ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A2*

Owner of the Declaration	IGP Pulvertechnik AG
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-IGP-20240285-CBD1-EN
Issue date	29.11.2024
Valid to	28.11.2029

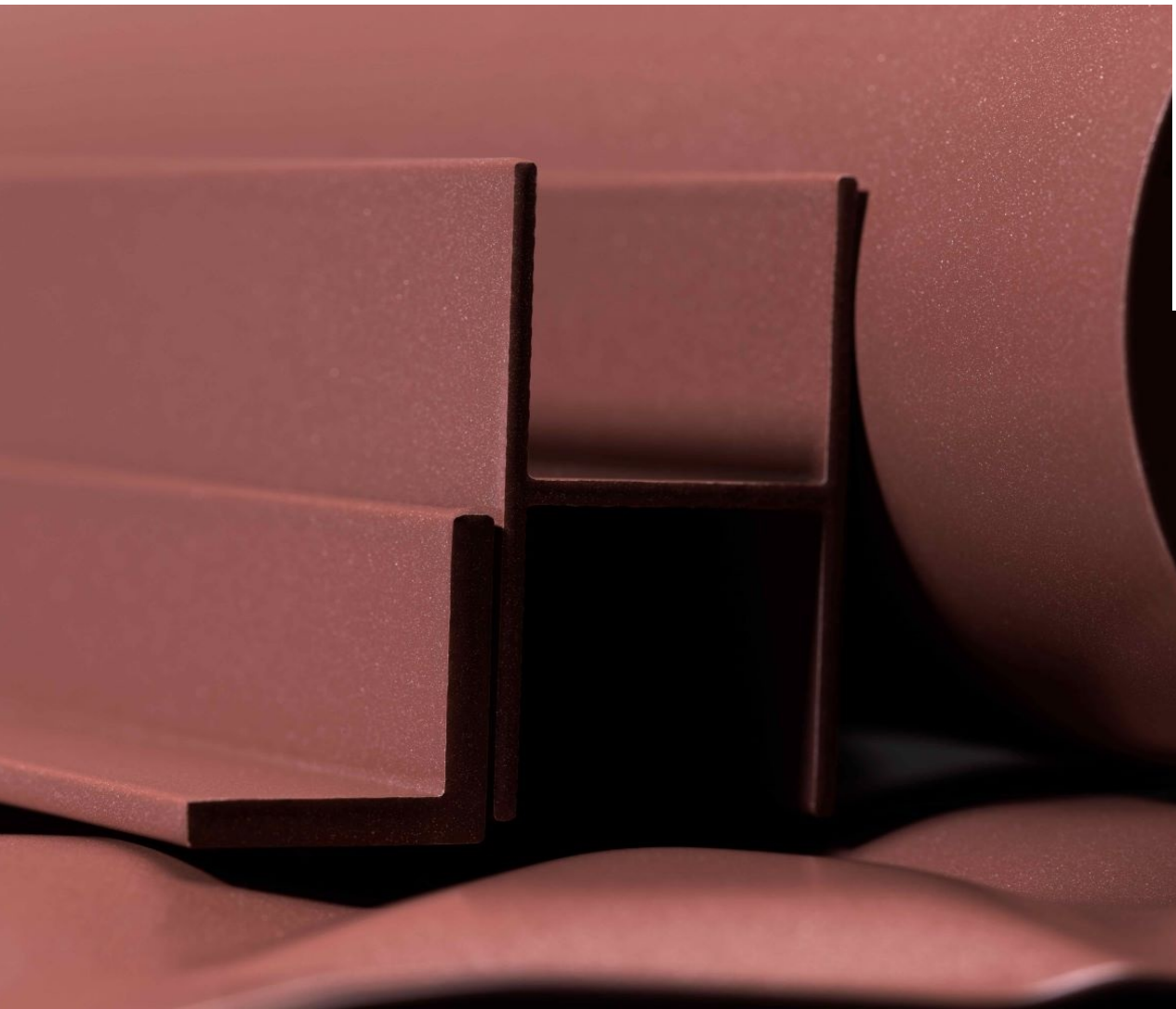
Coating powder IGP-DURA®one Series 56

IGP Pulvertechnik AG

Institut Bauen und Umwelt e.V.

ECO PLATFORM EPD VERIFIED

www.ibu-epd.com | https://epd-online.com



General Information

IGP Pulvertechnik AG

Programme holder

IBU – Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

Declaration number

EPD-IGP-20240285-CBD1-EN

This declaration is based on the product category rules:

Coatings with organic binders, 01.08.2021
(PCR checked and approved by the SVR)

Issue date

29.11.2024

Valid to

28.11.2029

Dipl.-Ing. Hans Peters
(Chairman of Institut Bauen und Umwelt e.V.)

Florian Pronold
(Managing Director Institut Bauen und Umwelt e.V.)

Coating powder IGP-DURA®one Series 56

Owner of the declaration

IGP Pulvertechnik AG
Ringstrasse 30
9500 Wil
Switzerland

Declared product / declared unit

Coating powder IGP-DURA®*one, s*eries 56 for facade-friendly, weather-resistant powder coatings.

Declared unit 1kg

Scope:

This environmental product declaration refers to a representative formula of an organic, thermosetting coating powder of series 56 from the manufacturer IGP Pulvertechnik AG.

The declaration covers the reproducible color range of the solid and pearl mica effect shades of the weather-resistant product groups:

IGP-DURA®*one* 5603, 5607 and 561M.

The declared products originate from the development and production locations in Wil, Switzerland and Siestrzeń, Poland.

The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

The EPD was created according to the specifications of EN 15804+A2. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard EN 15804 serves as the core PCR
Independent verification of the declaration and data according to ISO 14025:2011
☐ internally ☒ externally

Florian Gehring,
(Independent verifier)

Product

Product description/Product definition

The low-temperature powder coatings of series 56 are of weather-resistant quality and are based on saturated polyester resins, corresponding hardeners, and moisture- and light-resistant pigments.
Thanks to quickly reacting cross-linking binders, the product series enables energy- and resource-efficient coating.

The series includes the following surface characteristics:IGP-DURA®*one* 5603 smooth, matte
IGP-DURA®*one* 5607 smooth, silk-gloss
IGP-DURA®*one* 561M finely structured, matte

Usability:
The coating powders are not subject to the CE labeling requirement or other EU harmonization regulations. The respective national regulations at the point of use apply.

Application

IGP-DURA®*one* 56 is used for powder coating diverse outdoor and facade applications on metal substrates.

On the one hand, the product profile meets the performance requirements of certification bodies and on the other hand, its high reactivity enables fast heating and cross-linking times in the thermal coating process, making series 56 coating powder an energy-efficient all-round product for various applications.

Technical Data

When applied with the recommended coating thickness of 60 µm, the powder coating films of IGP-DURA®*one,* series 56 have the following technical properties:

Powder and film properties

Name	Value	Unit
Hardness test EN ISO 1520	≤ 5 mm, mit Tapetest	mm
Indentation hardness EN ISO 2815	≥ 80	-
Weathering quality as per GSB und Qualicoat	GSB Florida 1; Qualicoat Kl. 1	-
Density EN ISO 8130-2	1,2-1,6	kg/l
Solid substance content EN ISO 14680-2	99	%
Theoretical yield at 60 µm, 90% application efficiency	8 - 12	m²
Gloss range matte 56-03 EN ISO 2813	25 - 35	*R'/60°
Gloss range silk gloss 56-07	65 - 85	R'/60°
Gloss range fine structure 56-1M	8 - 22	R'/60°
Curing time	from 15	min
Curing temperature	160	° C
Impact penetration, indirect, EN ISO 6272-2	≥ 2,5	Nm
Bending test EN ISO 1519	≤ 5	mm
Adhesion test EN ISO 2409	no delamination	-
Salt spray test (AASS) EN ISO 9227, ISO 4628	1000 h max ≤ S2	h
Condensation water test EN ISO 6270-2 CH, ISO 4628	1000 h max ≤ S2	h
Gloss stability accelerated weathering QUV-B EN ISO 16474-3	300 h ≥ 50%	RG**
Gloss stability accelerated weathering WOM EN ISO 16474-2	1000 h ≥ 50%	RG
Florida outdoor exposure Gloss stability as per GSB, Qualicoat ISO 2810	1 year ≥ 50%	RG
Color Stability as per Qualicoat and GSB limit values, CIELAB color space ISO 11664-4; D65	LV*** : QC: App. A12; GSB: AL631-4: App. 2, 2.4	QC: ΔE GSB: ΔL*, C*
Scratch resistance Martindale 32 revolutions, 200 gr CEN/TS 16611	≥ 60%	RG

* R' - Reflectometer values at a 60° angle of measurement
** RG - Residual gloss
*** LV - Limit Values ' QC- Qualicoat

Base materials/Ancillary materials

The declaration refers to the following composition of coating material from the IGP-DURA®*one* 56 series:

Name	Value	Unit
Binders (resins and hardeners)Harze und Härter)	58-74	%
Pigments (color and effect pigments)	0,01-6	%
Titanium oxide	0-34	%
Extender	0,9-32,5	%
Additives	1,2-2,2	%

The weighted average composition consists of binders (68%), Titanium oxide (13%), extenders (16%), additives (2%), and pigments (1%).

All articles of series 56 comply with *REACH Regulation (EG) No.1907/2006*.

Substances of very high concern (SVHC) as per the current ECHA Candidate List and substances listed in Annex XIV of *REACH Regulation (EG) No. 1907/2006* are not contained above the legally defined threshold value of 0,1%.
Articles of series 56 also comply with *Directive (EU) 2015/863 (RoHS 3)*.

Reference service life

Provided the surfaces coated with IGP-DURA®*one*, series 56 are cared for properly, the period of use corresponds to the life of the building.
Changes to the shade and gloss caused by weathering do not impair the protective effect.

LCA: Calculation rules

Declared Unit

The declared unit is 1 kg.

Details of the declared unit

Name	Value	Unit
Gross density (mean value)	1450	kg/m^3
Declared unit	1	kg

The EPD declares an average composition for all analyzed products.
The weighted average composition of the declared product is calculated in relation to the production volume shares of a total of 12 variants, manufactured at the IGP production locations in Wil, Switzerland, and Siestrzeń, Poland.

The production process is identical for all products of all the analyzed variants.
With regard to the variability of the LCA results, slight fluctuations can occur due to different supply chains, production locations, and differences in the product formulation.

System boundary

Type of EPD:
Cradle to plant gate with modules C1-C4 and module D (A1-A3, C, D).

The life cycle assessment covers raw material provision (module A1), transport to the production facility (module A2), and the powder coating manufacturing processes, including the packaging (module A3).
The coating process is not the object of the study. The biogenic CO_2 emissions from the packaging material are declared in A1-A3.
At the endof its life, the product is transported for disposal (module C2), and then disposed of (module C4).

Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product´s lifespan: Europe

Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account. Background database: Sphera LCA FE (*GaBi ts*) software, CUP 2023.2.

LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

The calculation of the biogenic carbon content is based on the assumption that the absolutely dry wood and cardboard mass consists of 50% biogenic carbon.
None of the analyzed products contain biogenic carbon, only the packaging material.
The biogenic CO_2 emissions from the packaging material are declared in A1-A3.

Name	Value	Unit
Biogenic carbon content in product	-	kg C
Biogenic carbon content in accompanying packaging	0.0259	kg C

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO_2.

The following information was used to calculate the declared modules:

End of life (C1-C4)

- Module C1: Manual dismantling (no environmental loads).
- Module C2: An average transport distance of 200 km by truck is assumed.
- Module C4: As a disposal scenario, it is assumed that the coating powder, which is located on an aluminium surface during disposal is thermally dosposed of during the recycling of the aluminium (melting/burning)

Name	Value	Unit
For thermal ulilization without energy recovery	1	kg

LCA: Results

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

Product stage			Construction process stage		Use stage							End of life stage				Benefits and loads beyond the system boundaries
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	MND	MND	MND	MND	MNR	MNR	MNR	MND	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 kg IGP-DURA®one Serie 56

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Global Warming Potential total (GWP-total)	kg CO_2 eq	4E+00	0	9.58E-03	0	2.52E+00	0
Global Warming Potential fossil fuels (GWP-fossil)	kg CO_2 eq	3.97E+00	0	9.46E-03	0	2.52E+00	0
Global Warming Potential biogenic (GWP-biogenic)	kg CO_2 eq	3.04E-02	0	2.21E-05	0	2.02E-04	0
Global Warming Potential luluc (GWP-luluc)	kg CO_2 eq	1.53E-03	0	8.92E-05	0	5.41E-05	0
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC11 eq	1.63E-11	0	8.44E-16	0	8.56E-13	0
Acidification potential of land and water (AP)	mol H^+ eq	7.98E-03	0	1.63E-05	0	4.27E-04	0
Eutrophication potential aquatic freshwater (EP-freshwater)	kg P eq	1.39E-05	0	3.51E-08	0	2.17E-07	0
Eutrophication potential aquatic marine (EP-marine)	kg N eq	2.01E-03	0	6.56E-06	0	9.53E-05	0
Eutrophication potential terrestrial (EP-terrestrial)	mol N eq	2.18E-02	0	7.52E-05	0	1.99E-03	0
Formation potential of tropospheric ozone photochemical oxidants (POCP)	kg NMVOC eq	7.43E-03	0	1.46E-05	0	2.63E-04	0
Abiotic depletion potential for non fossil resources (ADPE)	kg Sb eq	9.64E-06	0	6.26E-10	0	6.71E-09	0
Abiotic depletion potential for fossil resources (ADPF)	MJ	8.36E+01	0	1.31E-01	0	1.28E+00	0
Water use (WDP)	m^3 world eq deprived	3.18E-01	0	1.11E-04	0	2.36E-01	0

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 kg IGP-DURA®one Serie 56

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Renewable primary energy as energy carrier (PERE)	MJ	1.13E+01	0	9.27E-03	0	4.23E-01	0
Renewable primary energy resources as material utilization (PERM)	MJ	9.33E-01	0	0	0	0	0
Total use of renewable primary energy resources (PERT)	MJ	1.22E+01	0	9.27E-03	0	4.23E-01	0
Non renewable primary energy as energy carrier (PENRE)	MJ	6.14E+01	0	1.31E-01	0	2.2E+01	0
Non renewable primary energy as material utilization (PENRM)	MJ	2.22E+01	0	0	0	-2.07E+01	0
Total use of non renewable primary energy resources (PENRT)	MJ	8.37E+01	0	1.31E-01	0	1.28E+00	0
Use of secondary material (SM)	kg	0	0	0	0	0	0
Use of renewable secondary fuels (RSF)	MJ	0	0	0	0	0	0
Use of non renewable secondary fuels (NRSF)	MJ	0	0	0	0	0	0
Use of net fresh water (FW)	m^3	2.21E-02	0	1.02E-05	0	5.66E-03	0

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 kg IGP-DURA®one Serie 56

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed (HWD)	kg	2.09E-08	0	4.86E-13	0	4.43E-14	0
Non hazardous waste disposed (NHWD)	kg	8.77E-01	0	1.89E-05	0	2.52E-01	0
Radioactive waste disposed (RWD)	kg	1.44E-03	0	1.7E-07	0	4.32E-05	0
Components for re-use (CRU)	kg	0	0	0	0	0	0
Materials for recycling (MFR)	kg	0	0	0	0	0	0
Materials for energy recovery (MER)	kg	0	0	0	0	0	0
Exported electrical energy (EEE)	MJ	0	0	0	0	0	0
Exported thermal energy (EET)	MJ	0	0	0	0	0	0

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 kg IGP-DURA®one Serie 56

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Incidence of disease due to PM emissions (PM)	Disease incidence	7.64E-08	0	2.01E-10	0	4.88E-09	0
Human exposure efficiency relative to U235 (IR)	kBq U235 eq	2.07E-01	0	2.45E-05	0	4.57E-03	0
Comparative toxic unit for ecosystems (ETP-fw)	CTUe	4.67E+01	0	9.23E-02	0	4.8E-01	0

Comparative toxic unit for humans (carcinogenic) (HTP-c)	CTUh	1.62E-09	0	1.86E-12	0	3.93E-11	0
Comparative toxic unit for humans (noncarcinogenic) (HTP-nc)	CTUh	1E-07	0	8.22E-11	0	2.96E-09	0
Soil quality index (SQP)	SQP	1.32E+01	0	5.47E-02	0	3.81E-01	0

Disclaimer 1 - for the indicator "Potential human exposure efficiency relative to U235."
This impact category deals mainly with the possible impact of low-dose ionizing radiation on human health in the nuclear fuel cycle. It does not give consideration to effects due to possible nuclear accidents, occupational exposure, or radioactive waste disposal in underground facilities. Nor is potential ionizing radiation from the soil, radon, or from certain construction materials measured by this indicator.
The effects of the individual products on the indicator results are a maximum of 42%. The effects of the individual products on the global warming potential (GWP-total) indicator are a maximum of 3%.
Disclaimer 2 -for the indicators "Abiotic depletion potential for non-fossil resources," "Abiotic depletion potential for fossil resources," "Water (user) deprivation potential," "Potential comparative toxic unit for ecosystems," "Potential comparative toxic unit for humans - carcinogenic," "Potential comparative toxic unit for humans - non-carcinogenic," "Potential soil quality index."

The results of this environmental impact indicator must be used with care, as the uncertainties surrounding these results are high because only limited experience with the indicator is available.

References

Standards

DIN CEN/TS 16611, Martindale Test
The Martindale test was originally an abrasion test for textiles. Since 2020, this test has been used as part of the Qualicoat tests to test the abrasion resistance of powder coatings.

DIN EN 12206-1
German version EN 12206-1:2021, Paints and varnishes - Coating of aluminium and aluminium alloys for architectural purposes - Part 1: Coatings prepared from thermosetting coating powder

DIN EN 13501-1
German version DIN EN 13501-1:2018, Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests

DIN EN 15804
German version EN 15804:2012+A2:2019 + AC:2021, Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products

ISO 1519
German version EN ISO 1519:2011 Paints and varnishes - Bend test (cylindrical mandrel)

ISO 1520
EN ISO 1520:2006 Paints and varnishes - Cupping test

ISO 2409
German version EN ISO 2409:2020 Paints and varnishes - Cross-cut test

ISO 2810
German Version EN ISO 2810:2004 Paints and varnishes - Natural weathering of coatings - Exposure and assessment

ISO 2813
DIN EN ISO 2813:2015, Paints and varnishes - Determination of gloss value at 20 degrees, 60 degrees and 85 degrees (ISO 2813:2014); German version EN ISO 2813:2014

ISO 2815
EN ISO 2815:2003, Paints and varnishes - Buchholz indentation test

ISO 4628-2
German version EN ISO 4628-2:2016, Paints and varnishes - Evaluation of degradation of coatings - Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 2: Assessment of degree of blistering

ISO 6270-2 AT
German version EN ISO 6270-2:2018, Paints and varnishes - Determination of resistance to humidity - Part 2: Condensation (in-cabinet exposure with heated water reservoir)

ISO 6272-2
DIN EN ISO 6272-2: ISO 6272-2:2011, Paints and varnishes - Rapid-deformation (impact resistance) tests - Part 2: Falling-weight test, small-area indenter

ISO 8130-2
ISO 8130-2:2021, Coating powders - Part 2: Determination of density by gas comparison pycnometer (referee method)

ISO 9227
German version EN ISO 9227:2022, Corrosion tests in artificial atmospheres; Salt-spray tests

ISO 11664-2
German version EN ISO/CIE 11664-2:2022, Colorimetry- Part 2: CIE standard illuminants;
D65 is defined as a standard illuminant with a color temperature of 6,504 Kelvin

ISO 14001
German and English version EN ISO 14001:2015, Environmental management systems - Requirements with guidance to use

ISO 14025
German and English version EN ISO 14025:2011, Environmental labels and declarations -Type III environmental declarations -Principles and procedures

ISO14680-2
German version EN ISO 14680-2:2006, Paints and varnishes - Determination of pigment content -Part 2: Ashing method

ISO 16474 Parts 1 - 3
DIN EN ISO 16474 Part 1 -3:2014, Paints and varnishes - Methods of exposure to laboratory light sources
DIN EN ISO 16474-1:2014-03: Part 1: General guidance
DIN EN ISO 16474-2:2014-03: Part 2: Xenon-arc lamps (e.g., WOM); irradiation, temperature cycles
DIN EN ISO 16474-3:2014-03: Part 3: Fluorescent lamps (e.g., QUV-B): Irradiation, temperature, cycles

Further references

ASTM D2244
Standard ASTM D2244-22, Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates

ASTM D 2794
Standard ASTM D 2794-1993, Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)

CIELAB or CIE
The CIELab system is a color space defined by the International Commission on Illumination (CIE) in 1976. Color differences are determined numerically. The model attempts to adapt the geometric distance between two colors in the color space to human perception.

GSB International
Certification body for assuring the quality ofthe coating of workpieces and the pretreatment and coating materials used in the process; www.gsb-international.com

Hunter color space
Color space defined by Richard Sewall Hunter in 1948 that describes color ranges using "Lab" coordinates. Like CIELAB, it was designed in such a way that color values can be transferred from the CIE-XYZ model with simple formulae, but is more uniform than the CIELAB model in terms of perception.

IBU 2021
Institut Bauen und Umwelt e.V.: General Program Instructions for the Preparation of EPDs of Institut Bauen und Umwelt e.V. (IBU). Version 2.0, Berlin: Institut Bauen und Umwelt e.V., 2021.
www.ibu-epd.com.

PCR Part A
PCR- Part A: Calculation Rules for the Life Cycle Assessment and Requirements for the Project Report, Berlin: Institut Bauen und Umwelt e.V., www.ibu-epd.com, Version 2024

PCR Part B
PCR -Part B: Requirements for the EPD for Coatings with Organic Binders,
Institut Bauen und Umwelt e.V. (IBU), v11, 2024

Qualicoat
Certification body for industrial painting and coating, quality assurance, and specifications of processes, products, and quality tests www.qualicoat.net

REACH
Regulation (EG) No. 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

Directive (EU) 2015/863 (RoHS 3)
based on Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances.

RoHS 2011/65/EU
Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment supersedes Directive 2002/95/EC.

Sphera LCA FE (ehemals GaBi)
Sphera LCA For Experts (formerly GaBi software system) with the respective databases Managed LCA Content MLC (formerly GaBi databases), Sphera Solutions GmbH. CUP Version: 2023.2. University of Stuttgart, Leinfelden Echterdingen, MLC data documentation at https://sphera.com/product sustainability-gabi-data-search/ (March 2024).

Regulation (EU) 528/2012 (EU BPR)
The Biocidal Products Regulation (BPR, Regulation (EU) 528/2012) concerns the making available on the market and use of biocidal products which are used to protect humans, animals, materials, or articles against harmful organisms such as pests or bacteria.

Publisher

Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

+49 (0)30 3087748- 0
info@ibu-epd.com
www.ibu-epd.com

Programme holder

Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

+49 (0)30 3087748- 0
info@ibu-epd.com
www.ibu-epd.com

Author of the Life Cycle Assessment

Sphera Solutions GmbH
Hauptstraße 111- 113
70771 Leinfelden-Echterdingen
Germany

+49 711 341817-0
info@sphera.com
www.sphera.com

Owner of the Declaration

IGP Pulvertechnik AG
Ringstrasse 30
9500 Wil
Switzerland

+41 71 929 81 49
info@igp-powder.com
www.igp-powder.com