

## TEST REPORT No. 27/DLS/2026

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

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

Project UP/DLS-34581/OR2  
No.:

Name of tested object:	<p>Material samples of rubber granules EPDM Virgin Kolor Material samples of rubber granules Techniczny EPDM Black UNIRUBBER Material samples of rubber granules Techniczny EPDM Grey Material samples of rubber granules Techniczny EPDM Grey UNIRUBBER Material samples of rubber granules Techniczny SBR Black UNIRUBBER Material samples of rubber granules Techniczny EPDM Black Material samples of rubber granules Techniczny SBR Black</p>
Orderer markings:	<p>EPDM Virgin Kolor ZP/25/12/110 10/12/2025 T11 zm B EPDM-2 Sampling date: 10/12/2025 Techniczny EPDM Black - ZP/25/12/152 12/12/2025 T1 zm B REC-2 Data pobrania próbki: 12/12/2025 Techniczny EPDM Grey - ZP/25/12/141 10/12/2025 T1 zm C REC-2 Sampling date: 10/12/2025 Techniczny SBR Black - ZP/25/12/150 12/12/2025 T1 zm C REC-2 Sampling date: 12/12/2025 Techniczny EPDM Black UNIRUBBER - ZP/25/12/151 12/12/2025 T1 zm B REC-1 Sampling date: 12/12/2025 Techniczny EPDM Grey UNIRUBBER - ZP/25/12/140 10/12/2025 T1 zm C REC-1 Sampling date: 12/12/2025 Techniczny SBR Black UNIRUBBER - ZP/25/12/149 12/12/2025 T1 zm C REC-2 Sampling date: 12/12/2025</p>
Number of sample, according to the R-DLS/7:	<p>6/26/P1 - material samples of rubber granules EPDM Virgin Kolor 6/26/P2 - material samples of rubber granules Techniczny EPDM Black UNIRUBBER 6/26/P3 - material samples of rubber granules Techniczny EPDM Grey 6/26/P4 - material samples of rubber granules Techniczny EPDM Grey UNIRUBBER 6/26/P5 - material samples of rubber granules Techniczny SBR Black UNIRUBBER 6/26/P6 - material samples of rubber granules Techniczny EPDM Black 6/26/P7 - material samples of rubber granules Techniczny SBR Black</p>



Date of delivery of the object for testing: 23.12.2025  
 Date of beginning / completion of tests: 29.12.2025 / 28.01.2026  
 Place of testing: Laboratory of Material Engineering and Environment

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”		
6/26/P1	Limit values of elements migration:	+
6/26/P2	Category III:	+
6/26/P3	Al ≤ 28130 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	+
6/26/P4		+
6/26/P5		+
6/26/P6		+
6/26/P7	Organic tin: ≤ 12 mg/kg <sup>∇</sup>	+

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

\* - Migration of Cr (III) and Cr (VI) was assessed according to PN-EN 71-3+A2:2025 Standard basing on migration of total chromium, Cr<sub>total</sub>

<sup>∇</sup> - Migration of organic tin was assessed according to PN-EN 71-3+A2:2025, Standard basing on migration of total tin Sn<sub>total</sub>

**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	
<b>European Parliament and Council (EC) Regulation No. 1907/2006 for registration, assessment and authorization of chemicals (REACH) (OJ L 396, 30.12.2006, p. 1-794 with further amendments)</b>		
6/26/P1	entry 50 paragraph 5 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 $\leq$ 1 mg/kg in relation to the weight of material with admixture of PAH	+
6/26/P2		+
6/26/P3		+
6/26/P4		+
6/26/P5		+
6/26/P6		+
6/26/P7		+
6/26/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 $\leq$ 0,5 mg/kg in relation to the weight of material with admixture of PAH	+
6/26/P2		+
6/26/P3		+
6/26/P4		+
6/26/P5		+
6/26/P6		+
6/26/P7		+
6/26/P1	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 $\leq$ 20 mg/kg in relation to the weight of material with admixture of PAH	+
6/26/P2		+
6/26/P3		+
6/26/P4		+
6/26/P5		+
6/26/P6		+
6/26/P7		+
<b>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</b>		
6/26/P1	<b>Category 1</b> 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	+
6/26/P2		+
6/26/P3		+
6/26/P4		+
6/26/P5		+
6/26/P1	<b>Category 2a</b> 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	+
6/26/P2		+
6/26/P3		+
6/26/P4		+
6/26/P5		+
6/26/P6		+
6/26/P7		+
6/26/P1	<b>Category 2b</b> 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	+
6/26/P2		+
6/26/P3		+
6/26/P4		+
6/26/P5		+
6/26/P6		+
6/26/P7		+

Sample number	Confirmation of conformity/non-conformity the test results with the requirements	
<b>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</b>		
6/26/P1	<b>Category 3a</b> 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	+
6/26/P2		+
6/26/P3		+
6/26/P4		+
6/26/P5		+
6/26/P6		+
6/26/P7		+
6/26/P1	<b>Category 3b</b> 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	+
6/26/P2		+
6/26/P3		+
6/26/P4		+
6/26/P5		+
6/26/P6		+
6/26/P7		+


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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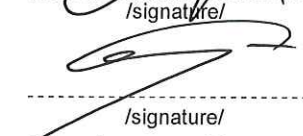
  
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Authorized by:

Beata Grynkiewicz-Bylina, Ph.D. Eng.


Profesor at KOMAG

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**Approved by**  
Kierownik Laboratorium  
Inżynierii Materiałowej i Środowiska

Gliwice, 28.01.2026.

  
hab. inż. Beata Grynkiewicz-Bylina  
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/signature and stamp/

TEST REPORT INCLUDES ONLY THE RESULTS, WHICH ARE RELATED TO THE TESTED OBJECT DELIVERED BY THE ORDERER  
KOMAG TAKES AN OBLIGATION TO KEEP IN SECRET ALL TEST RESULTS AND THE RESULTS WILL NOT BE PUBLISHED WITHOUT A  
PERMISSION OF ORDERER THIS WILL BE NOT IN FORCE IF LAW REGULATIONS ARE DIFFERENT  
IT CAN NOT BE COPIED WITHOUT A WRITTEN APPROVAL OTHERWISE AS AN ENTIRE DOCUMENT  
REPORT IS A LABORATORY PROPERTY AND ANY CHANGES CAN NOT BE MADE WITHOUT AUTHORS PERMISSION.

**Description of the samples**

Material samples of granules:

- EPDM Virgin Kolor
- Techniczny EPDM Black UNIRUBBER
- Techniczny EPDM Grey
- Techniczny EPDM Grey UNIRUBBER
- Techniczny SBR Black UNIRUBBER
- Techniczny EPDM Black
- Techniczny SBR Black

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 Standard
1.	Migration of: Al, Sb, As, Ba, B, Cd, Cr <sub>total</sub> , Co, Cu, Pb, Mn, Hg, Ni, Se, Sr, Sn <sub>total</sub> , Zn	Inductively coupled plasma mass spectrometry (ICP-MS) method	PB-DLS/31, 31 <sup>st</sup> edition; 2025 PB-DLS/32, 34 <sup>th</sup> edition; 2025 PN-EN 71-3+A2:2025-05
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 No.	Migration of certain elements [mg/kg]									
		Category III									
1.	6/26/P1	Al	U	Sb	U	As	U	Ba	U	B	U
		< 20 000	-	< 200	-	< 20	-	< 10 000	-	< 9000	-
		Cd	U	Cr <sub>total</sub>	U	Co	U	Cu	U	Zn	U
		< 9.0	-	< 0.030	-	< 60	-	< 3000	-	< 20 000	-
		Pb	U	Mn	U	Hg	U	Ni	U	Se	U
		< 10	-	< 7000	-	< 40	-	< 400	-	< 100	-
		Sr	U	Sn <sub>total</sub>	U						
< 20 000	-	< 3.0	-								
2.	6/26/P2	Al	U	Sb	U	As	U	Ba	U	B	U
		< 20 000	-	< 200	-	< 20	-	< 10 000	-	< 9000	-
		Cd	U	Cr <sub>total</sub>	U	Co	U	Cu	U	Zn	U
		< 9.0	-	< 0.030	-	< 60	-	< 3000	-	< 20 000	-
		Pb	U	Mn	U	Hg	U	Ni	U	Se	U
		< 10	-	< 7000	-	< 40	-	< 400	-	< 100	-
		Sr	U	Sn <sub>total</sub>	U						
< 20 000	-	< 3.0	-								
3.	6/26/P3	Al	U	Sb	U	As	U	Ba	U	B	U
		< 20 000	-	< 200	-	< 20	-	< 10 000	-	< 9000	-
		Cd	U	Cr <sub>total</sub>	U	Co	U	Cu	U	Zn	U
		< 9.0	-	< 0.030	-	< 60	-	< 3000	-	< 20 000	-
		Pb	U	Mn	U	Hg	U	Ni	U	Se	U
		< 10	-	< 7000	-	< 40	-	< 400	-	< 100	-
		Sr	U	Sn <sub>total</sub>	U						
< 20 000	-	< 3.0	-								
4.	6/26/P4	Al	U	Sb	U	As	U	Ba	U	B	U
		< 20 000	-	< 200	-	< 20	-	< 10 000	-	< 9000	-
		Cd	U	Cr <sub>total</sub>	U	Co	U	Cu	U	Zn	U
		< 9.0	-	< 0.030	-	< 60	-	< 3000	-	< 20 000	-
		Pb	U	Mn	U	Hg	U	Ni	U	Se	U
		< 10	-	< 7000	-	< 40	-	< 400	-	< 100	-
		Sr	U	Sn <sub>total</sub>	U						
< 20 000	-	< 3.0	-								

Item	Sample No.	Migration of certain elements [mg/kg]									
Category III											
5.	6/26/P5	Al	U	Sb	U	As	U	Ba	U	B	U
		< 20 000	-	< 200	-	< 20	-	< 10 000	-	< 9000	-
		Cd	U	Cr <sub>total</sub>	U	Co	U	Cu	U	Zn	U
		< 9.0	-	< 0.030	-	< 60	-	< 3000	-	< 20 000	-
		Pb	U	Mn	U	Hg	U	Ni	U	Se	U
		< 10	-	< 7000	-	< 40	-	< 400	-	< 100	-
		Sr	U	Sn <sub>total</sub>	U						
< 20 000	-	< 3.0	-								
6.	6/26/P6	Al	U	Sb	U	As	U	Ba	U	B	U
		< 20 000	-	< 200	-	< 20	-	< 10 000	-	< 9000	-
		Cd	U	Cr <sub>total</sub>	U	Co	U	Cu	U	Zn	U
		< 9.0	-	< 0.030	-	< 60	-	< 3000	-	< 20 000	-
		Pb	U	Mn	U	Hg	U	Ni	U	Se	U
		< 10	-	< 7000	-	< 40	-	< 400	-	< 100	-
		Sr	U	Sn <sub>total</sub>	U						
< 20 000	-	< 3.0	-								
7.	6/26/P7	Al	U	Sb	U	As	U	Ba	U	B	U
		< 20 000	-	< 200	-	< 20	-	< 10 000	-	< 9000	-
		Cd	U	Cr <sub>total</sub>	U	Co	U	Cu	U	Zn	U
		< 9.0	-	< 0.030	-	< 60	-	< 3000	-	< 20 000	-
		Pb	U	Mn	U	Hg	U	Ni	U	Se	U
		< 10	-	< 7000	-	< 40	-	< 400	-	< 100	-
		Sr	U	Sn <sub>total</sub>	U						
< 20 000	-	< 3.0	-								

Item	Sample number	Content PAHs [mg/kg]					
1.	6/26/P1	benzo[a]pyrene	U	benzo[j]fluoranthene	U	phenantrene	U
		< 0.1	-	< 0.1	-	< 0.1	-
		benzo[e]pyrene	U	benzo[k]fluoranthene	U	pyrene	U
		< 0.1	-	< 0.1	-	< 0.1	-
		benzo[a]anthracene	U	dibenzo[a,h]anthracene	U	anthracene	U
		< 0.1	-	< 0.1	-	< 0.1	-
		chrysene	U	benzo[g,h,i]perylene	U	fluoranthene	U
		< 0.1	-	< 0.1	-	< 0.1	-
2.	6/26/P2	benzo[b]fluoranthene	U	indeno(1,2,3-cd)pyrene	U	naphthalene	U
		< 0.1	-	< 0.1	-	< 0.1	-
		benzo[a]pyrene	U	benzo[j]fluoranthene	U	phenantrene	U
		< 0.1	-	< 0.1	-	< 0.1	-
		benzo[e]pyrene	U	benzo[k]fluoranthene	U	pyrene	U
		< 0.1	-	< 0.1	-	< 0.1	-
		benzo[a]anthracene	U	dibenzo[a,h]anthracene	U	anthracene	U
		< 0.1	-	< 0.1	-	< 0.1	-
3.	6/26/P3	chrysene	U	benzo[g,h,i]perylene	U	fluoranthene	U
		< 0.1	-	< 0.1	-	< 0.1	-
		benzo[b]fluoranthene	U	indeno(1,2,3-cd)pyrene	U	naphthalene	U
		< 0.1	-	< 0.1	-	< 0.1	-
		benzo[a]pyrene	U	benzo[j]fluoranthene	U	phenantrene	U
		< 0.1	-	< 0.1	-	< 0.1	-
		benzo[e]pyrene	U	benzo[k]fluoranthene	U	pyrene	U
		< 0.1	-	< 0.1	-	< 0.1	-
benzo[a]anthracene	U	dibenzo[a,h]anthracene	U	anthracene	U		
< 0.1	-	< 0.1	-	< 0.1	-		

Item	Sample number	Content PAHs [mg/kg]					
		benzo[a]pyrene	U	benzo[j]fluoranthene	U	phenantrene	U
4.	6/26/P4	< 0.1	-	< 0.1	-	< 0.1	-
		benzo[e]pyrene	U	benzo[k]fluoranthene	U	pyrene	U
		< 0.1	-	< 0.1	-	< 0.1	-
		benzo[a]anthracene	U	dibenzo[a,h]anthracene	U	anthracene	U
		< 0.1	-	< 0.1	-	< 0.1	-
		chrysene	U	benzo[g,h,i]perylene	U	fluoranthene	U
		< 0.1	-	< 0.1	-	< 0.1	-
		benzo[b]fluoranthene	U	indeno(1,2,3-cd)pyrene	U	naphthalene	U
5.	6/26/P5	< 0.1	-	< 0.1	-	< 0.1	-
		benzo[e]pyrene	U	benzo[k]fluoranthene	U	pyrene	U
		< 0.1	-	< 0.1	-	< 0.1	-
		benzo[a]anthracene	U	dibenzo[a,h]anthracene	U	anthracene	U
		< 0.1	-	< 0.1	-	< 0.1	-
		chrysene	U	benzo[g,h,i]perylene	U	fluoranthene	U
		< 0.1	-	< 0.1	-	< 0.1	-
		benzo[b]fluoranthene	U	indeno(1,2,3-cd)pyrene	U	naphthalene	U
6.	6/26/P6	< 0.1	-	< 0.1	-	1.8	±0.8
		benzo[e]pyrene	U	benzo[k]fluoranthene	U	pyrene	U
		< 0.1	-	< 0.1	-	< 0.1	-
		benzo[a]anthracene	U	dibenzo[a,h]anthracene	U	anthracene	U
		< 0.1	-	< 0.1	-	< 0.1	-
		chrysene	U	benzo[g,h,i]perylene	U	fluoranthene	U
		< 0.1	-	< 0.1	-	< 0.1	-
		benzo[b]fluoranthene	U	indeno(1,2,3-cd)pyrene	U	naphthalene	U
7.	6/26/P7	< 0.1	-	< 0.1	-	2.6	±1.2
		benzo[e]pyrene	U	benzo[k]fluoranthene	U	pyrene	U
		< 0.1	-	< 0.1	-	< 0.1	-
		benzo[a]anthracene	U	dibenzo[a,h]anthracene	U	anthracene	U
		< 0.1	-	< 0.1	-	< 0.1	-
		chrysene	U	benzo[g,h,i]perylene	U	fluoranthene	U
		< 0.1	-	< 0.1	-	< 0.1	-
		benzo[b]fluoranthene	U	indeno(1,2,3-cd)pyrene	U	naphthalene	U
		< 0.1	-	< 0.1	-	0.8	±0.4

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%

Number of copies – 2

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-END OF THE REPORT-

