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**LABORATORY OF MATERIAL
ENGINEERING AND ENVIRONMENT**



AB 910

TEST REPORT No. 643.1/DLS/2019

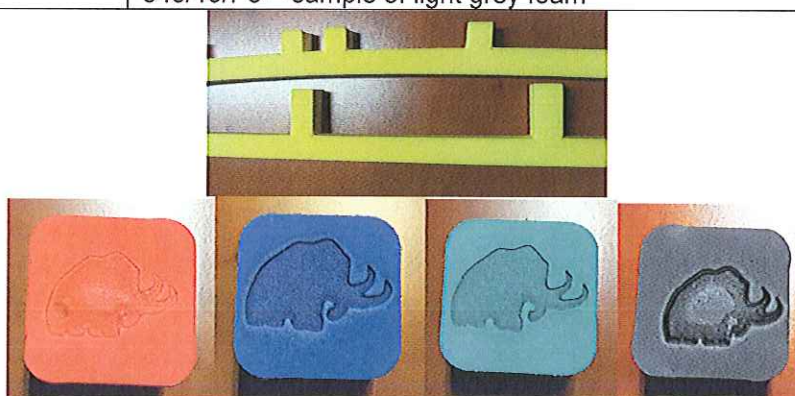
Replaces the Test Report No.643/DLS/2019 of 20.12.2019

**Testing the material samples of Mammutico foam, delivered for testing
by Mammuti Co. for PAHs content**

Orderer: Mammuti Co. Sp. z o.o.
Plac Zgody 6A
05-820 Piastów, Poland

Project UP/DLS-26039/OR
No.:

Name of tested object:	Material samples of Mammutico foam
Orderer markings:	Mammutico Foam yellow – yellow sample Mammutico Foam blue – blue sample Mammutico Foam red – red sample Mammutico Foam green – green sample Mammutico Foam gray – light grey sample
Number of sample, according to the R-DLS/7:	643/19/P1 – sample of yellow foam 643/19/P2 – sample of blue foam 643/19/P3 – sample of red foam 643/19/P5 – sample of green foam 643/19/P6 – sample of light grey foam



Date of delivery of the object for testing: 21.11.2019
Date of beginning / completion of tests: 29.11.2019 / 20.12.2019
Place of testing: Laboratory of Material Engineering and Environment

Sample number	Statement of conformity /non-conformity of test results with the requirements ^{/1}	
Testing and assessment of polycyclic aromatic hydrocarbons (PAHs) in the course of awarding the GS mark - Specification pursuant to article 21(1) no. 3 of the Product Safety Act (ProdSG) – AfPS GS 2014:01 PAK, Federal Institute for Occupational Safety and Health		
643/19/P1 643/19/P2 643/19/P3 643/19/P5 643/19/P6	Category 1 Content of each of the following PAHs: 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, chrysen, is < 0.2 mg/kg in relation to the weight of material with admixture of PAH. Total content of the following PAHs: acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene < 1 mg/kg in relation to the weight of material with admixture of PAH Content of naphthalene < 1 mg/kg in relation to the weight of material with admixture of PAH Total content of 18 WWA is < 1 mg/kg in relation to the weight of material with admixture of PAH	+

signs: "+" – conform to the requirements, "-" – not conform to the requirements

Note: Confirmation of 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:

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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, 28.01.2020.

Prof. dr hab. inż. Beata Grynkiewicz-Bylina

/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
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Description of the samples

Material samples of Mammutico foam in: yellow, blue, red, green, light grey.
The samples were taken and delivered for testing by the Orderer.

Scope and methods of testing

Item	Tested parameters	Testing method	Testing procedure and Standard
1.	Polycyclic aromatic hydrocarbons (PAHs) content	Gas chromatography method with tandem mass spectrometry (GC-MS/MS)	PB-DLS/38, 5 th edition; 2019

Results¹²

Item	Sample number	Content PAHs [mg/kg]	
1.	643/19/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	-
		benzo[g,h,i]perylene	U
		< 0.1	-
		indeno(1,2,3-cd)pyrene	U
		< 0.1	-
		acenaphthene	U
		< 0.1	-
		fluorene	U
		< 0.1	-
		acenaphthylene	U
		< 0.1	-
		phenanthrene	U
		< 0.1	-
		pyrene	U
		0.47	±0.15
		anthracene	U
		< 0.1	-
		fluoranthene	U
		< 0.1	-
		naphthalene	U
		< 0.1	-

Item	Sample number	Content PAHs [mg/kg]	
2.	643/19/P2	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	-
		benzo[g,h,i]perylene	U
		< 0.1	-
		indeno(1,2,3-cd)pyrene	U
		< 0.1	-
		acenaphthene	U
		< 0.1	-
		fluorene	U
		< 0.1	-
		acenaphthylene	U
		< 0.1	-
		phenanthrene	U
		< 0.1	-
3.	643/19/P3	pyrene	U
		< 0.1	-
		anthracene	U
		< 0.1	-
		fluoranthene	U
		< 0.1	-
		naphthalene	U
		< 0.1	-
		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	-
		benzo[g,h,i]perylene	U
		< 0.1	-
		indeno(1,2,3-cd)pyrene	U
		< 0.1	-
		acenaphthene	U
		< 0.1	-
		fluorene	U
		< 0.1	-
		acenaphthylene	U
		< 0.1	-
		phenanthrene	U
		< 0.1	-
		pyrene	U
		< 0.1	-
		anthracene	U
		< 0.1	-
		fluoranthene	U
		< 0.1	-
		naphthalene	U
		< 0.1	-

Item	Sample number	Content PAHs [mg/kg]	
4.	643/19/P5	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	-
		benzo[g,h,i]perylene	U
		< 0.1	-
		indeno(1,2,3-cd)pyrene	U
		< 0.1	-
		acenaphthene	U
		< 0.1	-
		fluorene	U
		< 0.1	-
		acenaphthylene	U
		< 0.1	-
		phenanthrene	U
		< 0.1	-
5.	643/19/P6	pyrene	U
		< 0.1	-
		anthracene	U
		< 0.1	-
		fluoranthene	U
		< 0.1	-
		naphthalene	U
		< 0.1	-
		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	-
		benzo[g,h,i]perylene	U
		< 0.1	-
		indeno(1,2,3-cd)pyrene	U
		< 0.1	-
		acenaphthene	U
		< 0.1	-
		fluorene	U
		< 0.1	-
		acenaphthylene	U
		< 0.1	-
		phenanthrene	U
		< 0.1	-
		pyrene	U
		< 0.1	-
		anthracene	U
		< 0.1	-
		fluoranthene	U
		< 0.1	-
		naphthalene	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/ not 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-G8:03/2009 guidelines.: "Guidelines on the Reporting of Compliance with Specification":

1. **Compliance with the requirements is stated when the measurement result/test result plus/minus expanded uncertainty at confidence level 95% and coverage factor $k = 2$, is within the limits defined in regulations / standards by the accepted value/values.**
2. **Non-compliance with the requirements is stated when the measurement result/test result plus/minus expanded uncertainty at confidence level 95% and coverage factor $k = 2$, is outside the limits defined in regulations / standards by the accepted value/values**
3. **Compliance or non-compliance with the requirements cannot be stated when the measurement result/test result plus/minus expanded uncertainty at confidence level 95% and coverage factor $k = 2$, overlaps upper/lower limit defined in regulations / standards by the accepted value/values.**

^{1/} In relation to the Test Report No. 643/DLS/2019 the Test Report 643.1/DLS/2019 was complemented by the statement of conformity with the requirements in Testing and assessment of polycyclic aromatic hydrocarbons (PAHs) in the course of awarding the GS mark - Specification pursuant to article 21(1) no. 3 of the Product Safety Act (ProdSG) – AfPS GS 2014:01 PAK, Federal Institute for Occupational Safety and Health

^{2/} In relation to the Test Report No. 643/DLS/2019 the Test Report 643.1/DLS/2019 was complemented by test results for acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, 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, dibenzo[a,h]anthracene, benzo[g,h,i]perylene.

Number of copies – 2

Mammuti Co. Sp. z o.o. x 1

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