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Cologne, 09.04.2019

Report No. 0003287451/30 AZ 337537 / 0003299045/30 AZ348943

Test item:	Organic coating at ceramic plates
Identification:	Ceramic plates
Condition at delivery:	No claim, Test item without sales packaging
Date of delivery:	20.03.2019, 18.07.2019
Place of testing:	Cologne
Test period:	28.03.2019 to 09.04.2019 31.07.2019 to 08.08.2019
Test scope:	Parameters selected by customer
Test specification:	§ 31 LFGB (German Lebensmittel-, Bedarfsgegenstände- und Futtermittelgesetzbuch)
Test result:	Pass - According to the kind and extent of tests performed the test item meets the test specification.

Cologne, 09.04.2019

X

Sachverständige(r)/Expert
Signiert von: Mark Hofmann

X

Sachverständige(r)/Expert
Signiert von: Klaus Kaiser

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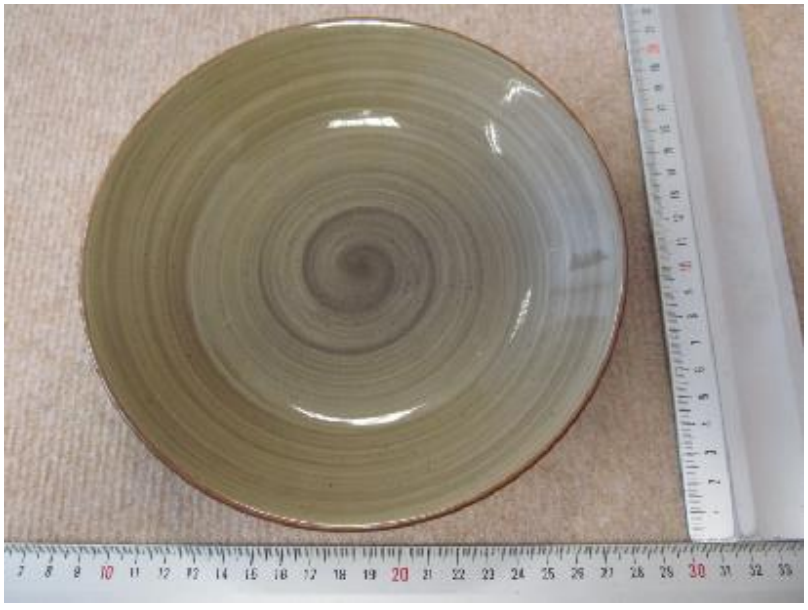
1. Photo documentation

Picture 1: Organic coating at ceramic plates, Coating: Nasiol ZR 53

Picture 2: Organic coating at ceramic plates , Coating: Nasiol ZR 53



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2. List of materials

Matl.No.	Article	Article name
337537-1	1	Ceramic plates ZR 53, delivery date 20.03.2019

Mat.No.	Article	Component	Material	Colour
001	1	coating	varnish	transparent

Matl.No.	Article	Article name
348943-1	1	Coating: Nasiol ZR 53, delivery date 18.07.2019

Mat.No.	Article	Component	Material	Colour
001	1	coating	varnish	transparent

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3. Results

Sensory analysis

Sample No.	**337537-001**		
Sample composition	**Mat. 001**		
Unit	.		
Organoleptic test			
Contact medium	H2O		
Test conditions	2 h, 70°C		
Migration preparation	2,84dm²/420ml		
Smell transfer	0		
Transfer of taste	0		

H2O water

If the evaluation is between 0 to 2.5 no sensory deviation is indicated and the sample fulfils the requirements of § 31 LFGB respectively article 3 of the regulation (EC) 1935/2004 (61. Mitteilung Bundesgesundheitsbl. - Gesundheitsforsch - Gesundheitsschutz 46 (2003) 363).
Evaluation scheme:
0 = no perceptible difference
1 = just perceptible difference (still difficult to define)
2 = slight difference
3 = marked difference
4 = strong difference

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Migration of heavy metals, plastic

Sample No.	**337537-002**		
Sample composition	**Mat. 001**		
Unit	mg/kg food simulant		
Soluble heavy metals			
Migration solution	3 % HAC		
Conditions of migration	2 h, 70°C		
Migration preparation	2,84dm²/420ml		
Barium	<0,3		
Cobalt	<0,01		
Copper	<1		
Iron	<5		
Lithium	<0,1		
Manganese	<0,05		
Zinc	<1		
Aluminium	<0,2		
Nickel	<0,01		

Limit value for products in contact with foodstuffs according to the German Commodity Goods Ordinance respectively Regulation (EU) No 10/2011, DM/4B/COM/003 and if applicable amendments:
Plastic materials and articles shall not release the following substances in quantities exceeding the specific migration limits below:
Aluminium = 1 mg/kg Lebensmittel oder Lebensmittelsimulanz.
Barium = 1 mg/kg food or food simulant,
Cobalt = 0,05 mg/kg food or food simulant,
Copper = 5 mg/kg food or food simulant,
Iron = 48 mg/kg food or food simulant,
Lithium = 0,6 mg/kg food or food simulant,
Manganese = 0,6 mg/kg food or food simulant,
Zinc = 5 mg/kg food or food simulant.
Additional valid limit values, applicable starting 19. May 2019, for products in contact with foodstuffs according commission (EU) 2017/752 of 28 April 2017 amending and correcting Regulation (EU) No 10/2011 on plastic materials and articles intended to come into contact with food:
Nickel = 0,02 mg/kg food or food simulant.
Limits for colored products in contact with foodstuffs according French DM/4B/COM/003 and if applicable amendments:
Colored plastic materials and articles shall not release the following substances in quantities exceeding the specific migration limits below:
Barium = 1 mg/kg food or food simulant,
Lead = 0,07 mg/kg food or food simulant,
Nickel = 1 mg/kg food or food simulant.
If not further specified the 1st migrate is reported.

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GC-MS Screening, migration (Organic substances)

Sample No.			
Sample composition	**CAS Nr.**	348943_001	**Calculated result based on 6dm²/1kg food sim.***
Unit		µg/kg	mg/kg food simulant
Migration solution		348943_001	348943_001
Conditions of migration		2h, 70°C	2h, 70°C
Migration preparation		0,38dm²/1,52g	6dm²/1kg
aliphatic hydrocarbons			
n-octane	111-65-9	12	<0,005
nonane	111-84-2	11	<0,005
aldehydes and ketones			
2-butanone(VVOC)	78-93-3	20	<0,005
hexanal	66-25-1	25	<0,005
benzaldehyde	100-52-7	66	<0,005
octanal	124-13-0	17	<0,005
nonanal	124-19-6	250	<0,01
acetophenone	98-86-2	43	<0,005
n-decanal	112-31-2	62	<0,005
esters and ethers			
methyl palmitate(SVOC)	112-39-0	17	<0,005
organic acids			
acetic acid	64-19-7	190	<0,005
siloxanes			
hexamethylcyclotrisiloxane	541-05-9	10	<0,005

MPPO Poly(2,6-diphenyl-p-phenylene oxide)

Limit value for products in contact with foodstuffs according to the German Commodity Goods Ordinance respectively
Regulation (EU) No 10/2011 and if applicable amendments: SML not detectable (detection limit 0.01 mg/kg food simulant)
If not further specified the 1st migrate is reported.

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Hydrocarbons, migration

Sample No.	**337537-003**		
Sample composition	**Mat. 001**		
Unit	mg/kg food simulant		
Migration solution	MPPO		
Conditions of migration	2 h, 70°C		
Migration preparation	0,93dm²/3,73g		
Mineral oil saturated hydrocarb. (MOSH C16-C20)	<0,5		
Mineral oil saturated hydrocarb. (MOSH C20-C35)	<0,5		
Mineral oil aromatic hydrocarb. (MOAH C16-C35)	<0,5		

Maximum amounts according to the 3rd draft of the German Mineral oil Regulation issue 24.07.2014:
MOSH (C20-C35) 2 mg/kg foodstuff
MOAH (C16-C35) 0,5 mg/kg foodstuff
According to the recommendation of the BfR part XXXVI the transfer for parts of solvents with a chain length from C16 to C20 from the final product (in)to the foodstuff may not exceed 4 mg/kg foodstuff (preliminary limit).
If not further specified the 1st migrate is reported.

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4. Summary of methods

Sensory analysis	**Standard: DIN 10955**	**Issue date: 01.06.04**

Method description: Sensory analysis -Testing of container materials and containers for food products (Commodities), test accorduing to: clause 11.6.3 letter c)

Migration of heavy metals, plastic	**Standard: MS-0022823***	**Issue date: 21.01.19**

Method description: Determination of metals in plastic after migration under specified conditions according to Regulation 10/2011 (EC) under consideration of all effective transitional rules. Quantification by ICP-OES according to DIN EN ISO 11885 respectively ICP-MS according to DIN EN ISO 17294-2
Notes: * in-house working instruction

GC-MS Screening, migration	**Standard: MS-0024709***	**Issue date: 06.03.19**

Method description: In house method - Analytic by GC-MS analytic after migration with specified terms. Results are calculated on basis of deuterated aliphatic standards.
Notes: * in-house working instruction

Hydrocarbons, migration		

Method description: Determination of hydrocarbons after migration under specified conditions according to: BfR-method - Determination of hydrocarbons from mineral oil (MOSH and MOAH) or plastics (POSH and PAO) in packaging materials and dry foodstuffs by solid phase extraction and GC-FID respectively MSD

----End of report----