaluation scheme:

- 0 = No discernible deviation
- 1 = Barely discernible deviation
- 2 = Weak deviation
- 3 = Clear deviation
- 4 = Strong deviation

Limit: 3 (failed)

The following food simulants and conditions were applied:

Food simulant	Test duration / Temperature
Water	2 hour(s) / 100 °C

Test No.:	1
Sample No.:	1
Parameter:	Result
Transfer of Smell:	0
Transfer of Taste:	1

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3.2 Global Migration from Coating

Test method: The migratory behaviour is examined with reference to Chapter V, Article 18 of Commission regulation 10/2011 and its amendments. Deviating to the regulations the following tests were performed as orientating single tests.

Limit: With reference to Commission Regulation (EU) No 10/2011 and amendments

The following food simulants and conditions were applied:

Food simulant	Test duration / Temperature
Acetic acid 3 %	4 hour(s) / 100 °C
Ethanol 95 %	6 hour(s) / 60 °C
Isooctane	4 hour(s) / 60 °C

Results 3rd Migration:

Test No.:	1		
Sample No.:	1A		
Parameter	Unit	Result	Limit
Acetic acid 3 %	mg/dm ²	<2	10
Ethanol 95 %	mg/dm ²	<2	10
Isooctane	mg/dm ²	<2	10

Abbreviations:

mg/dm² = Milligram per square decimetre

< = Less than

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3.3 Specific Release of Metals

Test method: The sample preparation is performed with reference to “*Technical Guide on Metals and alloys used in food contact materials*”. The migratory behaviour is examined with reference to Chapter V, Article 18 of Commission regulation 10/2011 and its amendments. Presence of elements were detected by means of ICP-MS.

Limit: Technical Guide on Metals and alloys used in food contact materials

The following food simulant and condition was applied:

Food simulant	Test duration / Temperature
Citric Acid 0.5 %	2 hour(s) / 100 °C

Test No.:	1					
Sample No.:	1					
Volume to surface area ratio	1333 ml					
	Sum 1 st + 2 nd test				3 rd test	
Parameter	Unit	RL	Result	Limits ⁽²⁾	Result	Limits ⁽¹⁾
Silver (Ag)	mg/kg	0.05	<RL	0.56	<RL	0.08
Aluminum (Al)	mg/kg	0.1	<RL	35	<RL	5
Cobalt (Co)	mg/kg	0.01	<RL	0.14	<RL	0.02
Chromium (Cr)	mg/kg	0.01	<RL	1.75	<RL	0.25
Copper (Cu)	mg/kg	0.5	<RL	28	<RL	4
Iron (Fe)	mg/kg	5	<RL	280	<RL	40
Manganese (Mn)	mg/kg	0.1	<RL	12.6	<RL	1.8
Molybdenum (Mo)	mg/kg	0.02	<RL	0.84	<RL	0.12
Nickel (Ni)	mg/kg	0.01	<RL	0.98	<RL	0.14
Tin (Sn)	mg/kg	10	<RL	700	<RL	100
Vanadium (V)	mg/kg	0.01	<RL	0.07	<RL	0.01
Zinc (Zn)	mg/kg	1	<RL	35	<RL	5
Arsenic (As)	mg/kg	0.002	<RL	0.014	<RL	0.002
Barium (Ba)	mg/kg	0.1	<RL	8.4	<RL	1.2
Beryllium (Be)	mg/kg	0.01	<RL	0.07	<RL	0.01
Cadmium (Cd)	mg/kg	0.002	<RL	0.035	<RL	0.005
Mercury (Hg)	mg/kg	0.003	<RL	0.021	<RL	0.003
Lithium (Li)	mg/kg	0.02	<RL	0.336	<RL	0.048
Lead (Pb)	mg/kg	0.01	<RL	0.07	<RL	0.01
Antimony (Sb)	mg/kg	0.01	<RL	0.28	<RL	0.04
Thallium (Tl)	mg/kg	0.0001	<RL	0.0007	<RL	0.0001

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Abbreviations:

- RL = Reporting Limit
- mg/kg = Milligram per kilogram
- < = Less than

Remark:

- *1 Compliance is established on the findings on the third test for products intended for repeated use.
- *2 In addition, the sum of each metal in the first and second test should not exceed the sevenfold limit.

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3.4 Specific Migration of Primary Aromatic Amines

Test method: The migratory behaviour was examined with reference to Commission Regulation (EU) No 10/2011 and its amendments. Determination by LC-MS/MS.

Limit: With reference to Commission Regulation (EU) No 10/2011 and its amendments

The following food simulant and condition were applied:

Food simulant	Test duration / Temperature
Acetic acid 3 %	2 hour(s) / 100 °C

Test No.:		1			
Material No.:		1A			
Migration ratio:		1000 ml / 4.4 dm ²			
Parameter	CAS no.	Unit	RL	Result	Limit
2,4-Diaminoanisole	615-05-4	mg/kg	0.002	n.d.	n.d.
2,4-toluenediamine	95-80-7	mg/kg	0.002	n.d.	n.d.
4,4'-oxydianiline	101-80-4	mg/kg	0.002	n.d.	n.d.
Benzidine	92-87-5	mg/kg	0.002	n.d.	n.d.
4,4'-methylenedianiline	101-77-9	mg/kg	0.002	n.d.	n.d.
o-anisidine	90-04-0	mg/kg	0.002	n.d.	n.d.
o-Toluidine	95-53-4	mg/kg	0.002	n.d.	n.d.
4,4'-bi-o-toluidine	119-93-7	mg/kg	0.002	n.d.	n.d.
3,3'-Dimethoxybenzidine	119-90-4	mg/kg	0.002	n.d.	n.d.
4-chloroaniline	106-47-8	mg/kg	0.002	n.d.	n.d.
p-cresidine	120-71-8	mg/kg	0.002	n.d.	n.d.
4-chloro-o-toluidine	95-69-2	mg/kg	0.002	n.d.	n.d.
4-aminobiphenyl	92-67-1	mg/kg	0.002	n.d.	n.d.
4,4'-Methylene-di-o-toluidine	838-88-0	mg/kg	0.002	n.d.	n.d.
4,4'-thiodianiline	139-65-1	mg/kg	0.002	n.d.	n.d.
2-Naphthylamine	91-59-8	mg/kg	0.002	n.d.	n.d.
3,3'-Dichlorobenzidine	91-94-1	mg/kg	0.002	n.d.	n.d.
4,4'-methylene-bis-(2-chloro-aniline)	101-14-4	mg/kg	0.002	n.d.	n.d.
4-aminoazobenzene	60-09-3	mg/kg	0.002	n.d.	n.d.
o-aminoazotoluene	97-56-3	mg/kg	0.002	n.d.	n.d.
2,4,5-Trimethylaniline	137-17-7	mg/kg	0.002	n.d.	n.d.
2-Methyl-5-nitroaniline	99-55-8	mg/kg	0.002	n.d.	n.d.
m-phenylenediamine	108-45-2	mg/kg	0.002	n.d.	n.d.

Benzoguanamine	91-76-9	mg/kg	0.01	n.d.	5
4,4'-Methylenebis-(3-chloro-2,6-diethylaniline)	106246-33-7	mg/kg	0.01	n.d.	0.05
PAAs not listed in entry 43 to Appendix 8 of Annex XVII to Regulation (EC) No 1907/2006 and its amendments					
p-toluidine	106-49-0	mg/kg	0.01	n.d.	-
p-phenylenediamine	106-50-3	mg/kg	0.01	n.d.	-
2-Methyl-4-nitroaniline	99-52-5	mg/kg	0.01	n.d.	-
o-phenylenediamine	95-54-5	mg/kg	0.01	n.d.	-
1,5-naphthylenediamine	2243-62-1	mg/kg	0.01	n.d.	-
Aniline	62-53-3	mg/kg	0.01	n.d.	-
2,4-Dimethylaniline	95-68-1	mg/kg	0.01	n.d.	-
2,6-Dimethylaniline	87-62-7	mg/kg	0.01	n.d.	-
5-Chloro-2-methylaniline	95-79-4	mg/kg	0.01	n.d.	-
2,6-toluenediamine	823-40-5	mg/kg	0.01	n.d.	-
5-Amino-6-methyl-1,3-dihydro-2H-benzimidazol-2-one	67014-36-2	mg/kg	0.01	n.d.	-
4-aminobenzamide	2835-68-9	mg/kg	0.01	n.d.	-
3-Amino-4-methylbenzamide	19406-86-1	mg/kg	0.01	n.d.	-
m-Anisidine	536-90-3	mg/kg	0.01	n.d.	-
m-toluidine	108-44-1	mg/kg	0.01	n.d.	-
4-Ethoxyaniline	156-43-4	mg/kg	0.01	n.d.	-
2-ethoxyaniline	94-70-2	mg/kg	0.01	n.d.	-
4-Chloro-3-methoxyaniline	13726-14-2	mg/kg	0.01	n.d.	-
1,3-Diiminoisoindoline	3468-11-9	mg/kg	0.01	n.d.	-
3-Amino-4-methoxybenzanilide	120-35-4	mg/kg	0.01	n.d.	-
2,4,5-Trichloroaniline	636-30-6	mg/kg	0.01	n.d.	-
4-chloro-2,5-dimethoxyaniline	6358-64-1	mg/kg	0.01	n.d.	-
2-Methoxy-4-nitroaniline	97-52-9	mg/kg	0.01	n.d.	-
5-Chloro-2-methoxyaniline	95-03-4	mg/kg	0.01	n.d.	-
3-Chloroaniline	108-42-9	mg/kg	0.01	n.d.	-
2-Chloroaniline	95-51-2	mg/kg	0.01	n.d.	-
Dimethyl-2-aminoterephthalate	5372-81-6	mg/kg	0.01	n.d.	-
Biphenyl-2-ylamine	90-41-5	mg/kg	0.01	n.d.	-
2,5-Dichloroaniline	95-82-9	mg/kg	0.01	n.d.	-
2-Nitroaniline	88-74-4	mg/kg	0.01	n.d.	-
4-Aminotoluene-3-sulfonic acid	88-44-8	mg/kg	0.01	n.d.	-
2-Aminonaphthalene-1-sulfonic acid	81-16-3	mg/kg	0.01	n.d.	-

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2,4-Dinitroaniline	97-02-9	mg/kg	0.01	n.d.	-
2-Chloro-4-nitroaniline	121-87-9	mg/kg	0.01	n.d.	-
Sum of Primary Aromatic Amines*1	-	mg/kg	0.01	n.d.	n.d.

Abbreviations:

RL = Reporting Limit

n.d. = Not detected

mg/kg = Milligram per kilogramm

ml/dm² = Millilitre per square decimetre

< = Less than

Remark:

- *1 Sum of Primary Aromatic Amines does not include the value of Benzoguanamine and 4,4'-Methylenebis-(3-chloro-2,6-diethylaniline) as the SML of both substances should refer to EU 10/2011 Union list.

Single components with an amount of less than reporting limit were not considered by the calculation of the sum. In the case of all of Primary Aromatic Amines were not detected, the result is stated n.d.

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3.5 Specific Migration of Formaldehyde

Test method: The migratory behaviour was examined with reference Commission Regulation (EU) No. 10/2011 and its amendments. Determination with ref. to CEN/TS 13130-23:2005.

Limit: BfR Recommendations on Food Contact Materials, Part LI, Temperature Resistant Polymer Coating Systems for Frying, Cooking and Baking Utensils

The following food simulant and condition was applied:

Food simulant	Test duration / Temperature
Acetic acid 3 %	2 hour(s) / 100 °C

Test No.:	1				
Sample No.:	1A				
Parameter	CAS No.	Unit	RL	Result	Limit
Formaldehyde	50-00-0	mg/kg	3	< RL	15

Abbreviations:

mg/kg = Milligram per kilogram

< = Less than

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3.6 Specific Migration of Organic Nitrogen

Test method: The migratory behaviour was examined with reference to Commission Regulation (EU) No. 10/2011 and its amendments. Determination with ref. to DIN EN 25663.

Limit: BfR Recommendations on Food Contact Materials , Part LI, Temperature Resistant Polymer Coating Systems for Frying, Cooking and Baking Utensils

The following food simulant and condition were applied:

Food simulant	Test duration / Temperature
Acetic acid 3 %	2 hour(s) / 100 °C

Test No.:	1			
Sample No.:	1A			
Migration ratio:	1000 ml / 4.4 dm ²			
Parameter	Unit	RL	Result	Limit
Organic Nitrogen	mg/dm ²	0.02	< RL	0.02

Abbreviations:

RL = Reporting Limit

mg/dm² = Milligram per square decimetre

< = Less than

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3.7 Specific Migration of Bisphenol A

Test method: The sample preparation is performed with reference to EN 13130-1:2004. The migratory behaviour is examined with reference to Chapter V, Article 18 of Commission regulation 10/2011 and its amendments. Presence of Bisphenol A was detected with reference to CEN/TS 13130-13: 2005.

Limit: With reference to Commission Regulation (EU) No 10/2011 and amendments

The following food simulant and condition was applied:

Food simulant	Test duration / Temperature
Ethanol 95 %	6 hour(s) / 60 °C

Test No.:	1			
Sample No.:	1A			
Parameter	CAS No.	Unit	Result	Limit
Bisphenol A	80-05-7	mg/kg	< 0.01	0.05

Abbreviations:

mg/kg = Milligram per kilogram

< = Less than

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3.8 Specific Migration of Polycyclic Aromatic Hydrocarbons (PAHs)

Test method: The sample preparation is performed with reference to EN 13130-1:2004. The migratory behaviour is examined with reference to Chapter V, Article 18 of Commission Regulation 10/2011 and its amendments. Presence of PAHs is detected by means of GC-MS.

Limit: Please refer to remark 1

The following food simulant and condition was applied:

Food simulant	Test duration / Temperature
Isooctane	4 hour(s) / 60 °C

Test No.:	1			
Material No.:	1A			
Migration ratio	300 ml / 2.8 dm ²			
Parameter	CAS No.	Unit	Result	Limit
Benzo[a]pyrene (BaP)	50-32-8	mg/kg	n.d.	-
Benzo[e]pyrene	192-97-2	mg/kg	n.d.	-
Benzo[a]anthracene	56-55-3	mg/kg	n.d.	-
Benzo[b]fluoranthene	205-99-2	mg/kg	n.d.	-
Benzo[j]fluoranthene	205-82-3	mg/kg	n.d.	-
Benzo[k]fluoranthene	207-08-9	mg/kg	n.d.	-
Chrysene	218-01-9	mg/kg	n.d.	-
Dibenzo[a,h]anthracene	53-70-3	mg/kg	n.d.	-
Benzo[g,h,i]perylene	191-24-2	mg/kg	n.d.	-
Indeno[1,2,3-c,d]pyrene	193-39-5	mg/kg	n.d.	-
Naphthalene	91-20-3	mg/kg	n.d.	-
Anthracene	120-12-7	mg/kg	n.d.	-
Fluoranthene	206-44-0	mg/kg	n.d.	-
Phenanthrene	85-01-8	mg/kg	n.d.	-
Pyrene	129-00-0	mg/kg	n.d.	-
Sum of 15 PAHs	NA	mg/kg	n.d.	n.d. (<0.01)

Abbreviations:

NA = Not Applicable

mg/kg = Milligram per kilogram

n.d. = Not detected

< = Less than

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Remark:

- *1 According to EU No. 1935/2004 materials and articles shall be manufactured in compliance to good manufacturing practice so that under normal and foreseeable conditions of use they do not transfer their constituents to food in quantities which could endanger human health or bring about an unacceptable change in the composition of the food. A migration of < 0.01 mg/kg per PAH is regarded as good manufacturing practice in this context.

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3.9 Colourfastness

Test method: 24th Communication on the testing of plastics in Bundesgesundheitsbl. 15 (1972) 285

Requirement: BfR Recommendations on Food Contact Materials (formerly "Plastics Recommendations") Part IX "Colorants for Plastics and other Polymers used in Commodities" - *No transfer of colorants to foodstuffs is permitted*

Test No.:	1
Sample No.:	1A
Parameter - Colourfastness to	Difference between blank and filter paper contacted with sample
Water	No
Acetic acid 3 %	No
Ethanol 50 %	No
Oil	No

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3.10 Specific Migration of Perfluoroalkenyl-Oxybenzene Sulfonic Acid (PFOS) from PTFE coating

Test method: The sample preparation is performed with reference to EN 13130-1:2004. The migratory behaviour is examined with reference to Chapter V, Article 18 of Commission Regulation 10/2011 and its amendments. Presence of PFOS is detected by means of LC-MS/MS.

Limit: BfR Recommendations on Food Contact Materials (formerly “Plastics Recommendations”), Part LI „Temperature Resistant Polymer Coating Systems for Frying, Cooking and Baking Utensils”

The following food simulant and condition was applied:

Food simulant	Test duration / Temperature
Ethanol 95 %	6 hour(s) / 60 °C

Test No.:	1		
Sample No.:	1A		
Parameter	Unit	Result	Limit
Perfluoroalkenyl-Oxybenzene Sulfonic Acid (PFOS)	µg/dm ²	< 5	5

Abbreviations:

µg /dm² = Microgram per square decimeter

< = Less than

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4 Sample picture(s):



Sample 1

* According to client's information, untested samples are made of the same material as tested one.



- END -

