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Bellaterra : November 7th, 2023
Dossier no.: 23/32305446
Reference of the requester: **GRUPO PUMA ESPAÑA, S.L.**
TIN.: B14528921
AVDA. AGRUPACIÓN CÓRDOBA, Nº 17
14014 - CÓRDOBA

TEST REPORT

No. LGAI sample: **23/16237**

RECEIVED MATERIAL

On July 7th, 2023, samples of two-component flexible mortar have been received at Applus Laboratories, with the following reference according to the Petitioner:

MORCEM® DRY SF PLUS

REQUESTED TEST

1- UNE-EN 14944-3:2008: Influence of cement-based materials on water intended for human consumption. Test method.
Part 3: Substances migration from cement-based materials. Assess for compliance with RD 3/2023 (Annex I).

DATE OF TESTING: From 12/07/2023 to 26/10/2023.

RESULTS: See attached pages.

Digitally signed by
JOAN MARTINEZ
EGEA

Digitally signed
by MARTA
ROVIRA
ARGEMI

Responsible for Construction materials
LGAI Technological Centre S.A.

Responsible Technician
LGAI Technological Centre S.A.

Results provided in this document exclusively correspond to the above mentioned and tested material.

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TEST CONDITIONS:

Sampling, transport, and conservation of samples:

Samples were provided by GRUPO PUMA ESPAÑA S.L. and no special conservation conditions were required.

Test tubes preparation:

- Mechanically mix: 4 kg of powder of component A + 1.21 kg Liquid component B, until getting a homogeneous paste.
- Product applied in two cross coats with a thickness of 1 mm per coat. Leave two hours between the application of one coat and another.
- Mixing date: 12/07/2023.
- Minimum curing time: 28 days at (20 ± 2) °C

The piece has been prepared in such a way that only the surface intended for the study is exposed to migrating water.

Pretreatment without disinfection treatment:

The sample is subjected to static contact with preconditioning water over a succession of five contact periods, without rinsing between periods, at a temperature of (23 ± 2) °C as follows:

- Three periods of (24 ± 1) h.
- One period of (72 ± 1) h.
- One period of (24 ± 1) h.

Migration test at room temperature:

Three cycles of 72 hours at (23 ± 2) °C are performed, thus obtaining 3 test samples. All parameters are analysed in the first cycle of 72 hours, and only those parameters that are not within the limits of RD 3/2023 in the first cycle are repeated in the second and third cycles.

TEST DATA:

- Extraction means: Chlorine-free water.
- Migration temperature: (23 ± 2) °C.
- Test water volume: 8 litres for each cycle.
- Surface of the test tube: 100 cm²
- Surface / volume ratio: 2,0 dm²/l

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RESULTS:

Physical/Chemical

Parameter	RESULT	Legal norm
Colour (Ud. Pt/Co)	<5	≤ 15
Smell (Dilution index)	1	≤ 3
Conductivity at 20°C (µS/cm) (Note 1)	369 ± 55	≤ 2500
Turbidity (NTU)	0.25	≤ 4
pH at 25°C (Ud. pH)	8.66 ± 0.20	≥ 6,5 ≤ 9,5
Oxidability (mg O ₂ /l)	0.58 ± 0.08	≤ 5
Langelier index (LSI) (Note 6)	0.1	≥-0,5 ≤ 0,5
Total organic carbon (TOC) (mg/l)	<1.0	≤ 5
Combined residual Chlorine (mg/l)	0.24	≤ 2
Residual Free Chlorine	0.07	≤ 1
Bromate (mg/l)	0.003 ± 0.0007	≤ 0.01
Chloride (mg/l)	53.1 ± 6.4	≤ 250
Ammonium (mg/l)	0.21 ± 0.04	≤ 0.5
Cyanide (µg/l)	<5	≤ 50
Sulphates (mg/l)	<2	≤ 250
Fluorides (mg/l)	<0.1	≤ 1.5
Nitrates (mg/l)	<0.5	≤ 50
Nitres (mg/l) (Note 7)	<0.1	≤ 0.5
Sodium (mg/l)	56.4 ± 7.3	≤ 200
Volatile Organic Compounds		
- 1.2 Dichloroethane (µg/l)	<0.30	≤ 3
Trichloroethane + Tetrachloroethylene (µg/l)	1.082	≤ 10
Benzene	<0.30	≤ 1
Trihalomethanes (total) (µg/l) (Note 2)	<4	≤ 100
Dissolved Aluminium (Al) (µg/l)	50.8 ± 11.1	≤ 200
Dissolved Antimony (Sb) (µg/l)	<1	≤ 10
Dissolved Arsenic (As) (µg/l)	<1	≤ 10
Dissolved Boron (B) (µg/l)	104 ± 14	≤ 1500
Dissolved Cadmium (Cd) (µg/l)	<0.05	≤ 5
Dissolved Copper (Cu) (µg/l)	<1	≤ 2000
Dissolved Chromium (Cr) (µg/l)	<1	≤ 50

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RESULTS:

Physical/Chemical

Parameter	RESULT	Legal norm
Dissolved Iron (Fe) (µg/l)	<2	≤ 200
Dissolved Magnesium (Mn) (µg/l)	<1	≤ 50
Dissolved Mercury (Hg) (µg/l)	<0.015	≤ 1
Dissolved Nickel (Ni) (µg/l)	<1	≤ 20
Dissolved lead (Pb) (µg/l)	<0.5	≤ 10
Dissolved Selenium (Se) (µg/l)	<0.5	≤ 20
Polycyclic Aromatic Hydrocarbons		
Benzo-a-] pyrene (µg/l)	<0.001	≤ 0.01
Total Polycyclic Aromatic Hydrocarbons (µg/l) (Note 3)	<0.03	≤ 0.10
Pesticides		
- Alachlor (µg/l)	<0.0005	≤ 0.1
- Aldrin (µg/l)	<0.0005	≤ 0.1
- Dieldrin (µg/l)	<0.0005	≤ 0.1
- Endrin (µg/l)	<0.0005	≤ 0.1
Heptachlor Epoxide (isomer B) (µg/l)	<0.0005	≤ 0.1
- Heptachlor (µg/l)	<0.0005	≤ 0.1
- Lindane (µg/l)	<0.0005	≤ 0.1
- Metolachlor (µg/l)	<0.0005	≤ 0.1
- Methoxychlor (µg/l)	<0.0005	≤ 0.1
- Simazine (µg/l)	<0.010	≤ 0.1
- Terbutylazine (µg/l)	<0.010	≤ 0.1
Total amount of pesticides (total) (µg/l)	<0.50	≤ 0.5
- Acrylamide (µg/l)	<0.030	≤ 0.1
Epichlorohydrin (µg/l)	<0.07	≤ 0.1
Vinyl Chloride (µg/l)	<0.15	≤ 0.5
Chlorites (µg/l)	<0.005	≤ 0.25
Chlorates (µg/l)	0.19 ± 0.06	≤ 0.25
Haloacetic Acids (µg/l) (Note 4)	<15	≤ 60
PFAs (µg/l) (Note 5)	<0.075	≤ 0.1
Bisphenol A (µg/l)	<0.50	≤ 2.5
Uranium (µg/l)	<1.0	≤ 30
Microcystins (µg/l)	<0.20	≤ 1

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RESULTS:

Physical/Chemical

Parameter	RESULT	Legal norm
Radioactivity		
Total Alpha Activity (Bq/l)	<0.02	≤ 0.1
Indicative Dose (mSv/year)	<0.10	≤ 0.1

Biological / Micro-biological analysis:

Parameter	RESULT	Legal norm
Escherichia Coli (cfu/100ml)	0	≤ 0
Clostridium perfringens (cfu/100ml)	0	≤ 0
Total Coliforms (cfu/100ml)	0	≤ 0
Aerobic Bacteria at 22°C (72h) (cfu/ml)	0	≤ 100
Intestinal Enterococcus (cfu/ml)	0	≤ 0
somatic coliphages (cfu/ml)	0	≤ 0

Note 1: The temperature of the sample at the time of conductivity measurement was 24.5 °C. Conductivity correction using a temperature compensation system.

Note 2: The subparameter "Trihalomethanes (total)" is obtained by summing the concentrations of Chloroform, Bromoform, Dibromochloromethane, and Bromodichloromethane, included in the parameter "volatile compounds s/R. D 3/2023".

Note 3: The limit value for Polycyclic Aromatic Hydrocarbons (total) (0.1 µg/l) corresponds to the sum of the compounds benzo-(b)-fluoranthene, benzo-(k)-fluoranthene, indeno-1,2,3-c, d-pyrene, and benzo-(g,h,i)-perylene.

Note 4: The value of total Haloacetic Acids corresponds to the sum of the limits of quantification of the following compounds: Chloroacetic acid, Dichloroacetic acid, Trichloroacetic acid, Bromoacetic acid, Dibromoacetic acid.

Note 5: The value of total PFAs corresponds to the sum of the limits of quantification of the following compounds: PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFNA, PFDA, PFUnDA, PFDoDA, PFTDA, PFBS, PFPeS, PFHxS, PFHpS, PFOS, PFNS, PFDS, PFUnDS, PFDoDS, PFTrDS

Note 6: A reference temperature of 25°C was used for the determination of the Langelier Index.

Note 7: For the determination of Nitrites, the limit of quantification depends on the dilution performed due to matrix interferences.

CONCLUSION

Based on the parameters analysed, the sample complies with the Spanish Royal Decree 3/2023, of January 10, which establishes the technical-sanitary criteria for consumption water quality, its control and supply.

Guarantee of quality service

Applus+ guarantees that this work has been conducted in accordance with the requirements of our Quality and Sustainability System, fulfilling contractual conditions and legal regulations.

As part of our improvement program, we appreciate any comments you may have, directed to the person signing this document or to the Quality Director of Applus+, at the following address: satisfaccion.cliente@applus.com