

TEST REPORT No. 17/DLS/2025

Testing of material samples of granules, delivered for testing by Unirubber Sp. z o. o.,
in the scope of migration of certain elements and polycyclic aromatic hydrocarbons
content

Orderer: Unirubber Sp. z o.o.
Zielonka 17
59-940 Węgliniec, Poland

Project UP/DLS-32419/OR5
No.:

Name of tested object:	Material samples of rubber granules
Orderer markings:	WWA+MIGRACJA: EPDM Black Rec. UNIRUBBER WWA+MIGRACJA: EPDM Grey Rec. UNIRUBBER WWA+MIGRACJA: SBR Black Rec. UNIRUBBER
Number of sample, according to the R-DLS/7:	17/25/P1 – material samples of EPDM Black Rec. UNIRUBBER 17/25/P2 – material samples of EPDM Grey Rec. UNIRUBBER 17/25/P3 – material samples of SBR Black Rec. UNIRUBBER



Date of delivery of the object for testing: 17.12.2024
Date of beginning / completion of tests: 02.01.2025 / 30.01.2025
Place of testing: Laboratory of Material Engineering and Environment

Sample number	Confirmation of conformity/non-conformity the test results with the requirements	
EN 71-3:2019+A2:2024 „Safety of toys – Part 3: Migration of certain elements”		
17/25/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 [∇]	+
17/25/P2		+
17/25/P3		+

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

*- Migration of Cr (III) and Cr (VI) were assessed according to EN 71-3:2019+A2:2024, based on migration of total chromium, Cr_{total}

[∇]- Migration of organic tin was assessed according to EN 71-3:2019+A2:2024, based on migration of total tin Sn_{total}

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.

Sample number	Confirmation of conformity/non-conformity the test results with the requirements	
Testing and assessment of polycyclic aromatic hydrocarbons (PAHs) in the awarding the GS mark - Specification pursuant to article 21(1) no. 3 of the Product Safety Act (ProdSG) – AfPS GS 2019:01 PAK, Federal Institute for Occupational Safety and Health		
17/25/P1	Category 1 Content of each of the following PAHs: chrysene, benzo[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[j]fluoranthene, benzo[a]pyrene, benzo[e]pyrene, indeno[1,2,3-c,d]pyrene, benzo[g,h,i]perylene, dibenzo[a,h]anthracene, is below 0.2 mg/kg of the material with admixture of PAH Total content of the following PAHs: phenanthrene, anthracene, fluoranthene, pyrene below 1 mg/kg of the material with admixture of PAH Content of naphthalene below 1 mg/kg of the material with admixture of PAH Total content of 15 PAH below 1 mg/kg of the material with admixture of PAH	+
17/25/P2		+
17/25/P3		+
17/25/P1	Category 2a Content of each of the following PAHs: chrysene, benzo[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[j]fluoranthene, benzo[a]pyrene, benzo[e]pyrene, indeno[1,2,3-c,d]pyrene, benzo[g,h,i]perylene, dibenzo[a,h]anthracene, is below 0.2 mg/kg of the material with admixture of PAH Total content of the following PAHs: phenanthrene, anthracene, fluoranthene, pyrene below 5 mg/kg of the material with admixture of PAH Content of naphthalene below 2 mg/kg of the material with admixture of PAH Total content of 15 PAH below 5 mg/kg of the material with admixture of PAH	+
17/25/P2		+
17/25/P3		+
17/25/P1	Category 2b Content of each of the following PAHs: chrysene, benzo[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[j]fluoranthene, benzo[a]pyrene, benzo[e]pyrene, indeno[1,2,3-c,d]pyrene, benzo[g,h,i]perylene, dibenzo[a,h]anthracene, is below 0.5 mg/kg of the material with admixture of PAH Total content of the following PAHs: phenanthrene, anthracene, fluoranthene, pyrene below 10 mg/kg of the material with admixture of PAH Content of naphthalene below 2 mg/kg of the material with admixture of PAH Total content of 15 PAH below 10 mg/kg of the material with admixture of PAH	+
17/25/P2		+
17/25/P3		+
17/25/P1	Category 3a Content of each of the following PAHs: chrysene, benzo[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[j]fluoranthene, benzo[a]pyrene, benzo[e]pyrene, indeno[1,2,3-c,d]pyrene, benzo[g,h,i]perylene, dibenzo[a,h]anthracene, is below 0.5 mg/kg of the material with admixture of PAH Total content of the following PAHs: phenanthrene, anthracene, fluoranthene, pyrene below 20 mg/kg of the material with admixture of PAH Content of naphthalene below 10 mg/kg of the material with admixture of PAH Total content of 15 PAH below 20 mg/kg of the material with admixture of PAH	+
17/25/P2		+
17/25/P3		+
17/25/P1	Category 3b Content of each of the following PAHs: chrysene, benzo[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[j]fluoranthene, benzo[a]pyrene, benzo[e]pyrene, indeno[1,2,3-c,d]pyrene, benzo[g,h,i]perylene, dibenzo[a,h]anthracene, is below 1 mg/kg of the material with admixture of PAH Total content of the following PAHs: phenanthrene, anthracene, fluoranthene, pyrene below 50 mg/kg of the material with admixture of PAH Content of naphthalene below 10 mg/kg of the material with admixture of PAH Total content of 15 PAH below 50 mg/kg of the material with admixture of PAH	+
17/25/P2		+
17/25/P3		+
European Parliament and Council (EC) Regulation No. 1907/2006 for registration, assessment and authorization of chemicals (REACH) as regards phthalates content (OJ L 396, 30.12.2006, p. 1-794 with further amendments)		
17/25/P1	entry 50 paragraph 5 Content of each of the following PAHs: benzo[a] pyrene, benzo[e]pyrene,	+

17/25/P2	benzo[a]anthracene, chrysen, 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	+
17/25/P3		+
17/25/P1	entry 50 paragraph 6 Content of each of the following PAHs: benzo[a] pyrene, benzo[e]pyrene, benzo[a]anthracene, chrysen, 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	+
17/25/P2	entry 50 paragraph 9 i paragraph 10 Total content of the following PAHs: benzo[a] pyrene, benzo[e]pyrene, benzo[a]anthracene, chrysen, 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	+
17/25/P3		+
17/25/P1		+
17/25/P2		+
17/25/P3		+

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:

Monika Gawlik-Jędrysiak, Ph.D. Eng.

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Kierownik Laboratorium
Inżynierii Materiałowej i Środowiska

Approved by

Gliwice, 30.01.2025

dr hab. inż. Beata Gryniewicz-Bylina
Profesor ITG KOMAG
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Description of the samples

Material samples of granules: EPDM Black Rec. UNIRUBBER, EPDM Grey Rec. UNIRUBBER, SBR Black Rec. UNIRUBBER.

The samples were taken and delivered for testing by the Unirubber Sp. z o.o.

Scope and methods of testing

Item	Tested parameters	Testing method	Testing procedure and Standard
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, 31 st edition; 2025 PB-DLS/32, 34 th edition; 2025 EN 71-3:2019+A2:2024
2.	Polycyclic aromatic hydrocarbons (PAHs) content	Gas chromatography method with tandem mass spectrometry (GC-MS/MS)	PB-DLS/38, 8th edition; 2021

Test Results

Item	Sample number	Migration of certain elements [mg/kg]									
		Category III									
1.	17/25/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	Zn	U
		< 0.15	-	< 0.030	-	< 0.5	-	< 50	-	< 500	-
		Pb	U	Mn	U	Hg	U	Ni	U	Se	U
		< 0.25	-	< 150	-	< 0.5	-	< 6.5	-	< 5.0	-
2.	17/25/P2	Sr	U	Sn _{total}	U						
		< 500	-	< 3	-						
		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	Zn	U
		< 0.15	-	< 0.030	-	< 0.5	-	< 50	-	< 500	-
3.	17/25/P3	Pb	U	Mn	U	Hg	U	Ni	U	Se	U
		< 0.25	-	< 150	-	< 0.5	-	< 6.5	-	< 5.0	-
		Sr	U	Sn _{total}	U						
		< 500	-	< 3	-						
		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	Zn	U		
< 0.15	-	< 0.030	-	< 0.5	-	< 50	-	< 500	-		

Item	Sample number	Content PAHs [mg/kg]			
1.	17/25/P1	benzo[a]pyrene	U	benzo[g,h,i]perylene	U
		< 0.1	-	< 0.1	-
		benzo[e]pyrene	U	indeno(1,2,3-cd)pyrene	U
		< 0.1	-	< 0.1	-
		benzo[a]anthracene	U	phenanthrene	U
		< 0.1	-	< 0.1	-
		chrysene	U	pyrene	U
		< 0.1	-	< 0.1	-
		benzo[b]fluoranthene	U	anthracene	U
		< 0.1	-	< 0.1	-
		benzo[j]fluoranthene	U	fluoranthene	U
		< 0.1	-	< 0.1	-
		benzo[k]fluoranthene	U	naphthalene	U
		< 0.1	-	< 0.1	-
dibenzo[a,h]anthracene	U				
< 0.1	-				
2.	17/25/P2	benzo[a]pyrene	U	benzo[g,h,i]perylene	U
		< 0.1	-	< 0.1	-
		benzo[e]pyrene	U	indeno(1,2,3-cd)pyrene	U
		< 0.1	-	< 0.1	-
		benzo[a]anthracene	U	phenanthrene	U
		< 0.1	-	< 0.1	-
		chrysene	U	pyrene	U
		< 0.1	-	< 0.1	-
		benzo[b]fluoranthene	U	anthracene	U
		< 0.1	-	< 0.1	-
		benzo[j]fluoranthene	U	fluoranthene	U
		< 0.1	-	< 0.1	-
		benzo[k]fluoranthene	U	naphthalene	U
		< 0.1	-	< 0.1	-
dibenzo[a,h]anthracene	U				
< 0.1	-				
3.	17/25/P3	benzo[a]pyrene	U	benzo[g,h,i]perylene	U
		< 0.1	-	< 0.1	-
		benzo[e]pyrene	U	indeno(1,2,3-cd)pyrene	U
		< 0.1	-	< 0.1	-
		benzo[a]anthracene	U	phenanthrene	U
		< 0.1	-	< 0.1	-
		chrysene	U	pyrene	U
		< 0.1	-	< 0.1	-
		benzo[b]fluoranthene	U	anthracene	U
		< 0.1	-	< 0.1	-
		benzo[j]fluoranthene	U	fluoranthene	U
		< 0.1	-	< 0.1	-
		benzo[k]fluoranthene	U	naphthalene	U
		< 0.1	-	< 0.1	-
dibenzo[a,h]anthracene	U				
< 0.1	-				

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":

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