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AB 910

TEST REPORT No. 282/DLS/2025

Testing a material sample of recycled rubber granulate in the scope of migration of certain elements, content of elements released into the leaching solution: Pb, Cd, Cr_{total}, Cr (VI), Hg, Zn, Sn, and SCCP, phthalates, polycyclic aromatic hydrocarbons, cadmium, lead and formaldehyde content

Orderer: Metkom Oddział Rzeszów
Okulickiego 18B
35-206 Rzeszów

Project No.: UP/DLS-34052/OR1

Name of tested object:	**Material sample of recycled rubber granulate**
Orderer markings:	Granulate from recycled automotive industry post-production waste; Name: EPDM Granulate; Colour desigantion: BLACK/DARK GRAPHITE; Batch: G08/14072025/1-2
Number of sample, according to the R-DLS/7:	282/25/P1

Date of delivery of the object for testing: 22.08.2025
Date of beginning / completion of tests: 25.08.2025 / 02.10.2025
Place of testing: Laboratory of Material Engineering and Environment

CONFIRMATION OF CONFORMITY/NON-CONFORMITY OF ACCREDITED TEST RESULTS		
Sample number	**Confirmation of conformity/non-conformity of the test results with the requirements**	
PN-EN 71-3+A2:2025-05 „Safety of Toys – Part 3: Migration of certain elements"		
282/25/P1	Limit values of elements migration: Category III: Al ≤ 28 130 mg/kg, Sb ≤ 560 mg/kg, As ≤ 47 mg/kg, Ba ≤ 18 750 mg/kg, B ≤ 15 000 mg/ kg, Cd ≤ 17 mg/kg, Cr (III) ≤ 460 mg/kg*, Cr (VI) ≤ 0.053 mg/kg, Co ≤ 130 mg/kg, Cu ≤ 7 700 mg/kg, Pb ≤ 23 mg/kg, Mn ≤ 15 000 mg/kg, Hg ≤ 94 mg/kg, Ni ≤ 930 mg/kg, Se ≤ 460 mg/kg, Sr ≤ 56 000 mg/kg, Sn ≤ 180 000 mg/kg, Zn ≤ 46 000 mg/kg Organic tin: ≤ 12 mg/kg$^{\nabla}$	+

**- Migration of Cr (III) was assessed according to PN-EN 71-3+A2:2025-05, based on migration of total chromium, Cr_{total}*
$^{\nabla}$- Migration of organic tin was assessed according to PN-EN 71-3+A2:2025-05, based on migration of total tin Sn_{total}

CONFIRMATION OF CONFORMITY/NON-CONFORMITY OF ACCREDITED TEST RESULTS		
Sample number	**Confirmation of conformity/non-conformity of the test results with the requirements**	
DIN 18035-7:2019-12 Sports ground Part 7: Synthetic Turf areas		
282/25/P1	Content of elements released into the leaching solution: Pb ≤ 0.025 mg/l; Cd ≤ 0.005 mg/l; Cr_{total} ≤ 0.05 mg/l; Cr (VI) ≤ 0.008 mg/l; Hg ≤ 0.001 mg/l; Zn ≤ 0.5 mg/l; Sn ≤ 0.04 mg/l	+
282/25/P1	Total phthalate content: di(2-ethylhexyl) (DEHP), dibutyl phthalate (DBP), benzylbutyl phthalate (BBP), diisobutyl phthalate (DIBP) ≤ 0.1% weight	+
282/25/P1	SCCP content < 0.15% weight	+
DIN 18035-6:2021-08 Sports ground Part 6: Synthetic surfaces		
282/25/P1	Content of elements released into the leaching solution: Pb ≤ 0.025 mg/l; Cd ≤ 0.005 mg/l; Cr_{total} ≤ 0.05 mg/l; Cr (VI) ≤ 0.008 mg/l; Hg ≤ 0.001 mg/l; Zn ≤ 0.5 mg/l; Sn ≤ 0.04 mg/l	+
282/25/P1	Total phthalate content: di(2-ethylhexyl) (DEHP), dibutyl phthalate (DBP), benzylbutyl phthalate (BBP), diisobutyl phthalate (DIBP) ≤ 0.1% weight	+
282/25/P1	SCCP content < 0.15% weight	+
European Parliament and Council (EC) Regulation No. 1907/2006 for registration, assessment and authorization of chemicals (REACH) as regards content of chemicals (OJ L 396, 30.12.2006, p. 1-794 with further amendments)		
282/25/P1	Entry 50 paragraph 5 Content of each of the following PAHs: benzo[a] pyrene, benzo[e]pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[j]fluoranthene, benzo[k]fluoranthene, dibenzo[a,h]anthracene ≤ 1 mg/kg in relation to the weight of material with admixture of PAH	+
282/25/P1	Entry 50 paragraph 6 Content of each of the following PAHs: benzo[a] pyrene, benzo[e]pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[j]fluoranthene, benzo[k]fluoranthene, dibenzo[a,h]anthracene ≤ 0.5 mg/kg in relation to the weight of material with admixture of PAH	+
282/25/P1	Entry 50 paragraph 9 and 10 Content of each of the following PAHs: benzo[a] pyrene, benzo[e]pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[j]fluoranthene, benzo[k]fluoranthene, dibenzo[a,h]anthracene ≤ 20 mg/kg in relation to the weight of material with admixture of PAH	+
282/25/P1	Total phthalate content: di(2-ethylhexyl) phthalate (DEHP), dibutyl phthalate (DBP), benzylbutyl phthalate (BBP), diisobutyl phthalate (DIBP) ≤ 0.1% weight Total phthalate content: di-isononyl phthalate (DINP), di-isodecyl phthalate (DIDP) and di-n-octyl phthalate (DNOP) ≤ 0.1% weight	+
282/25/P1	Content of Cd < 0.01% weight	+
282/25/P1	Content of Pb < 0.05% weight	+

*symbol: "**+**"– sample meets the requirements, "**-**" – sample does not meet the requirements*

***NOTE**: Statement of test results conformity with the requirements is based on a confidence level of 95% for the expanded uncertainty of measurement results on which the decision of conformity is based.*

Leader of testing team: *Hanna Ambroży, M.Sc.* /name/ Ambroży / signature /

Authorized by: *Bożena Rakwic, Ph.D. Eng.* /name/ Rakwic / signature /

Kierownik Laboratorium Inżynierii Materiałowej i Środowiska
Approved by
B. Rakwic
dr hab. inż. Beata Grynkiewicz-Bylina
Profesor ITG KOMAG

Gliwice, 02.10.2025 /signature and stamp/

Description of the sample

Material sample of Granulate from recycled automotive industry post-production waste; Name: EPDM Granulate; Colour desigantion: BLACK/DARK GRAPHITE; Batch: G08/14072025/1-2.
The sample was taken and delivered for testing by the Orderer – Metkom.

Scope and methods of testing

Item	Tested parameters	Testing method	Testing procedure and Standard
ACCREDITED TEST METHODS			
1.	Migration of elements: Al, Sb, As, Ba, B, Cd, Cr_{total}, Co, Cu, Pb, Mn, Hg, Ni, Se, Sr, Sn_{total}, Zn	Inductively coupled plasma mass spectrometry (ICP-MS)	PB-DLS/31, 31st edition; 2025 PB-DLS/32, 34th edition; 2025 PN-EN 71-3+A2:2025-05
2.	Migration of Cr (VI)	Liquid chromatography-inductively coupled plasma mass spectrometry (HPLC-ICP-MS)	
3.	Content of elements released into the leaching solution: Pb, Cd, Cr_{total}, Zn, Sn	Inductively coupled plasma mass spectrometry (ICP-MS)	PB-DLS/54, 4th edition; 2022 PN-EN 12457-4:2006
4.	Content of elements released into the leaching solution: Hg	Cold vapour atomic absorption Spectrometry (CVAAS)	
5.	Content of elements released into the leaching solution: Cr (VI)	Liquid chromatography-inductively coupled plasma mass spectrometry (HPLC-ICP-MS)	
6.	Phthalates content	Gas chromatography with mass spectrometry detection (GC-MS)	PB-DLS/12, 31st edition; 2025
7.	SCCP content	Gas chromatography with tandem mass spectrometry detection (GC-MS/MS)	PB-DLS/42, 5th edition; 2022
8.	Polycyclic aromatic hydrocarbons (PAHs) content	Gas chromatography with tandem mass spectrometry detection (GC-MS/MS)	PB-DLS/38, 8th edition; 2021
9.	Cadmium and lead content	Inductively coupled plasma optical emission spectroscopy(ICP-OES)	PB-DLS/29, 9th edition; 2023
NON-ACCREDITED TEST METHODS			
10.	Formaldehyde content	Spectrophotometric method (UV-VIS)	PB-DLS/18, 14th edition; 2023

Test Results

ACCREDITED TEST RESULTS											
Item	Sample No.	Migration of certain elements [mg/kg]									
1.	282/25/P1	Al	U	Sb	U	As	U	Ba	U	B	U
		< 250	-	< 6.5	-	< 0.5	-	< 150	-	< 150	-
		Cd	U	Cr_{total}	U	Co	U	Cu	U	Pb	U
		< 0.15	-	1.23	±0.12	< 0.5	-	< 50	-	< 0.25	-
		Mn	U	Hg	U	Ni	U	Se	U	Sr	U
		< 150	-	< 0.5	-	< 6.5	-	< 5.0	-	< 500	-
		Sn_{total}	U	Zn	U	Cr (VI)	U				
		< 3.0	-	< 500	-	< 0.030	-				

ACCREDITED TEST RESULTS									
Item	Sample No.	Phthalate content [%]							
1.	282/25/P1	DEHP	U	DBP	U	BBP	U	DIBP	U
		< 0.05	-	< 0.05	-	< 0.05	-	< 0.05	-
		DNOP	U	DIDP	U	DINP	U	DIHP	U
		< 0.05	-	< 0.05	-	< 0.05	-	< 0.05	-

<table>
<tr><th colspan="9">ACCREDITED TEST RESULTS</th></tr>
<tr><th>Item</th><th>Sample No.</th><th>Leaching test</th><th colspan="6">Content of elements released into the leaching solution [mg/l]</th></tr>
<tr><td rowspan="6">1.</td><td rowspan="6">282/25/P1</td><td rowspan="6">Leaching solution to solid mass ratio (L/S): 10 l/kg</td><td>Pb</td><td>U</td><td>Cd</td><td>U</td><td>Cr_{calk}</td><td>U</td></tr>
<tr><td><0.015</td><td>-</td><td><0.0014</td><td>-</td><td><0.0074</td><td>-</td></tr>
<tr><td>Hg</td><td>U</td><td>Zn</td><td>U</td><td>Sn</td><td>U</td></tr>
<tr><td><0.00035</td><td>-</td><td>< 0.20</td><td>-</td><td><0.006</td><td>-</td></tr>
<tr><td>Cr (VI)</td><td>U</td><td colspan="4" rowspan="2"></td></tr>
<tr><td>< 0.0006</td><td>-</td></tr>
</table>

ACCREDITED TEST RESULTS			
Item	**Sample No.**	**SCCP content [%]**	
1.	282/25/P1	**SCCP**	**U**
		< 0,002	-

ACCREDITED TEST RESULTS			
Item	**Sample No.**	**PAHs content [mg/kg]**	
1.	282/25/P1	benzo[a]pyrene	U
		< 0.1	-
		benzo[e]pyrene	U
		< 0.1	-
		benzo[a]anthracene	U
		< 0.1	-
		chrysene	U
		< 0.1	-
		benzo[b]fluoranthene	U
		< 0.1	-
		benzo[j]fluoranthene	U
		< 0.1	-
		benzo[k]fluoranthene	U
		< 0.1	-
		dibenzo[a.h]anthracene	U
		< 0.1	-

ACCREDITED TEST RESULTS					
Item	**Sample No.**	**Cadmium content [%]**		**Lead content [%]**	
1.	282/25/P1	**Cd**	**U**	**Pb**	**U**
		< 0.005	-	< 0.005	-

NON-ACCREDITED TEST RESULTS			
Item	**Sample No.**	**Formaldehyde content [mg/kg]**	
1.	282/25/P1	formaldehyde	U
		< 1	-

symbol:
"-" in uncertainty "U" column – there is no uncertainty value as the test result is below/above bottom/upper limit of the measuring range
Note: *measurements uncertainty U is an expanded uncertainty at confidence level 95% and coverage factor k = 2, according to the PO-DLS/07 general procedure.*

The results and their uncertainty refer only to the tested sample and not to the product batch/substance/material the sample was taken from.

Rules for taking decisions on compliance/ non compliance with the requirements

According to ISO/IEC Guide 98-4:2012 "Uncertainty of measurement. Part 4: Role of measurement uncertainty in conformity assessment" and ILAC-G8:09/2019 guidelines.: "Guidelines on Decision Rules and Statements of Conformity":

1. ***COMPLIANCE WITH THE REQUIREMENTS*** *is stated when the measurement result/test result does not exceed the limit value. Risk of wrong decision on acceptation is up to 50%*
2. ***NON-COMPLIANCE WITH THE REQUIREMENTS*** *is stated when the measurement result/test result exceeds the limit value. Risk of wrong decision on rejection is up to 50%*

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- END OF THE REPORT -