

Test Report

No. QUOP 5791360_AgBB

Client: Firat Plastic, Kaucuk SAN. Ve TIC. A.S.
Türkoba Köyü P.K. 12

34907 Büyükçekmece Istanbul
Turkey

Date of commission: August 27, 2009

Samples received: September 03, 2009

Nature of commission: Examination of PVC window profiles regarding the emission of volatile organic compounds (VOC)

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Should the content of the test report require any interpretation, the German text shall take precedence.

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1. Nature of commission

LGA QualiTest GmbH was commissioned to carry-out an orientating emission test on the basis of the authorization principles for health-related evaluation of building products for a quality assurance check of the material for window profiles.

General information of the product:

Product name: 6 PVC profile samples

Samples received: Sept. 03, 2009 packaged in bubble wrap

Storage of the samples up to examination: Packaged. in an air-conditioned room (23 °C)

Examination period: Sept. 08, 2009 – Sept. 16, 2009

2. Sample description

Surface of the sample: 0.32 m² (corresponds to a PVC profile)

Profile length: 1.00 m

Profile width: 0.095 m

Thickness of the sample: 0.06 m

Edges were not taped

3. Examination method

The examination was performed based on the authorization principles for health-related evaluation of building products published by DIBt¹. The LCI² list dated 2008 was used as a basis for data result assessment.

Testing conditions:

Chamber volume:	1 m ³
Temperature:	(23 ± 2) °C
Air humidity:	50 % rel. h. ± 5 % rel. h.
Air velocity:	0.1 to 0.3 m/s
Air flow rate:	0.5 m ³ /(m ² h) ± 0.05 m ³ /(m ² h)

The definition of the air flow rate is based on a model room with a size of 3 m x 4 m x 2.70 m. The air flow rate in the model room is 0.5 h⁻¹.

Presently, no certification or examination requirements exist for such building materials, e.g. for PVC window profiles. For comparison: For emission tests of building materials, the Danish Indoor Climate Label of the Danish Technological Institute define 17.4 m³ for a standard room (air flow rate 0.5 h⁻¹) and the surface of a fictitious window frame of 0.2 m². This corresponds to a product loading factor of 0.011 m²/m³ and an area-specific air flow rate of 43.4 m³/m² h. Assuming that the examined PVC window profiles are an emission-low product, the tests were carried-out on a complete profile and therefore with a higher product loading factor of 0.32 m²/m³ and a significantly lower area-specific air flow rate of 1.56 m³/m² h. This means, the tests were carried-out under more stricter and severe testing conditions as described above.

Sampling was performed as follows:

Conditioning period, 3 days

- VOC: using Tenax tubes, analyzed using thermal desorption/GC-MS
- Aldehydes: DNPH technique, analyzed using HPLC/DAD

Conditioning period, 7 days

- VOC: using Tenax tubes, analyzed using thermal desorption/GC-MS
- Aldehydes: DNPH technique, analyzed using HPLC/DAD

GC system description:

- GC - Agilent 6890N, MS - Agilent 5973, thermal desorption unit - Perkin Elmer ATD 400
- Column, RTX-200, 60 m x 0.32 mm x 1 µm from Restek

¹ DIBt: Deutsches Institut für Bautechnik = German Institute for Civil Engineering

² LCI: Lowest Concentration of Interest

HPLC system description:

- HPLC - Agilent 1100/1200 system with diode array detector (DAD)
- Separation column, Macherey & Nagel, CC250/3 100-5 C18 ec

4. Examination results

The detailed examination results can be found in the attached DIBt evaluation sheet.

5. Evaluation

Presently, no certification and/or testing requirements exist for such building materials, e.g. for PVC window profiles. The current examination is used as an orientating quality assurance check of the material. The criteria corresponding to the ADAM evaluation mask are fulfilled for the evaluation of building products. The tested PVC window profiles are an emission-low product. The measured emissions of volatile organic compounds are within the range of the test chamber blank value.

Nuremberg, September 24, 2009

LGA QualiTest GmbH
Ecological Product Testing

Expert:

B. Maciej



J. Galinkina

Dr. Bernd Maciej
Deputy Head of the Competence Center

Dr. Jelena Galinkina
Chemist

Attachment

DIBt evaluation mask

Produktname - Name of the product		PVC-Fensterprofile	
Datum der Prüfkörperherstellung Date of the manufacture of the test specimen		08.09.2009	
Herstellung des Prüfkörpers Preparation of the test specimen		--	
verwendete Hilfsmaterialien used auxiliary materials		keine	

Prüfung - Testing		Datum date	Uhrzeit time
Beginn der Vorkonditionierung Start of preconditioning	t_{0-x}	--	--
Einbringen der Probe in die Prüfkammer und Beginn der Prüfung Placing of the test specimen into the test chamber and start of testing	t_0	8.9.2009	15:44
erste Probenahme first sampling	t_{3d}	11.9.2009	11:09
zweite Probenahme second sampling	t_{7d}	15.9.2009	12:00
dritte Probenahme third sampling	t_{28d}	--	--
Prüfkörperanordnung in der Prüfkammer Arrangement of the test specimen in the test chamber		aufrecht	
Anwendung der Abbruchkriterien Use of the break-off criteria	3d/7d	ja	

Prüfkammer - Test chamber			
Hersteller/Typ der Prüfkammer Manufacturer/type of the test chamber		Eigenbau	
Material der Prüfkammer Material of the test chamber		Edelstahl / Glas	
Volumen der Prüfkammer Volume of the test chamber	[m ³]	1,00	
Fläche der Probe Area of the test specimen	[m ²]	0,32	
Luftwechselrate Air exchange rate	[h ⁻¹]	0,50	
flächenspezifische Luftdurchflussrate q Area specific air flow rate	[mh ⁻¹]	1,56	
Temperatur Temperature	[°C]	23,00	
relative Luftfeuchte relative humidity	[%]	50,00	

Berücksichtigungsgrenzen - Limits of consideration	C, [µg/m ³]	
Substanzen mit NIK-Wert Substances with LCI value	5	*) mit Ausnahme aller cancerogenen Substanzen, hier gilt Nachweisgrenze with exception of all carcinogenic substances, detection limit applies here
alle anderen Substanzen*) all other substances	5	
LCI list 2008		
AgBB scheme 2008		

Anmerkungen zur Prüfung (neue Zeile mit [ALT] + [RETURN]) Comments on testing (new line with [ALT] + [RETURN])

1. Allgemeine Angaben - General information		
Prüfstelle Testing laboratory	LGA QualiTest GmbH	
Verantwortlicher Prüfer Responsible laboratory staff	Dr. Jelena Galinkina	
Prüfberichtsnr. Number of the test report	QUOP 5791360_AgBB	
Kunde/Antragsteller Client/Applicant	Firat Plastic, Kaucuk SAN. Ve TIC. A.S.	
Produktname und Artikelnr. Name of the product and material number	PVC-Fensterprofile	
Aktenzeichen beim DIBt File number at DIBt	--	
Probenbezeichnung Marking of the sample	PVC-Fensterprofile	
Datum des Probeneingangs bei der Prüfstelle Date of receipt of the sample	03.09.2009	
Lagerung der Probe bis zur Prüfung Storage of the sample until testing	verpackt, im klimatisierten Raum	
2. Beschreibung des Bauprodukts - Description of the construction product		
Bitte auswählen! Choose, please!	<input type="checkbox"/> textile Bodenbeläge - textile floorings	
	<input type="checkbox"/> Laminate - Laminates	
	<input type="checkbox"/> Parkette und Holzfußböden - Parquet and wood floorings	
	<input type="checkbox"/> PVC, Kautschuk- und Linoleum-Bodenbeläge - PVC, rubber, linoleum floorings	
	<input checked="" type="checkbox"/> Beschichtungen - Coatings	
<input type="checkbox"/> Sonstige Bodenbeläge - other floorings		
Sonstige Bodenbeläge - Other floorings	Herstellerangaben Manufacturer's data	Prüfstellenangaben Testing laboratory's data
Allgemeine Produktbeschreibung General description of the product	PVC-Fensterprofile	
Herstellungsart Manufacturing method	--	--
Gesamtdicke [mm] Total thickness	--	60
Flächengewicht [g/m²] Area weight	--	5300
weitere Angaben Additional information	--	--
3. Bemerkungen (z.B. Produktbesonderheiten, Abweichungen von "Grundsätzen zur gesundheitlichen Bewertung von Bauprodukten in Innenräumen" etc.) (neue Zeile mit [ALT] + [RETURN]) Comments (e.g. particularities on the product, variation of the "Principles for health assessment of construction products used in interiors" etc.) (new line with [ALT] + [RETURN])		

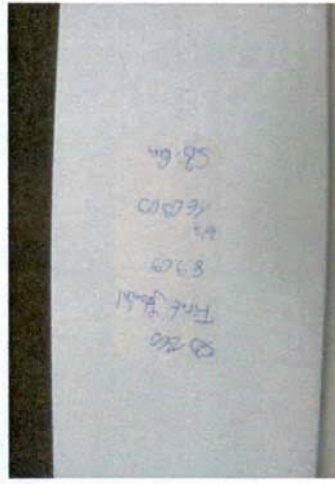
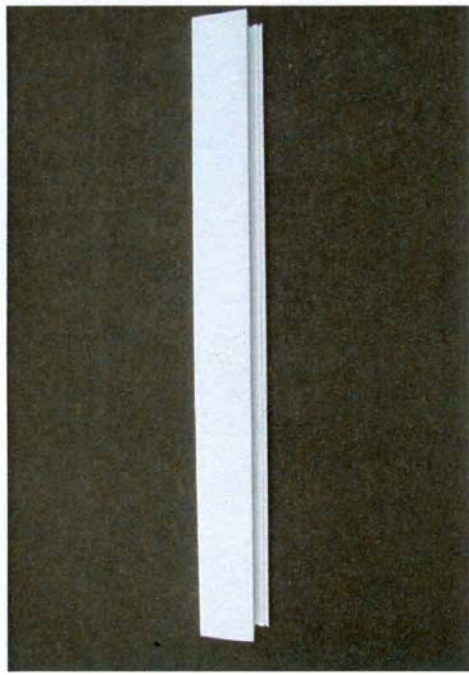
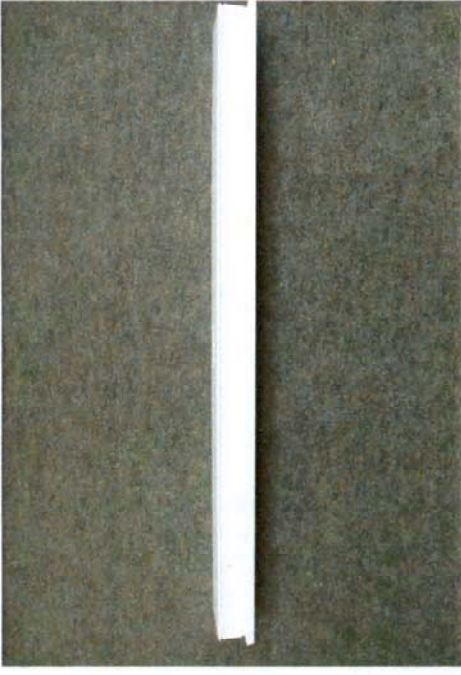
ADAM_2008_04_Urversion

Emissionen nach 3 Tagen Emission after 3 days		CAS-No.	RT [min]	Retentionsbereich Retention range	Quantifizierung Quantification	Identifikation Identification	C _i [µg/m ³]	SER _i [µg/m ² h]	Zuordnung Classification [canc./NIK/o.NIK] [carc./LC/no LCi]	R _i	Ifd. Nr. Serial number	Legende Legend VVOC = < C6 VOC = C6 - C16 SVOC = C16 - C22 a = substanzspezifisch substance-specific b = substanzähnlich substance-like c = Toluoläquivalent toluene equivalent d = DNPH 1 = Klasse 1 class 1 2 = Klasse 2 class 2 3 = Klasse 3 class 3	
Kommentar Comment	ADAM 2008 04 Urversion												
Daten nur über den Button "Messergebnisse eingeben/löschen" in diese Tabelle eintragen Data to be entered only via the button "enter/delete results"													
gefundene Substanzen Detected substances													
Toluol		108-88-3		12,71 VOC	a	1	1,30	2,031	1.900	0,001	1-1	1	
Aceton		67-64-1		6,17 VVOC	c	1	2,10	3,281	ohne NIK			0	
Ethylmethylketon		78-93-3		9,68 VOC	a	1	4,00	6,250	6.000	0,001	8-1	1	
N.i.				6,88 VOC	c	3	1,00	1,563	ohne NIK			0	

Emissionen nach 7 Tagen Emission after 7 days		Kommentar Comment	CAS-No.	RT [min]	Retentionsbereich Retention range	Quantifizierung Quantification	Identifikation Identification	C _i [µg/m ³]	SER _i [µg/m ² h]	Zuordnung Classification [canc./NIK/o.NIK] [canc./LCI/no LCI]	R _i	Ifd. Nr. Serial number	ADAM_2008_04_UVersion	Legende legend WOC = < C6 VOC = C6 - C16 SVOC = C16 - C22 a = substanzspezifisch substance-specific b = substanzähnlich substance-like c = Toluoläquivalent toluene equivalent d = DNPH 1 = Klasse 1 class 1 2 = Klasse 2 class 2 3 = Klasse 3 class 3
PVC-Fensterprofile														
gefundene Substanzen Detected substances Daten nur über den Button "Messergebnisse eingeben/löschen" in diese Tabelle eintragen Data to be entered only via the button "enter/delete results"														
Aceton			67-64-1	6,17	VVOC	c	1	2,30	3,594	ohne NIK			0	
Ethylmethylketon			78-93-3	9,68	VOC	a	1	4,20	6,563	6.000,00	0,001	8-1	1	

Probenbezeichnung Marking of the sample		PVC-Fensterprofile										
Aktenzeichen beim DIBt File number of DIBt		-										
Prüfinstitut Testing laboratory		LGA QualiTest GmbH										
Ergebnisüberblick General view of the results ADAM_2008_04_Urversion		3 Tage (days)			7 Tage (days)			28 Tage (days) Keine Daten vorhanden - No data available				
		Ergebnisse results µg/m³	AgBB Anforderungen requirements mg/m³	Abbruchkriterien break-off criteria mg/m³	Ergebnisse results µg/m³	Abbruchkriterien break-off criteria mg/m³	Ergebnisse results µg/m³	AgBB Anforderungen requirements mg/m³	Ergebnisse results µg/m³	Abbruchkriterien break-off criteria mg/m³	AgBB Anforderungen requirements mg/m³	
[A]	TVOC (C ₆ - C ₁₆)	0	0 ≤ 10 mg/m³	0,0 ≤ 0,3 mg/m³	0	0,0 ≤ 0,5 mg/m³	0	0,0 ≤ 1,0 mg/m³	0	0,0 ≤ 1,0 mg/m³	0	0,0 ≤ 1,0 mg/m³
[B]	Σ SVOC (C ₁₆ - C ₂₂)	0	keine none	0,00 ≤ 0,03 mg/m³	0	0,00 ≤ 0,05 mg/m³	0	0,0 ≤ 0,1 mg/m³	0	0,0 ≤ 0,1 mg/m³	0	0,0 ≤ 0,1 mg/m³
[C]	R (dimensionlos/dimensionless)	0,000	keine none	0,0 ≤ 0,5	0,000	0,0 ≤ 0,5	0,000	0 ≤ 1	0,000	0 ≤ 1	0,000	0 ≤ 1
[D]	Σ VOC o. NIK without LCI	0	keine none	0,00 ≤ 0,05 mg/m³	0	0,00 ≤ 0,05 mg/m³	0	0,0 ≤ 0,1 mg/m³	0	0,0 ≤ 0,1 mg/m³	0	0,0 ≤ 0,1 mg/m³
[E]	Σ Cancerogene	0	0,00 ≤ 0,01 mg/m³	0,000 ≤ 0,001 mg/m³	0	0,000 ≤ 0,001 mg/m³	0	0,000 ≤ 0,001 mg/m³	0	0,000 ≤ 0,001 mg/m³	0	0,000 ≤ 0,001 mg/m³
Dieser Block liefert zusätzliche Information This part gives some additional information												
[F]	VVOC (< C ₆)	0			0				0			
[G]	VOC (C ₆ - C ₁₆) als Toluoläquivalent as toluene equivalent											
			Wert manuell eingegeben! Enter value manually!			Wert manuell eingegeben! Enter value manually!				Wert manuell eingegeben! Enter value manually!		Wert manuell eingegeben! Enter value manually!

Photo of the test specimen



photo

24.09.2009

ADAM_5791360.xls

Photo of the test specimen

