Produkte
Products

TÜVRheinland®

Prüfbericht - Nr.: *Test Report No.:*	**0114073318i2 001**	**Seite 1 von 5** *Page 1 of 5*
Auftraggeber: *Client:*	FORMOSA PLASTICS CORPORATION Formosa Industrial Complex No. 1, Mailiao, Yunlin 638, Taiwan, R.O.C.	
Gegenstand der Prüfung: *Test Item:*	1 plastic, translucence	
Bezeichnung: *Identification:*	台塑烯 LLDPE 射出級聚合物 / Taisox LLDPE Injection Grade Polymer / 3470, 3490, 3830U, 3840, 3840U, 3440, 3450, 3460	
Anlieferungszustand: *Delivery condition:*	apparent good	**Eingangsdatum:** *Date of Receipt:* 2018-01-12
Prüfort: *Testing location:*	TÜV Rheinland Hong Kong Ltd.	
Prüfgrundlage: *Test specification:*	Testing according to customers specification for the following parameters: Global migration, Specific migration of metals, Specific migration of primary aromatic amines	
Prüfergebnis: *Test result:*	The test results are the measurements, stated in the test report.	

geprüft: *tested by:*			**kontrolliert:** *checked by:*		
2018-02-01	Anne Chen /Coordinator		2018-01-01	Carl Chang /Department Manager	
Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*	**Datum** *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*

Sonstiges/ *Other Aspects:*

Test period: 2018-01-12 – 2018-02-01
The test sample is model no. 3470.
Model no. 3470 and others are same material as client's declaration dated on 2017-12-22.

Abkürzungen:				*Abbreviations:*			
	ok / P	=	*entspricht Prüfgrundlage*		*ok / P*	=	*passed*
	fail / F	=	*entspricht nicht Prüfgrundlage*		*fail / F*	=	*failed*
	n.a. / N	=	*nicht anwendbar*		*n.a. / N*	=	*not applicable*

Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.

This test report relates to the a. m. 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.

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TÜV Rheinland Taiwan Ltd. TÜVRheinland Chemical Laboratory

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Customer : FORMOSA PLASTICS CORPORATION

1. Specific Migration of metals, Metal-release from Plastic

Test method: The migratory behaviour is examined with reference to Chapter V, Article 18 of Commission Regulation 10/2011 and its amendments. The determination of amounts of metals that were released is done via ICP-OES with reference to ISO 11885:2007.

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

The following food simulant and condition was applied per client's request:

Food simulant	Test duration / Temperature
Acetic acid 3 %	10 day(s) / 40 °C

Sample	台塑烯 LLDPE 射出級聚合物 / Taisox LLDPE Injection Grade Polymer		
Material	plastic/translucence		
Lab.-No.	TCL180112-09		
Parameter	**Unit**	**Result**	**Limit**
Barium, Ba	mg/kg	<0.1	1
Cobalt, Co	mg/kg	<0.01	0.05
Copper, Cu	mg/kg	<0.1	5
Iron, Fe	mg/kg	<1	48
Lithium, Li	mg/kg	<0.1	0.6
Manganese, Mn	mg/kg	<0.1	0.6
Zinc, Zn	mg/kg	<1	5 *1
Aluminium, Al	mg/kg	<0.1	1 *2
Nickel, Ni	mg/kg	<0.01	0.02*3

Abbreviations: mg/kg = Milligram per kilogram
< = Less than

Remark

*1 The migration limit of 5 mg/kg shall be applied from 14 September 2018 according to Commission Regulation (EU) 2016/1416. The migration limit of 25 mg/kg is still accepted and considered as pass.

*2 The migration limit for Aluminium of 1 mg/kg shall be applied from 14 September 2018 according to Commission Regulation (EU) 2016/1416. During the transitional period, Aluminium release is not considered for compliance evaluation.

*3 The migration limit for Nickel of 0.02 mg/kg shall be applied from 19 May 2019 according to Commission Regulation (EU) 2017/752. During the transitional period, Nickel release is not considered for compliance evaluation.

*4 The examined item does meet the requirement

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2. Global Migration

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: Commission Regulation (EU) No 10/2011 and its amendments

The following food simulant and condition was applied per client's request:

Food simulant	Test duration / Temperature
Acetic acid 3 %	10 day(s) / 40 °C
Ethanol 95 %	10 day(s) / 40 °C
Isooctane	2 day(s) / 20 °C

Sample	台塑烯LLDPE射出級聚合物 / Taisox LLDPE Injection Grade Polymer		
Material	plastic/translucence		
Lab.-No.	TCL180112-09		
Parameter	**Unit**	**Result**	**Limit**
Acetic acid 3 %	mg/dm^2	<10	10
Ethanol 95 %	mg/dm^2	<10*	10
Isooctane	mg/dm^2	<10*	10

* Colorless grease was found after testing.

Abbreviations: mg/dm^2 = Milligram per square decimetre
< = Less than

The examined item does meet the requirement

3. Specific Migration of Primary Aromatic Amines from Plastic

Test method: The migratory behaviour is examined with reference to Chapter V, Article 18 of Commission Regulation 10/2011 and its amendments. Presence of Primary Aromatic Amines is detected by means of LC-MS/MS.

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

The following food simulant and condition was applied per client's request:

Food simulant	Test duration / Temperature
Acetic acid 3 %	10 days / 40°C

Sample	台塑烯 LLDPE 射出級聚合物 / Taisox LLDPE Injection Grade Polymer		
Material	plastic/translucence		
Lab.-No.	TCL180112-09		
Parameter	**Unit**	**Result**	**Limit**
Primary Aromatic Amines	mg/kg	n.d.	n.d. (<0.01)

Abbreviations: mg/kg = milligram per kilogramm
< = Less than
n.d. = Not detected (< Reporting Limit)

Remark:
*1 All primary aromatic amines as comprised in table 1 are considered within the screening.
*2 The examined item does meet the requirement.

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Table 1: Screening List of Primary Aromatic Amines

Parameter	CAS no.	Parameter	CAS no.
2,4,5-Trimethylaniline	137-17-7	2,4-Dimethylaniline	95-68-1
2,4-Diaminoanisole	615-05-4	2-ethoxyaniline	94-70-2
2-Naphthylamine	91-59-8	3-Amino-4-methoxybenzanilide	120-35-4
3,3'-Dichlorobenzidine	91-94-1	3-Amino-4-methylbenzamide	19406-86-1
4,4'-methylene-bis-(2-chloro-aniline)	101-14-4	4,4'-Methylenebis-(3-cholor-2,6-diethylaniline)	106246-33-7
4,4'-methylenedianiline	101-77-9	4-aminobenzamide	2835-68-9
4,4'-oxydianiline	101-80-4	4-chloro-2,5-dimethoxyaniline	6358-64-1
4,4'-thiodianiline	139-65-1	4-Ethoxyaniline	156-43-4
4-aminoazobenzene	60-09-3	Benzoguanamine	91-76-9
4-aminobiphenyl	92-67-1	Dimethyl-2-aminoterephthalate	5372-81-6
4-chloro-o-toluidine	95-69-2	2-Chloroaniline	95-51-2
o-anisidine	90-04-0	5-Chloro-2-methoxyaniline	95-03-4
Benzidine	92-87-5	2-Nitroaniline	88-74-4
4-chloroaniline	106-47-8	1,3-Diiminoisoindoline	3468-11-9
o-aminoazotoluene	97-56-3	2-Chloro-4-nitroaniline	121-87-9
p-cresidine	120-71-8	2-Methoxy-4-nitroaniline	97-52-9
4,4'-bi-o-toluidine	119-93-7	4-Chloro-3-methoxyaniline	13726-14-2
2,4-toluenediamine	95-80-7	5-Amino-6-methyl-1,3-dihydro-2H-benzimidazol-2-one	67014-36-2
o-Toluidine	95-53-4	2-Aminonaphthalene-1-sulfonic acid	81-16-3
3,3'-Dimethoxybenzidine	119-90-4	4-Aminotoluene-3-sulfonic acid	88-44-8
4,4'-Methylene-di-o-toluidine	838-88-0	2,5-Dichloroaniline	95-82-9
m-Anisidine	536-90-3	2,4,5-Trichloroaniline	636-30-6
3-Chloroaniline	108-42-9	2,4-Dinitroaniline	97-02-09
o-phenylenediamine	95-54-5	Biphenyl-2-ylamine	90-41-5
p-phenylenediamine	106-50-3	2-Methyl-4-nitroaniline	99-52-5
m-phenylenediamine	108-45-2	1,5-naphthylenediamine	2243-62-1
2,6-toluenediamine	823-40-5	2,6-Dimethylaniline	87-62-7
p-toluidine	106-49-0	2-Methyl-5-nitroaniline	99-55-8
m-toluidine	108-44-1	5-Chloro-2-methylaniline	95-79-4
		Aniline	62-53-3

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Test sample

--- End of Test-Report ---