ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

Royale Play Najm
BERGER PAINTS EMIRATES LTD. CO. L.L.C.

EPD HUB, HUB-3019
Published on 08.03.2025, last updated on 08.03.2025, valid until 07.03.2030

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	BERGER PAINTS EMIRATES LTD. CO. L.L.C.
Address	P.O. BOX 27524, AL QOUZ, DUBAI, U.A.E.
Contact details	weassure.uae@asianpaints.com
Website	http://www.asianpaintsarabia.com/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2 & ISO 14025
PCR	EPD Hub Core PCR Version 1.1, 5 Dec 2023
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with modules C1-C4, D
EPD author	Berger Paints Emirates Ltd. Co. L.L.C.
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Haiha Nguyen, as an authorized verifier acting for EPD Hub Limited

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	Royale Play Najm
Additional labels	Royale Play
Product reference	AL QOUZ, DUBAI, UNITED ARAB EMIRATES
Place of production	From 01.01.2023 - to 31.12.2023
Period for data	No averaging
Averaging in EPD	Not Relevant
Variation in GWP-fossil for A1-A3	-

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kilogram of material
Declared unit mass	1 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	2,04E+00
GWP-total, A1-A3 ($kgCO_2e$)	1,97E+00
Secondary material, inputs (%)	3.12
Secondary material, outputs (%)	0
Total energy use, A1-A3 (kWh)	7
Net freshwater use, A1-A3 (m^3)	0.04

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Since its foundation in 1942, Asian Paints has come a long way to become India's leading and Asia's third largest paint company, with a turnover of INR 205.16 billion. We operate in 16 countries and has 26 manufacturing facilities in the world, servicing consumers in over 60 countries.

Asian Paints Berger has a strong manufacturing base in the Middle East, with dedicated plants in Dubai, Sohar, and Bahrain. These fully automated units create our range of Middle East specific products. They are equipped with aseptic processing areas, computerised dosing stations to create finely calibrated formulations, R&D centres that incubate innovative paint technologies, and automated loading bays to respond to orders in an agile fashion.

Our team thrives on a culture of inclusivity, and we lay emphasis on collaboration. Our folks have a strong sense of ownership and revel in the open and interactive work culture. Innovation and invention are of prime importance in any organisation and in our industry, doubly so. Performance and agility are highly valued at Asian Paints Berger. Diversity is cherished and nourished, as we believe our people's unique perspectives can add strength and creativity to the Asian Paints Berger offering.

Continuous learning is the key to the growth of the individual and the organisation. Training forms an important part of the experience at Asian Paints Berger – leadership qualities are reinforced, and competencies are upgraded. We also regularly recruit new and emerging talents from top institutes.

The group has a strong presence in five regions of the world, including Middle East, South Asia, South East Asia and South Pacific, through its five corporate brands – Asian Paints Berger, Asian Paints, SCIB Paints, Apco Coatings, Taubmans, and Kadisco.

Driven by Research

Asian Paints Berger's success lies in its unrelenting R & D and its association with international professional bodies. We access the latest worldwide trends through our network of Technology Centres around the globe. As a result of these persistent efforts, Asian Paints Berger's product range is designed to be weatherproof, acting as an effective means of protection against the various destructive and corrosive elements of nature.

Our R&D plays many roles:-

- It supports manufacturing in process cycle time reduction and enhances productivity.
- Solves environmental issues by minimising waste generation and through recycling.
- Supports marketing with technical tools/USPs to sell new products.
- Assists the Materials department by discovering raw material alternatives, so that they can negotiate better with vendors or, have the flexibility to find new suppliers

Certified Quality & Regulatory Approvals

Asian Paints Berger is strongly committed to quality, and our Operations in the Middle-East are ISO 9001, ISO 14001 & ISO 45001 certified.

Besides being backed by various International third party certifications, our products have regulatory approvals such as DM-GBES, ESMA-ECAS & ADQCC product conformity.

PRODUCT DESCRIPTION

A premium quality acrylic co-polymer waterbased latex metallic special effects paint that creates a variety of pattern on the interior walls. The product is inspired from fashion, Glitters and are perfectly suitable suitable for decoration of interior walls in classical and modern environments.

Technical properties:
-Finish: Glitter with sheen
-Volume Solid: 44 ± 2 %
-Specific gravity: 1.19 (Theoretical)
-Theoretical Spread Rate: 5-10 m2/L (per coat)

Further information can be found at http://www.asianpaintsarabia.com/

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Minerals	64.21	MEA
Fossil materials	35.79	MEA

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0,0205

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kilogram of material
Mass per declared unit	1 kg
Reference service life	5 Years

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
x	x	x	MND	MND	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/ demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

The production process consists of four steps: pre-mixing, finishing, testing and packing. During the first two steps, water and paint components are added and mixed, while in the third step, the paint is tested to ensure quality and in the final step the paint material is transferred into either steel can or polypropylene bucket, then palletised and secured for storage and distribution. The production line primarily consumes electricity. Diesel & electricity is used in forklift for internal transport. Ancillary materials include water and cleaning agent. There is an estimated loss of 3% as the materials are transferred between different vessels. Manufacturing wastes include wastewater, which is treated in a wastewater treatment plant; waste paint and contaminated packaging materials are landfilled at a specified facility.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

PRODUCT USE AND MAINTENANCE (B1-B7)

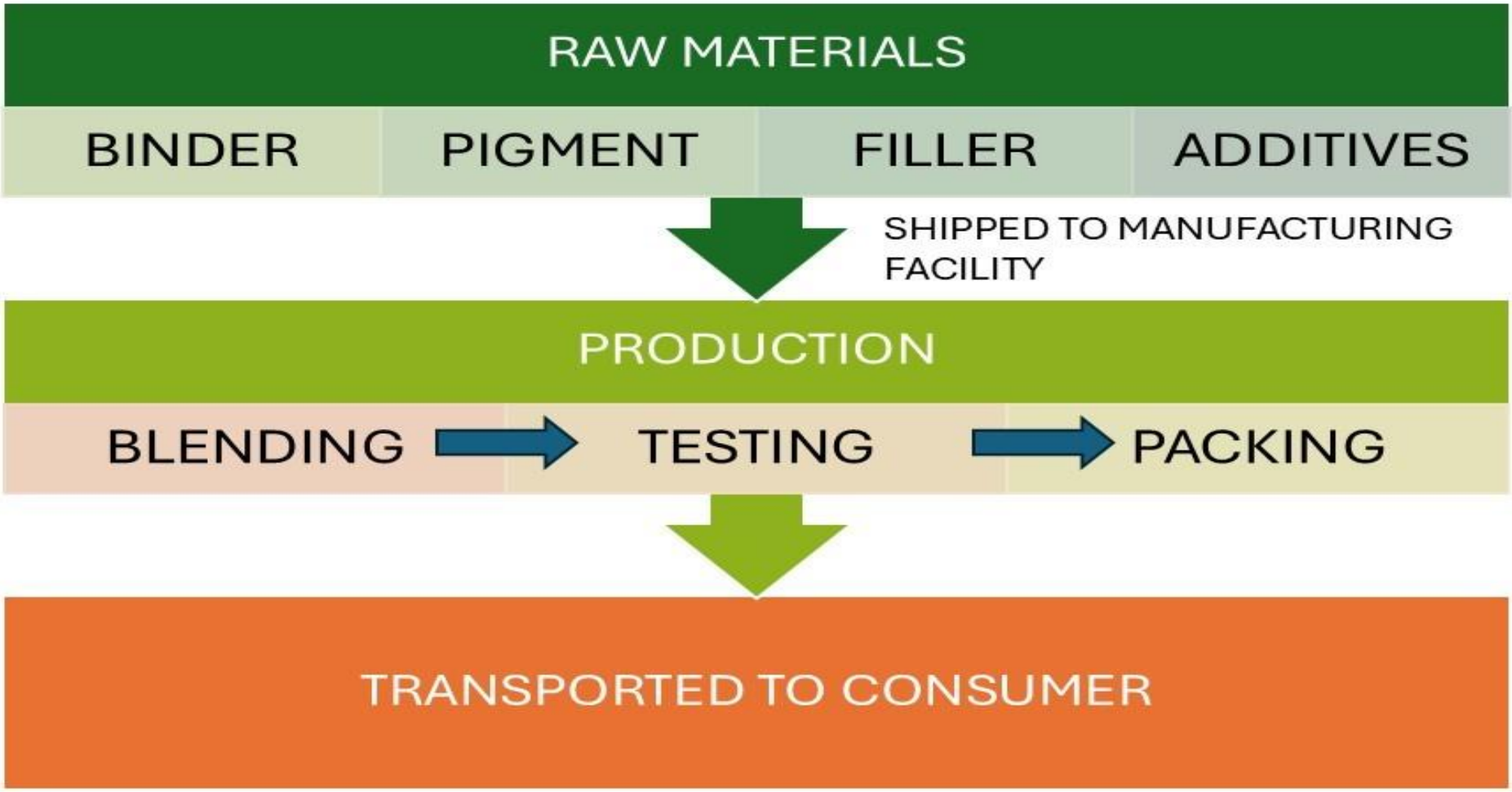
This EPD does not cover the use phase.

Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

Since the paint adheres firmly in a thin layer onto the underlying material, at EoL stage 100% of the solid content of the product is assumed to be collected together with the substrate, making the consumption of energy and natural resources for the paint alone negligible. The impacts of demolition are, therefore, close to zero (C1).The dismantled structure on which the paint is applied to is delivered to the nearest waste treatment plant, assumed to be located 100 km from the construction site (C2). At the waste treatment plant, waste that can be reused, recycled or recovered is separated and diverted for further use. The remaining is conservatively assumed to be landfilled (C4). Module D considers the benefits and loads, but as 100% of the material may be going for landfill no benefits are considered.

MANUFACTURING PROCESS



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging material	Allocated by mass or volume
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	Not Relevant

There is no average result considered in this study since this EPD refers to one specific product produced in one production plant.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.8, Plastics Europe, Federal LCA Commons and One Click LCA databases as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	1,74E+00	2,33E-02	2,09E-01	1,97E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,15E-03	0,00E+00	1,53E-01	0,00E+00
GWP – fossil	kg CO_2e	1,73E+00	2,33E-02	2,84E-01	2,04E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,15E-03	0,00E+00	7,76E-02	0,00E+00
GWP – biogenic	kg CO_2e	0,00E+00	0,00E+00	-7,52E-02	-7,52E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	7,52E-02	0,00E+00
GWP – LULUC	kg CO_2e	1,44E-03	1,57E-05	1,66E-04	1,62E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,27E-06	0,00E+00	7,64E-06	0,00E+00
Ozone depletion pot.	kg $CFC\text{-}_{11}$e	5,00E-06	4,72E-09	1,51E-08	5,02E-06	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,42E-09	0,00E+00	2,24E-09	0,00E+00
Acidification potential	mol H^+e	1,81E-02	6,50E-04	8,35E-04	1,95E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,60E-05	0,00E+00	6,31E-05	0,00E+00
EP-freshwater[2)]	kg Pe	6,84E-05	1,01E-07	4,87E-06	7,34E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,04E-08	0,00E+00	1,22E-07	0,00E+00
EP-marine	kg Ne	1,93E-03	1,61E-04	2,03E-04	2,29E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,74E-06	0,00E+00	3,14E-05	0,00E+00
EP-terrestrial	mol Ne	1,93E-02	1,79E-03	2,11E-03	2,32E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	8,54E-05	0,00E+00	2,34E-04	0,00E+00
POCP ("smog")[3)]	kg NMVOCe	6,35E-03	4,65E-04	6,97E-04	7,51E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,73E-05	0,00E+00	8,68E-05	0,00E+00
ADP-minerals & metals[4)]	kg Sbe	5,94E-05	3,74E-08	9,48E-07	6,04E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,44E-08	0,00E+00	2,52E-08	0,00E+00
ADP-fossil resources	MJ	2,43E+01	3,01E-01	5,77E+00	3,04E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	9,24E-02	0,00E+00	1,71E-01	0,00E+00
Water use[5)]	m^3e depr.	1,67E+00	9,74E-04	6,94E-02	1,74E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,13E-04	0,00E+00	1,03E-03	0,00E+00

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	1,51E-07	9,97E-10	9,48E-09	1,62E-07	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,09E-10	0,00E+00	1,25E-09	0,00E+00
Ionizing radiation[6)]	kBq U235e	9,40E-02	1,39E-03	7,54E-03	1,03E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,40E-04	0,00E+00	8,39E-04	0,00E+00
Ecotoxicity (freshwater)	CTUe	8,26E+01	2,06E-01	2,93E+00	8,58E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	8,31E-02	0,00E+00	1,68E-01	0,00E+00
Human toxicity, cancer	CTUh	1,58E-09	1,30E-11	1,74E-10	1,77E-09	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,04E-12	0,00E+00	9,44E-12	0,00E+00
Human tox. non-cancer	CTUh	4,90E-08	1,48E-10	1,73E-09	5,09E-08	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	8,23E-11	0,00E+00	1,29E-10	0,00E+00
SQP[7)]	-	1,04E+01	8,83E-02	9,76E+00	2,03E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,06E-01	0,00E+00	4,14E-01	0,00E+00

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. This impact category deals mainly with the eventual impact of low-dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator; 7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	1,77E+00	2,32E-03	7,56E-01	2,53E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,04E-03	0,00E+00	3,18E-03	0,00E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	6,60E-01	6,60E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	-6,60E-01	0,00E+00
Total use of renew. PER	MJ	1,77E+00	2,32E-03	1,42E+00	3,19E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,04E-03	0,00E+00	-6,57E-01	0,00E+00
Non-re. PER as energy	MJ	1,77E+01	3,01E-01	4,62E+00	2,26E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	9,24E-02	0,00E+00	1,71E-01	0,00E+00
Non-re. PER as material	MJ	6,57E+00	0,00E+00	9,31E-01	7,50E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	-7,50E+00	0,00E+00
Total use of non-re. PER	MJ	2,43E+01	3,01E-01	5,55E+00	3,01E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	9,24E-02	0,00E+00	-7,33E+00	0,00E+00
Secondary materials	kg	3,12E-02	1,29E-04	5,13E-03	3,65E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,57E-05	0,00E+00	6,13E-05	0,00E+00
Renew. secondary fuels	MJ	7,39E-04	4,86E-07	1,71E-02	1,78E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,59E-07	0,00E+00	2,35E-06	0,00E+00
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	4,20E-02	2,26E-05	1,68E-03	4,37E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,20E-05	0,00E+00	1,84E-04	0,00E+00

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	2,99E-01	4,11E-04	9,70E-03	3,09E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,23E-04	0,00E+00	0,00E+00	0,00E+00
Non-hazardous waste	kg	3,76E+00	3,96E-03	1,79E-01	3,95E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,01E-03	0,00E+00	6,98E-01	0,00E+00
Radioactive waste	kg	5,44E-05	2,10E-06	3,80E-06	6,03E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,18E-07	0,00E+00	0,00E+00	0,00E+00

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	1,69E+00	2,31E-02	2,76E-01	1,99E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,09E-03	0,00E+00	7,09E-02	0,00E+00
Ozone depletion Pot.	kg CFC_{-11}e	6,61E-06	3,74E-09	1,29E-08	6,63E-06	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,12E-09	0,00E+00	1,78E-09	0,00E+00
Acidification	kg SO_2e	1,57E-02	5,20E-04	6,73E-04	1,69E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,02E-05	0,00E+00	4,79E-05	0,00E+00
Eutrophication	kg PO_4^3e	3,72E-03	5,93E-05	2,27E-04	4,00E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,61E-06	0,00E+00	2,82E-03	0,00E+00
POCP (“smog”)	kg C_2H_4e	8,56E-04	1,35E-05	4,68E-05	9,16E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,90E-07	0,00E+00	1,33E-05	0,00E+00
ADP-elements	kg Sbe	5,86E-05	3,66E-08	9,37E-07	5,96E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,40E-08	0,00E+00	2,44E-08	0,00E+00
ADP-fossil	MJ	2,43E+01	3,01E-01	5,77E+00	3,04E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	9,24E-02	0,00E+00	1,71E-01	0,00E+00

ENVIRONMENTAL IMPACTS – GWP-GHG - THE INTERNATIONAL EPD SYSTEM

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG[9)]	kg CO_2e	1,74E+00	2,33E-02	2,84E-01	2,04E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,15E-03	0,00E+00	7,76E-02	0,00E+00

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013). In addition, the characterisation factors for the flows - CH4 fossil, CH4 biogenic and Dinitrogen monoxide - were updated in line with the guidance of IES PCR 1.2.5 Annex 1. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterization factor for biogenic CO2 is set to zero.

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? Read more online
This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

HaiHa Nguyen, as an authorized verifier acting for EPD Hub Limited
04.03.2025

VERIFIED ISO 14025

STANDARD METHOD FOR THE TESTING AND EVALUATION OF VOLATILE ORGANIC CHEMICAL (VOC) EMISSIONS FROM INDOOR SOURCES USING ENVIRONMENTAL CHAMBERS VERSION 1.2-CALIFORNIA DEPARTMENT OF PUBLIC HEALTH (CDPH)

(Emission testing method for California Specification 01350)

Laboratory Report

1. Introduction

Middle East Testing Laboratory L.L.C (METS) were contacted by Berger Paints Emirates Ltd co (LLC) and requested to perform 14 days emission test as per CDPH Method.

Client	: Berger Paints Emirates Ltd co (LLC) Al Qouz Indl Area-1, Opp TCTI factory, P O Box: 27524 - Dubai, UAE
Report No	: MR-180424-189
Reporting Date	: 08/05/2024
Tested by	: SH
Date of Analysis	: 18/04/2024-07/05/2024
Issue No	: 01 (Re-Issue Date: NA)

2. Sample Information

Sample Description	: Royale Play Najm
Batch No	: A1-616863/0823
Expiry Date	: 08/2025
Quantity	: 1 kg
Code	: AE1-F0371M00201K

3. Brief Evaluation of the Results:

	TVOC and Individual VOC's of Concern		Formaldehyde	
	Criterion	Compliance	Criterion	Compliance
MS-150424-169	TVOC: <0.5 mg/m^3	**PASS**	≤9.0µg/m^3	**PASS**
	Individual VOC: < Limit	**PASS**		

Details furnished in following pages

Prepared by

Team Head
Employee Code: METS AJ EC 110

Verified by

Assistant Laboratory Manager
Employee Code: METS AJ EC 103

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Report No.: MR-180424-189

4. Test Method

Standard Method for the Testing and Evaluation of VOC Emissions from Indoor Sources using Environmental Chambers, version 1.2 of January 2017 by the California Department of Public Health (CDPH Method).

For evaluation of test results the principle of shared risk is applied, i.e., for a max limit, a result Less than or equal to the limit complies and a result Greater than the limit does not comply.

5. Sample Preparation

The Royale Play Najm was mixed vigorously until it is fully homogenous and coated on a steel plate which has an area of 0.36 m^2

6. Test Procedure

Principle: To determine the specific emission rates of VOC's emitted from the tested specimen. The test was conducted in a small-scale environmental chamber at specified constant conditions of temperature, relative humidity, ventilation rate and product loading factor. The chamber is considered to be a constantly stirred tank reactor. As the air in the chamber is fully mixed, VOC concentrations measured at the chamber exhaust represents the air concentrations in the chamber. From the airflow rate into the chamber, the VOC concentration, and the exposed surface area of the specimen, an area-specific emission rate or emission factor is calculated using the steady-state form of the mass-balance model.

The specimens were placed in a separate conditioning container in a room with controlled climate conditions of temperature 23 ± 1°C and 50 ± 4 % RH. After 10 days ± 5 h of conditioning the specimens were placed in a 1 m^3 emission chamber of stainless steel. Air samplings, minimum duplicates, were carried out after 24, 48 and 96 hours in the chamber.

Conditions in the emission chamber

Chamber volume	: 1.0 m^3, stainless steel
Temperature	: 23 ± 1°C
Relative humidity	: 50 ± 4 % RH
Area of test specimen	: 0.36 m^2
Area specific air flow rate	: 2.0 m^3/m^2 h
Air exchange rate	: 1.0 h^{-1}
Air velocity at specimen surface	: 0.1 – 0.3 m/s

The air samples from the chamber were collected into a collection vessel containing sorbent materials. VOCs are determined by GC comparing the chromatographic retention time and mass spectrum of the unknown to the corresponding parameters for the pure compound analyzed on the same. Matching retention times and mass spectra provide positive, confirmed identifications.

The capillary column used is RXi-624 Sil MS – 30m x 0.32mm x 1.8µm. The mass/charge ratio is used for compound identification. The total volatile organic compounds (TVOC) mean compounds eluting between and including n-hexane to hexadecane, having boiling points in the range of about 60-250 °C. The emission rate of TVOC is quantified with known equivalent standard and includes all compounds ca ≥ 1 µg/m3 in the chamber. Minimum duplicate air samples were taken and the results are mean values. Sampled volumes are 3 to 8 L.

The samplings of formaldehyde and acetaldehyde were carried out with DNPH samplers. The samplers were analyzed similar to ISO 16000-3:2011(Indoor air--Part 3: Determination of formaldehyde and other carbonyl compounds – Active sampling method). This means analysis on a liquid chromatograph with absorbance detector. Duplicate air samples were taken and the results are mean values. Sampled volumes were 60 to 80 L.

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Report No.: MR-180424-189

7. Results

The results in Table 1, 2 and 3 are expressed as concentrations in the test chamber and as area specific emission rates. Calculation of emission rate from chamber concentration:

$$SER_{I} = \frac{Conc\ X\ n}{L}$$

SER_I = area specific emission rate, in µg/m²h

Conc = concentration of a VOC in the chamber, in µg/m³

n = air exchange rate, in changes per hour

L = loading factor, in m²/m³ (area of sample/volume of chamber)

Test results of TVOC and formaldehyde after 24 hours and 48 hours

Table 1
Test results of Royale Play Najm, after 24 h

Volatile organic compound	**CAS number**	**Retention time** (min)	**Concentration in the chamber** (µg/m3)	**Emission rate** (µg/m2h)
After 24 h:				
TVOC (C6 – C16)	--	5.9-40.1	< 20	< 50
Formaldehyde	50-00-0	--	< 1	< 1

Table 2
Test results of Royale Play Najm, after 48 h

Volatile organic compound	**CAS number**	**Retention time** (min)	**Concentration in the chamber** (µg/m3)	**Emission rate** (µg/m2h)
After 48 h:				
TVOC (C6 – C16)	--	5.9-40.1	< 20	< 50
Formaldehyde	50-00-0	--	< 1	< 1

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Report No.: MR-180424-189

Test results of TVOC and VOCs after 96 hours

Table 3
Test results of Royale Play Najm, after 96 h

Volatile organic compound	CAS number	Retention time (min)	Concentration in the chamber (µg/m3)	Emission rate (µg/m2h)
TVOC (C6 – C16)	--	5.9-40.1	< 20	< 50
Identified substances:				
No substances identified	--	--	< 2	< 4
Volatile Carcinogens 1		5.9-40.1		
No substances identified	--	--	< 1	< 1
Substances outside TVOC:				
VVOC (< C6)		4.5 – 6.2		
No substances identified	--	--	< 2	< 4
SVOC (C16 – C22)		37.9 - 50.0		
No substances identified	--	--	< 2	< 4
Formaldehyde	50-00-0	--	< 1	< 1
Acetaldehyde	75-07-0	--	< 1	< 1

[1)] Volatile carcinogens = VOCs according to EU Regulation No 1272/2008 Annex VI, cat 1A and 1B

The emission results in Table 4 are expressed as area emission rates (in µg/m2h) and as concentrations in a standard private office and in a standard school classroom (in µg/m3). Calculation of concentration of VOC in the standard private office from emission rate:

$$C = (SER \times A) \div (n \times V)$$

C = concentration of VOC in the private office, in µg/m^3
SERa= area specific emission rate of the tested product, in µg/m^{2}h
A = surface area of the tested product, in m, here 33.4 m, (wall area)
n = air ventilation rate, in changes per hour, here 0.68 h-1
V = volume of a private office in m3, here 30.6 m3

In the standard private office, the floor area is 11.1 m2, the wall area is 33.4 m2, door & other millwork 1.89 m2 and wall base area 1.27 m2. In a standard school classroom, the floor area is 89.2 m2, the wall area is 94.6 m2, wall base area 9.68 m2, air ventilation rate 0.82 h-1 and the volume of the room is 231 m3. Wall area is used for the calculations

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Report No.: MR-180424-189

Test results of the estimated concentrations in a standard private office and a standard school classroom scenario according to the target VOCs according to one-half of the CREL list (compound 1-35) and non-listed compounds:

Table 4
Estimated concentrations in a standard private office and a standard school classroom

No	Volatile organic compound	CAS number	Emission rate (µg/m2h)	Concentration in private office (µg/m3)	Concentration in school classroom (µg/m3)
1.	Acetaldehyde	75-07-0	ND	< 3	< 1
2.	Benzene	71-43-2	ND	<0.3	<0.3
3.	Carbon disulfide	75-15-0	ND	< 3	< 1
4.	Carbon tetrachloride	56-23-5	ND	< 3	< 1
5.	Chlorobenzene	108-90-7	ND	< 3	< 1
6	Chloroform	67-66-3	ND	< 3	< 1
7.	Dichlorobenzene (1,4-)	106-46-7	ND	< 3	< 1
8.	Dichloroethylene (1,1)	75-35-4	ND	< 3	< 1
9.	Dimethylformamide (N, N-)	68-12-2	ND	< 3	< 1
10.	Dioxane (1,4-)	123-91-1	ND	< 3	< 1
11.	Epichlorohydrin	106-89-8	ND	< 3	< 1
12.	Ethylbenzene	100-41-4	ND	< 3	< 1
13.	Ethylene glycol	107-21-1	ND	< 3	< 1
14.	Ethylene glycol mono ethyl ether	110-80-5	ND	< 3	< 1
15.	Ethylene glycol mono ethyl ether	111-15-9	ND	< 3	< 1
16.	Ethylene glycol monomethyl ether	109-86-4	ND	< 3	< 1
17.	Ethylene glycol monomethyl ether	110-49-6	ND	< 3	< 1
18.	Formaldehyde	50-00-0	ND	< 3	< 1
19.	n-Hexane	110-54-3	ND	< 3	< 1
20.	Iso-phorone	78-59-1	ND	< 3	< 1
21.	Isopropanol	67-63-0	ND	< 3	< 1
22.	Methyl chloroform	71-55-6	ND	< 3	< 1
23.	Methylene chloride	75-09-2	ND	< 3	< 1
24.	Methyl t-butyl ether	1634-04-4	ND	< 3	< 1
25.	Naphthalene	91-20-3	ND	< 3	< 1

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Report No.: MR-180424-189

Table 4 Cont.

No	Volatile organic compound	CAS number	Emission rate (µg/m2h)	Concentration in private office (µg/m3)	Concentration in school classroom (µg/m3)
26.	Phenol	108-95-2	ND	**< 3**	**< 1**
27.	Propylene glycol monomethyl ether	107-98-2	ND	**< 3**	**< 1**
28.	Styrene	100-42-5	ND	**< 3**	**< 1**
29.	Tetrachloroethylene	127-18-4	ND	**< 3**	**< 1**
30.	Toluene	108-88-3	ND	**< 3**	**< 1**
31.	Trichloroethylene	79-01-6	ND	**< 3**	**< 1**
32.	Vinyl acetate	108-05-4	ND	**< 3**	**< 1**
33-35	Xylenes (m-, o-, p-)	108-38-3, 95-47-6, 106-42-3	ND	**< 3**	**< 1**
	TVOC (C6 – C16)	-	< 20	< 30	< 10
	SVOC (C16 – C22)	-	<2	<3	<1

ND = Not Detected (detection limit is approx. 2 µg/m2h)

Evaluation of the test results

The tested product Royale Play Najm complies with the requirements of the Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources using Environmental Chambers, version 1.2, 2017, by the California Department of Public Health.

The test results can be used to evaluate compliance with the indoor air emission requirements of LEEDv4 and BREEAM International (2016), see Table 5 and 6. The sample is evaluated as wall product.

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Report No.: MR-180424-189

Table 5.
Standard private office: Compliance with LEED v4 and BREEAM International (2016)

	Concentration in private office (mg/m3)	**Maximum allowable conc.** (mg/m3)	**PASS / FAIL**
LEEDv4			
TVOC	**<0.010**	0.5 mg/m3 or less	**PASS**
		between 0.5 and 5.0 mg/m3	-
		5.0 mg/m3 or more	**-**
Acetaldehyde	**< 0.003**	0.070	**PASS**
Formaldehyde	**< 0.003**	0.009	**PASS**
Single VOC compounds found with defined CREL:	ND	According to list of CREL (see App 3)	**PASS**
BREEAM International (2016)			
TVOC	**<0.010**	1.0 (emission criteria)	**PASS**
		0.3 (exemplary level emission criteria)	**PASS**
SVOC	**< 0.003**	0.1 (exemplary level emission criteria)	**PASS**
Carc cat 1A+1B	**< 0.001**	0.001	**PASS**
Formaldehyde	**< 0.003**	0.06 (emission criteria)	**PASS**
		0.01 (exemplary level emission criteria)	**PASS**

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Report No.: MR-180424-189

Table 6.
Standard school classroom: Compliance with LEED v4 and BREEAM International (2016)

	Concentration in private office (mg/m3)	**Maximum allowable conc.** (mg/m3)	**PASS / FAIL**
LEEDv4			
TVOC	**<0.010**	0.5 mg/m3 or less	**PASS**
		between 0.5 and 5.0 mg/m3	-
		5.0 mg/m3 or more	**-**
Acetaldehyde	**< 0.001**	0.070	**PASS**
Formaldehyde	**< 0.001**	0.009	**PASS**
Single VOC compounds found with defined CREL:	ND	According to list of CREL (see App 3)	**PASS**
BREEAM International (2016)			
TVOC	**<0.010**	1.0 (emission criteria)	**PASS**
		0.3 (exemplary level emission criteria)	**PASS**
SVOC	**<0.001**	0.1 (exemplary level emission criteria)	**PASS**
Carc cat 1A+1B	**< 0.001**	0.001	**PASS**
Formaldehyde	**< 0.001**	0.06 (emission criteria)	**PASS**

Appendices:

1. Target CREL VOCs and their maximum allowable concentrations

For further clarification of reports, please contact qc@metslab.com

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Report No.: MR-180424-189

APPENDIX I

Sl. No	Volatile organic compound	CAS number	Maximum allowable conc. (µg/m3)
1.	Acetaldehyde	75-07-0	**70**
2.	Benzene	71-43-2	**0.3**
3.	Carbon disulfide	75-15-0	**400**
4.	Carbon tetrachloride	56-23-5	**20**
5.	Chlorobenzene	108-90-7	**500**
6.	Chloroform	67-66-3	**150**
7.	Dichlorobenzene (1,4-)	106-46-7	**400**
8.	Dichloroethylene (1,1)	75-35-4	**35**
9.	Dimethylformamide (N, N-)	68-12-2	**40**
10.	Dioxane (1,4-)	123-91-1	**1 500**
11.	Epichlorohydrin	106-89-8	**1.5**
12.	Ethylbenzene	100-41-4	**1 000**
13.	Ethylene glycol	107-21-1	**200**
14.	Ethylene glycol mono ethyl ether	110-80-5	**35**
15.	Ethylene glycol mono ethyl ether acetate	111-15-9	**150**
16.	Ethylene glycol monomethyl ether	109-86-4	**30**
17.	Ethylene glycol monomethyl ether acetate	110-49-6	**45**
18.	Formaldehyde	50-00-0	**9**
19.	n-Hexane	110-54-3	**3 500**
20.	Iso-phorone	78-59-1	**1 000**
21.	Isopropanol	67-63-0	**3 500**
22.	Methyl chloroform	71-55-6	**500**
23.	Methylene chloride	75-09-2	**200**
24.	Methyl t-butyl ether	1634-04-4	**4 000**
25.	Naphthalene	91-20-3	**4.5**
26.	Phenol	108-95-2	**100**
27.	Propylene glycol monomethyl ether	107-98-2	**3 500**
28.	Styrene	100-42-5	**450**
29.	Tetrachloroethylene	127-18-4	**17.5**
30.	Toluene	108-88-3	**150**
31.	Trichloroethylene	79-01-6	**300**
32.	Vinyl acetate	108-05-4	**100**
33-35	Xylenes (m-, o-, p-)	108-38-3, 95-47-6, 106-42-3	**350**

Target CREL VOCs and their maximum allowable concentrations.

Test Location: Ajman

-End of Report-

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