Environmental Product Declaration

NEOKEM S.A. – PP600 Architectural Super Durable Fine Textured Matt Bonded Powder Coatings (Class 2)

In accordance with ISO 14025 and EN 15804 + A1

EPD Registration Number	S-P-04000
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CPC	351 – Paints and varnishes and related products; artists' colours; ink

Program Information

Program

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Product category rules (PCR):	PCR 2012:01 Construction products and construction services
PCR review was conducted by:	The Technical Committee of the International EPD System Contact via info@envrirondec.com
Independent third-party verification of the declaration and data, according to ISO 14025:	☐ EPD process certification ☒ EPD verification (external)
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The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804.

Since 1972

NEOKEM
color performance

Company Profile

Established in **1972** , NEOKEM started the development and production of **high-quality coatings** that matched and even exceeded the expectations of our customers.

In **1987**, in a demanding environment for advanced high-tech products, we were **the first Greek company** to implement the production of **powder coatings** for aluminum architectural systems, industrial and other uses.

In **2006**, inspired by the market trends and motivated by our customers' particular needs, we produced **super durable powder coatings** with excellent resistance to adverse outdoor conditions.

Today, our business continues to grow along with our goals and expectations. We are a powder coating manufacturer with products that are internationally recognized and distributed.

50 years
Quality & Innovation in the Coatings Industry

Further information on www.neokem.eu

Powder Coatings
Our Core Business

Powder coatings represents 95% of our turnover.

We make environmentally friendly powder coatings that reflect the current market needs for superior quality, appearance, utility and durability.

We offer the best solutions through our extensive product ranges, and we ensure the high quality of our products through Certifications.

Most of NEOKEM powder coatings series are approved according to **Qualicoat**, **Qualideco** by the European Aluminium Association, **GSB International**, and **Qualisteelcoat**.

Aesthetics Built to Last

Architectural Applications

For over **30 years**, all our powder coatings have been produced in our state-of-the-art manufacturing facilities, consistently guaranteeing their high quality.

We draw inspiration from the market, designing and developing Powder Coatings which meet high standards in **Quality** and **Aesthetics**, in cooperation with well-known architects and interior designers.

The NEOKEM **Super Durable** powder coatings have been specially designed to withstand the high intensity solar radiation prevalent in Mediterranean Region.

Our Architectural Collections:

Prisma, Ammos, RAL Metallic and RAL Matt Polyester have been designed to meet the demands and preferences of contemporary architecture.

Main Applications: Facades, Doors, Windows, Blinds, Pergolas, Rails, Fences, Garage Doors.

Main Benefits of Super Durable powder coatings with fine textured finish

- Excellent durability in outdoor conditions
- High resistance to scratches and abrasion
- Outstanding appearance
- Low dirt pick – up due to the especially designed surface
- Wide range of contemporary, classic and popular color shades
- Environmentally friendly

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PP 600 Sahara

Architectural **Super Durable** Fine Textured Matt Bonded Powder Coatings

Product description

PP 600 Sahara is a new generation of Super Durable fine textured powder coatings. Due to its superior weathering resistance, 3 years Florida, it is recommended for architectural and other demanding applications where gloss, color retention and long-term aesthetics are of significant importance. It is bonded using Neobond proprietary method, thus ensuring homogeneous metallic effect and stability during recycling.

Superior Properties: Ability to cover substrate defects while creating a flawless appearance. Exceptional abrasion resistance. Increased chemical resistance. Low sensitivity to pollution. Superb edge coverage that reduces the risk of corrosion. Stable structure at different film thicknesses. Very good transfer efficiency and penetration to difficult areas. High yield due to low density. All PP 600 Sahara products are heavy metal and TGIC free. PP 600 Sahara is approved by **Qualicoat for Class 2** - Category 1 (Approval number: P-0780).

NEOKEM S.A. PP600 Powder Coatings conforms to Qualicoat Class 2 and GSB specifications. PP600 Sahara is presented for demonstration purposes.

Colour	Sahara
Density (ISO 8130-3)	1.39 ± 0.10 g/ cm^3
Curing Conditions	15 minutes at 190 ^0C

Technical data

Indicatively, some physicochemical performance data of PP600 Sahara Series Powder Coating will be presented.

Mechanical Property	Value
Adhesion (EN ISO 2409, 2mm)	Gt = 0
Bend Test (EN ISO 1519)	Pass 5 mm
Erichsen Cupping (EN ISO 1520)	> 5 mm
Direct impact (EN ISO 6272-1, EN ISO 6272-2, ASTM D2794)	> 2.5 Nm
Indentation Buchholz (EN ISO 2815)	> 80

Corrosion Test – Chemical Property	Value
Sulfur dioxide test in a humid atmosphere (ISO 22479)	Pass 24 cycles
Acetic Acid salt spray (EN ISO 9227)	Pass 1000 hours
Resistance to mortar (ASTM D3260, EN12206-1)	Pass 24 hours
Condensation water test (EN ISO 6270-2)	1000 hours, no blistering

Weathering Test	Value
Natural weathering 36 months Florida 5 South (ISO 2810)	> 50% gloss retention
Accelerated Weathering test EN ISO 16474-2 (Qualicoat cycle)	> 90% gloss retention after 1000 hours

For further information, details and/ or explanation, please contact info@neokem.gr .

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PP 600 Mesogeios

Architectural **Super Durable** Fine Textured Matt Bonded Powder Coatings

Product description

PP 600 Mesogeios is a new generation of Super Durable fine textured powder coatings. Due to its superior weathering resistance, 3 years Florida, it is recommended for architectural and other demanding applications where gloss, color retention and long-term aesthetics are of significant importance. It is bonded using Neobond proprietary method, thus ensuring homogeneous metallic effect and stability during recycling.

Superior Properties: Ability to cover substrate defects while creating a flawless appearance. Exceptional abrasion resistance. Increased chemical resistance. Low sensitivity to pollution. Superb edge coverage that reduces the risk of corrosion. Stable structure at different film thicknesses. Very good transfer efficiency and penetration to difficult areas. High yield due to low density. All PP 600 Mesogeios products are heavy metal and TGIC free.

PP 600 Mesogeios is approved by **Qualicoat for Class 2** - Category 1 (Approval number: P-0780).

NEOKEM S.A. PP600 Powder Coatings conforms to Qualicoat Class 2 and GSB specifications. PP600 Mesogeios is presented for demonstration purposes.

Colour	Mesogeios
Density (ISO 8130-3)	1.39 ± 0.10 g/ cm^3
Curing Conditions	15 minutes at 190 ^{0}C

Technical data

Indicatively, some physicochemical performance data of PP600 Mesogeios Series Powder Coating will be presented.

Mechanical Property	Value
Adhesion (EN ISO 2409, 2mm)	Gt = 0
Bend Test (EN ISO 1519)	Pass 5 mm
Erichsen Cupping (EN ISO 1520)	> 5 mm
Direct impact (EN ISO 6272-1, EN ISO 6272-2, ASTM D2794)	> 2.5 Nm
Indentation Buchholz (EN ISO 2815)	> 80

Corrosion Test – Chemical Property	Value
Sulfur dioxide test in a humid atmosphere (ISO 22479)	Pass 24 cycles
Acetic Acid salt spray (EN ISO 9227)	Pass 1000 hours
Resistance to mortar (ASTM D3260, EN12206-1)	Pass 24 hours
Condensation water test (EN ISO 6270-2)	1000 hours, no blistering

Weathering Test	Value
Natural weathering 36 months Florida 5 South (ISO 2810)	> 50% gloss retention
Accelerated Weathering test EN ISO 16474-2 (Qualicoat cycle)	> 90% gloss retention after 1000 hours

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PP 600 Ammos

Architectural **Super Durable** Fine Textured Matt Bonded Powder Coatings

Product description

PP 600 Ammos is a new generation of Super Durable fine textured powder coatings. Due to its superior weathering resistance, 3 years Florida, it is recommended for architectural and other demanding applications where gloss, color retention and long-term aesthetics are of significant importance.
Superior Properties: Ability to cover substrate defects while creating a flawless appearance. Exceptional abrasion resistance. Increased chemical resistance. Low sensitivity to pollution. Superb edge coverage that reduces the risk of corrosion. Stable structure at different film thicknesses. Very good transfer efficiency and penetration to difficult areas. High yield due to low density. All PP 600 Ammos products are heavy metal and TGIC free.
PP 600 Ammos is approved by **Qualicoat for Class 2** - Category 1 (Approval number: P-0780).

NEOKEM S.A. PP600 Powder Coatings conforms to Qualicoat Class 2 and GSB specifications. PP600 Ammos is presented for demonstration purposes.

Colour	Ammos collection, RAL
Density (ISO 8130-3)	1.39 ± 0.20 g/ cm^3
Curing Conditions	15 minutes at 190 ^0C

Technical data

Indicatively, some physicochemical performance data of PP600 Ammos collection Powder Coating will be presented.

Mechanical Property	Value
Adhesion (EN ISO 2409, 2mm)	Gt = 0
Bend Test (EN ISO 1519)	Pass 5 mm
Erichsen Cupping (EN ISO 1520)	> 5 mm
Direct impact (EN ISO 6272-1, EN ISO 6272-2, ASTM D2794)	> 2.5 Nm
Indentation Buchholz (EN ISO 2815)	> 80

Corrosion Test – Chemical Property	Value
Sulfur dioxide test in a humid atmosphere (ISO 22479)	Pass 24 cycles
Acetic Acid salt spray (EN ISO 9227)	Pass 1000 hours
Resistance to mortar (ASTM D3260, EN12206-1)	Pass 24 hours
Condensation water test (EN ISO 6270-2)	1000 hours, no blistering

Weathering Test	Value
Natural weathering 36 months Florida 5 South (ISO 2810)	> 50% gloss retention
Accelerated Weathering test EN ISO 16474-2 (Qualicoat cycle)	> 90% gloss retention after 1000 hours

For further information, details and/ or explanation, please contact info@neokem.gr .

PP600
Architectural **Super Durable** Fine Textured Powder Coatings

Base materials

The composition within ranges of the reference product of each PP600 Powder Coating sub-category is indicatively reported in the following tables. No substances included in the Candidate List of Substances of Very High Concern for authorization under the REACH Regulation that exceed 0.1% of the total weight.

The products covered by this EPD represent the 9% of total Powder Coating production during the reference period.

PP600/ 9010	
Contribution (% in weight) of materials to the declared unit – 1 kg of Powder Coating	
TiO2	25-30
Pigments	0.5
Binders	65-69
Fillers	1-5
Additives	1-2

PP600/ 9005	
Contribution (% in weight) of materials to the declared unit – 1 kg of Powder Coating	
Pigments	0.5-2
Binders	73-78
Fillers	18-23
Additives	1-3

PP600/ 8014	
Contribution (% in weight) of materials to the declared unit – 1 kg of Powder Coating	
TiO2	0.1-0.5
Pigments	3-5
Binders	70-75
Fillers	20-25
Additives	1-4

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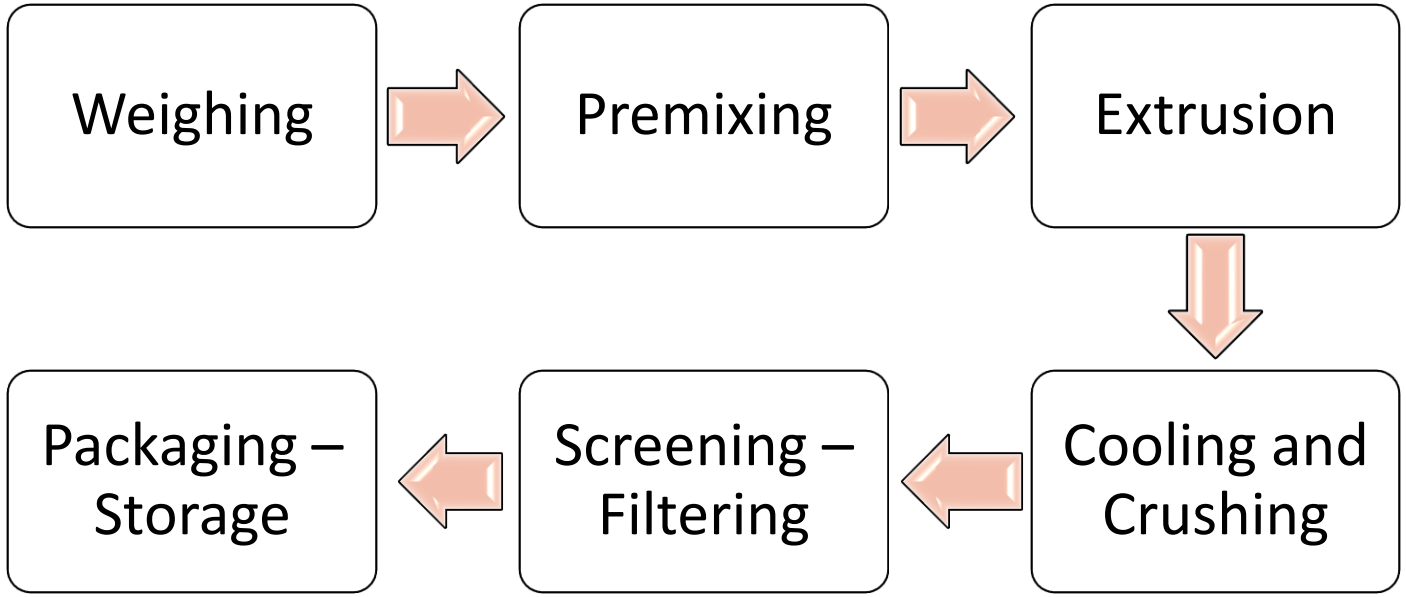
Manufacturing Process

PP600 Architectural Super Durable Fine Textured Matt Bonded Powder Coatings (Class 2)



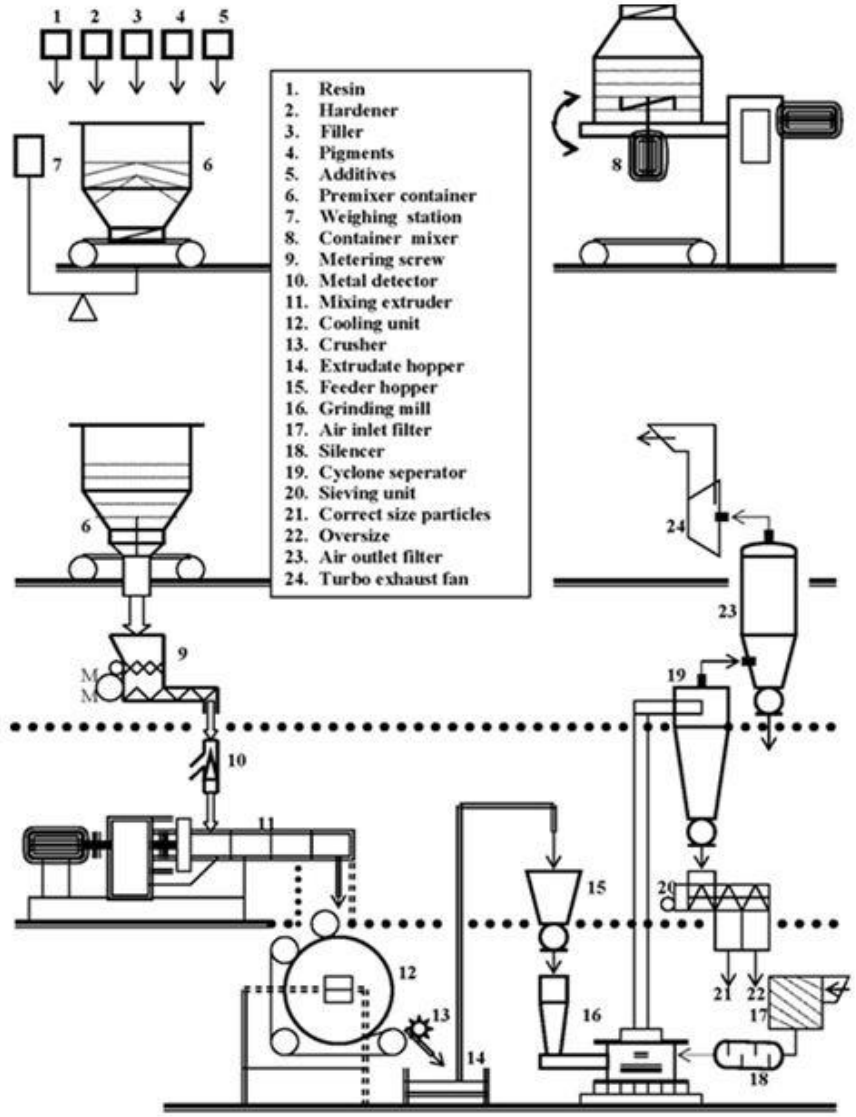


Figure 1.

Life Cycle Assessment (LCA)

Declared Unit

The declared unit is 1 kg PP600 Powder Coating (Class 2) including packaging material. This LCA study is associated with the manufacturing of three sub-categories of PP600 Powder Coatings, used to represent the various types of Class 2 Powder Coatings produced.

System boundary

This EPD only covers the **Cradle-to-gate**, because the rest of the Life Cycle stages are very dependent on the development of particular scenarios. Therefore, the system boundaries include raw material production and supply (A1), transportation (A2) and manufacturing (A3).

Similar products of a product group

Due to several similar products within each PP600 product sub-category (9010, 8014 & 9005) modelling needs, it is judged that there is no significant differentiation among the environmental performance of each product. Therefore, a representative product and the respective content declaration is chosen to effectively present the aggregated environmental impacts of the product sub-category.

Product Stage			Construction Process Stage		Use Stage							End of Life Stage				Resource Recovery Stage
Raw material	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction, demolition	Transport	Waste processing	Disposal	Reuse, recycling, or energy recovery potentials
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
✓	✓	✓	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

MND: Module Not Declared

EPD TYPE: Specific, only for PP600 Powder Coatings produced at NEOKEM's site

SOFTWARE: GaBi ts version 10.5.0.78

DATABASES: A compilation of Ecoinvent v.3.7 and Professional 2021 databases were used

REFERENCE PERIOD CONSIDERED: January 2020 – December 2020

Life Cycle Assessment (LCA)

Cut-off criteria

All raw materials and consumable item inputs, associated transportations as well as process energy and water use, are included in the LCA study. It is assumed, that the total neglected input flows are much less than 1% of total energy, area, area-time activities and mass. All associated processes specific data are determined and modelled by the use of generic data provided by the integrated GaBi databases. Disposal of production wastes is considered within the scope of the study. Packaging material is included in the LCA study as well.

Assumptions, Allocation, and Estimates

- Regarding the exclusion of product life cycle stages and processes, the use, end-of-life, and reuse stage have not been accounted for. Also, the capital goods (construction of the site) are not included in this LCA study.
- Producer specific data used for environmental impacts calculations refer to the inventory of one full calendar year and more specifically, data from January 2020 to December 2020 were used as reference.
- An uncertainty regarding the packaging materials was raised due to the complex variation of packaging. Thus, an assumption that the product is packed in a carton box, using PE film and a MDPE plastic bag, was made.
- Pigments were assumed to consist of carbon black exclusively.
- A default mean of road transportation “Truck Euro 6 – 9.3t payload – 12-14t gross weight” was assumed. Weighted average of the distance covered, and times needed were taken into account. Regarding ship transportation, “Average ship, 3.500t payload capacity” was assumed due to lack of actual data.
- It was assumed that production volumes of PP600 9010, 9005 and 8014 follow a ratio of 1:1:1.
- Regarding the energy, water and raw material consumption, an allocation based on the mass of the finished product has been applied, using site-specific data. PP600 Powder Coatings included in the EPD are accounted for the 9% of the total powder coatings production. Energy and mass apportionments made were based on this share.

Background data and data quality

For all processes primary data was collected and provided by **NEOKEM SA**. Data related to material and energy flows of the defined system, are acquired from the company developing the EPD and data related to life cycle impacts result from calculations based on databases and characterization factors. The primary data refers to January 2020 to December 2020 as reference period. For the data, which are not influenced by the manufacturer, generic data is used.

The LCA software GaBi ts version 10.5.0.78 was used for inventory and impact assessment calculations based on data entry of the developed model. A compilation of Ecoinvent v.3.7 and Professional 2021 databases was used.

Comparability

- 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 15084.
- This EPD and PCR 2012:01 “Construction products and construction services” are available on the website of The International EPD® System (www.environdec.com).

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Life Cycle Assessment (LCA) - Results

Since 1972 NEOKEM color performance

Parameters describing the environmental impacts

The following tables present the environmental impact potentials for different parameters, for the material flows as well as for the waste and other outputs. The results refer to 1 kg of PP600/ 9010 Powder Coating.

PP600/ 9010 Powder Coating:

Environmental Impact Categories		Impact/ 1 kg of PP600/ 9010			
	Unit	**A1**	**A2**	**A3**	**Total**
Depletion of abiotic resources (elements)	kg Sb eq.	8.467E-06	4.161E-09	9.888E-08	**8.570E-06**
Depletion of abiotic resources (fossil)	MJ net calorific value	75.212	0.723	0.061	**75.995**
Acidification Potential	kg SO_2 eq.	0.011	2.018E-04	1.447E-05	**0.011**
Eutrophication Potential	kg $PO4^{-3}$ eq.	0.0034	5.505E-05	1.822E-05	**0.0034**
Global Warming Potential (GWP100)	kg CO_2 eq.	3.804	0.046	0.017	**3.867**
Ozone Layer Depletion Potential	kg R-11 eq.	3.808E-09	9.298E-18	4.816E-15	**3.808E-09**
Photochemical Ozone Creation Potential	kg C_2H_4 eq.	0.0013	2.233E-05	3.744E-06	**0.0013**

Impact Category – Waste categories		Impact/ 1 kg of PP600/ 9010			
	Unit	**A1**	**A2**	**A3**	**Total**
Hazardous waste disposed	kg	4.947E-05	3.666E-11	1.111E-10	**4.947E-05**
Non-hazardous waste disposed	kg	0.024	1.081E-04	0.018	**0.042**
Radioactive waste disposed	kg	3.741E-04	8.800E-07	1.330E-06	**3.763E-04**

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Life Cycle Assessment (LCA) - Results

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PP600/ 9010 Powder Coating:

Impact Category – Use of resources		Impact/ 1 kg of PP600/ 9010			
	Unit	**A1**	**A2**	**A3**	**Total**
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ, net calorific value	4.579	0.041	3.972	**8.592**
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	-	-	-	**-**
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ, net calorific value	4.579	0.041	3.972	**8.592**
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ, net calorific value	77.793	0.728	0.065	**78.585**
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	-	-	-	**-**
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ, net calorific value	77.793	0.728	0.065	**78.585**
Use of secondary material	kg	-	-	-	**-**
Use of renewable secondary fuels	MJ, net calorific value	-	-	-	**-**
Use of non-renewable secondary fuels	MJ, net calorific value	-	-	-	**-**
Use of net fresh water	m^3	0.039	4.641E-05	5.500E-05	**0.039**

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Life Cycle Assessment (LCA) - Results

Since 1972 NEOKEM color performance

Parameters describing the environmental impacts

The following tables present the environmental impact potentials for different parameters, for the material flows as well as for the waste and other outputs. The results refer to 1 kg of PP600/ 9005 Powder Coating.

PP600/ 9005 Powder Coating:

Environmental Impact Categories		Impact/ 1 kg of PP600/ 9005			
	Unit	**A1**	**A2**	**A3**	**Total**
Depletion of abiotic resources (elements)	kg Sb eq.	8.513E-06	5.274E-09	9.888E-08	**8.617E-06**
Depletion of abiotic resources (fossil)	MJ net calorific value	60.221	0.916	0.061	**61.198**
Acidification Potential	kg SO_2 eq.	0.0034	3.026E-04	1.447E-05	**0.0037**
Eutrophication Potential	kg $PO4^{-3}$ eq.	6.538E-04	7.472E-05	1.822E-05	**7.467E-04**
Global Warming Potential (GWP100)	kg CO_2 eq.	2.253	0.062	0.017	**2.333**
Ozone Layer Depletion Potential	kg R-11 eq.	4.312E-09	1.179E-17	4.816E-15	**4.312E-09**
Photochemical Ozone Creation Potential	kg C_2H_4 eq.	0.0010	3.001E-05	3.744E-06	**0.0010**

Impact Category – Waste categories		Impact/ 1 kg of PP600/ 9005			
	Unit	**A1**	**A2**	**A3**	**Total**
Hazardous waste disposed	kg	5.617E-05	4.646E-11	1.111E-10	**5.617E-05**
Non-hazardous waste disposed	kg	0.027	1.370E-04	0.018	**0.045**
Radioactive waste disposed	kg	4.255E-04	1.115E-06	1.330E-06	**4.279E-04**

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Life Cycle Assessment (LCA) - Results

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PP600/ 9005 Powder Coating:

Impact Category – Use of resources		Impact/ 1 kg of PP600/ 9005			
	Unit	**A1**	**A2**	**A3**	**Total**
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ, net calorific value	3.583	0.051	3.972	**7.606**
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	-	-	-	**-**
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ, net calorific value	3.583	0.051	3.972	**7.606**
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ, net calorific value	61.443	0.922	0.065	**62.430**
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	-	-	-	**-**
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ, net calorific value	61.443	0.922	0.065	**62.430**
Use of secondary material	kg	-	-	-	**-**
Use of renewable secondary fuels	MJ, net calorific value	-	-	-	**-**
Use of non-renewable secondary fuels	MJ, net calorific value	-	-	-	**-**
Use of net fresh water	m^3	0.016	5.883E-05	5.500E-05	**0.016**

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Life Cycle Assessment (LCA) - Results

Since 1972 NEOKEM color performance

Parameters describing the environmental impacts

The following tables present the environmental impact potentials for different parameters, for the material flows as well as for the waste and other outputs. The results refer to 1 kg of PP600/ 8014 Powder Coating.

PP600/ 8014 Powder Coating:

Environmental Impact Categories		Impact/ 1 kg of PP600/ 8014			
	Unit	**A1**	**A2**	**A3**	**Total**
Depletion of abiotic resources (elements)	kg Sb eq.	1.256E-05	5.147E-09	9.888E-08	**1.266E-05**
Depletion of abiotic resources (fossil)	MJ net calorific value	59.791	0.881	0.061	**60.733**
Acidification Potential	kg SO_2 eq.	0.0037	2.949E-04	1.447E-05	**0.0040**
Eutrophication Potential	kg $PO4^{-3}$ eq.	7.352E-04	7.250E-05	1.822E-05	**8.259E-04**
Global Warming Potential (GWP100)	kg CO_2 eq.	2.217	0.054	0.017	**2.289**
Ozone Layer Depletion Potential	kg R-11 eq.	4.035E-09	1.062E-17	4.816E-15	**4.035E-09**
Photochemical Ozone Creation Potential	kg C_2H_4 eq.	9.470E-04	2.933E-05	3.744E-06	**9.801E-04**

Impact Category – Waste categories		Impact/ 1 kg of PP600/ 8014			
	Unit	**A1**	**A2**	**A3**	**Total**
Hazardous waste disposed	kg	5.301E-05	4.175E-11	1.111E-10	**5.301E-05**
Non-hazardous waste disposed	kg	0.025	1.297E-04	0.018	**0.044**
Radioactive waste disposed	kg	4.044E-04	1.092E-06	1.330E-06	**4.069E-04**

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Life Cycle Assessment (LCA) - Results

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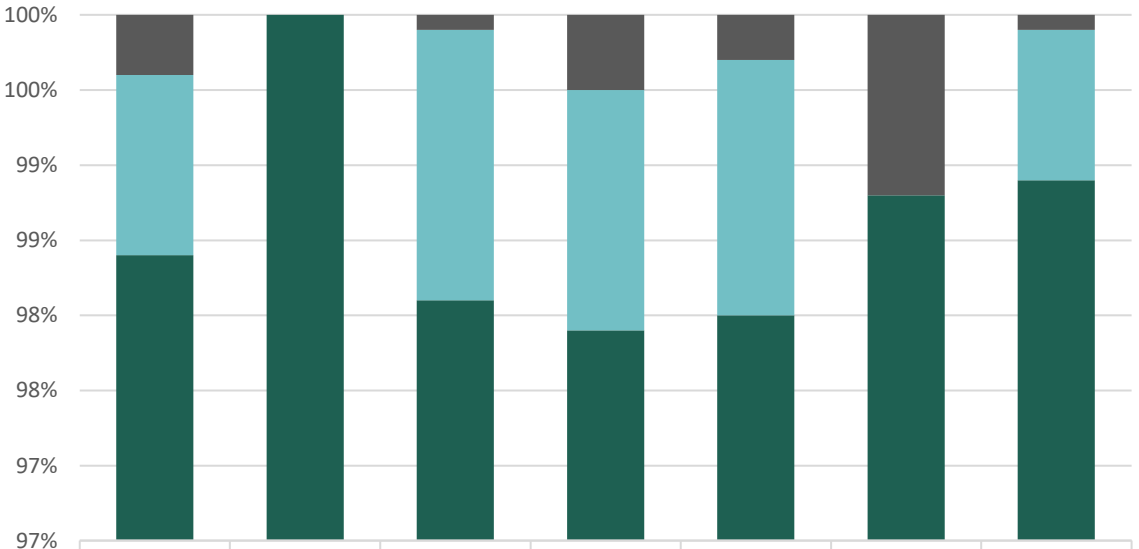
PP600/ 8014 Powder Coating:

Impact Category – Use of resources		Impact/ 1 kg of PP600/ 8014			
	Unit	**A1**	**A2**	**A3**	**Total**
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ, net calorific value	3.425	0.047	3.972	**7.444**
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	-	-	-	**-**
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ, net calorific value	3.425	0.047	3.972	**7.444**
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ, net calorific value	60.968	0.897	0.065	**61.930**
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	-	-	-	**-**
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ, net calorific value	60.968	0.897	0.065	**61.930**
Use of secondary material	kg	-	-	-	**-**
Use of renewable secondary fuels	MJ, net calorific value	-	-	-	**-**
Use of non-renewable secondary fuels	MJ, net calorific value	-	-	-	**-**
Use of net fresh water	m^3	0.016	5.738E-05	5.500E-05	**0.016**

Interpretation

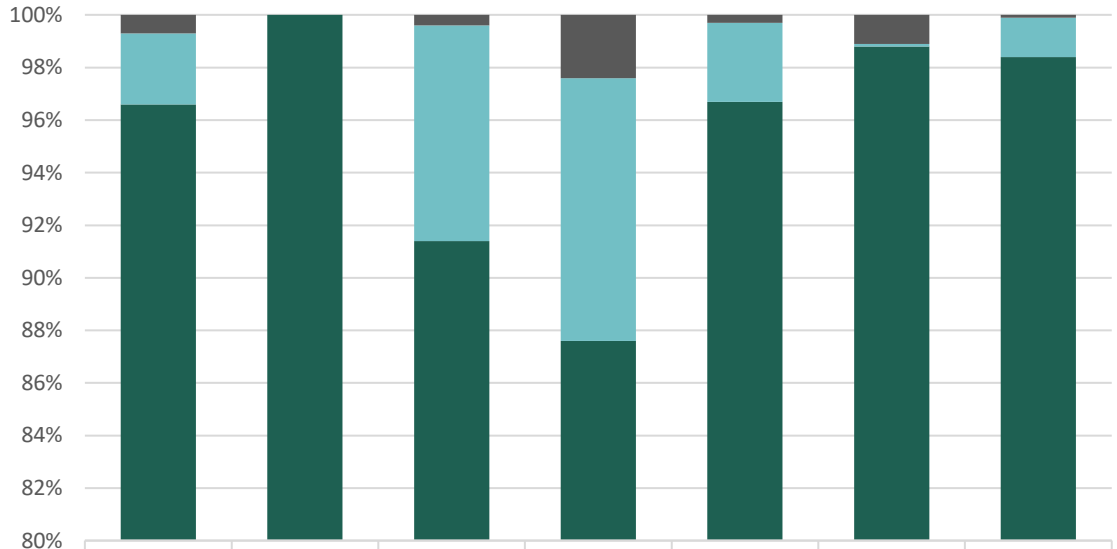
None core environmental impact indicator is affected more than ±3% (approximately) due to the deviation of the product's formulation. Therefore, a representative product can efficiently present the environmental performance of each product sub-category. The following figures present the influence of the Life Cycle stages A1, A2, and A3 on the environmental impact indicators. It can be clearly noticed that the analyzed impact categories are mainly influenced by the raw material supply stage (A1). It should be noted that many of the impact category indicators differ more than ±10% between the three representative product sub-categories of PP600 Powder Coatings. Thus, the results of the environmental impacts are presented in separate tables and charts.

Environmental Impacts – PP600/ 9010



	Global Warming Potential	Ozone Depletion Potential	Acidification Potential	Eutrophication Potential	Photochemical Ozone Creation Potential	Depletion of Abiotic resources (element)	Depletion of Abiotic resources (fossil)
A3	0,4	0	0,1	0,5	0,3	1,2	0,1
A2	1,2	0	1,8	1,6	1,7	0	1
A1	98,4	100	98,1	97,9	98	98,8	98,9

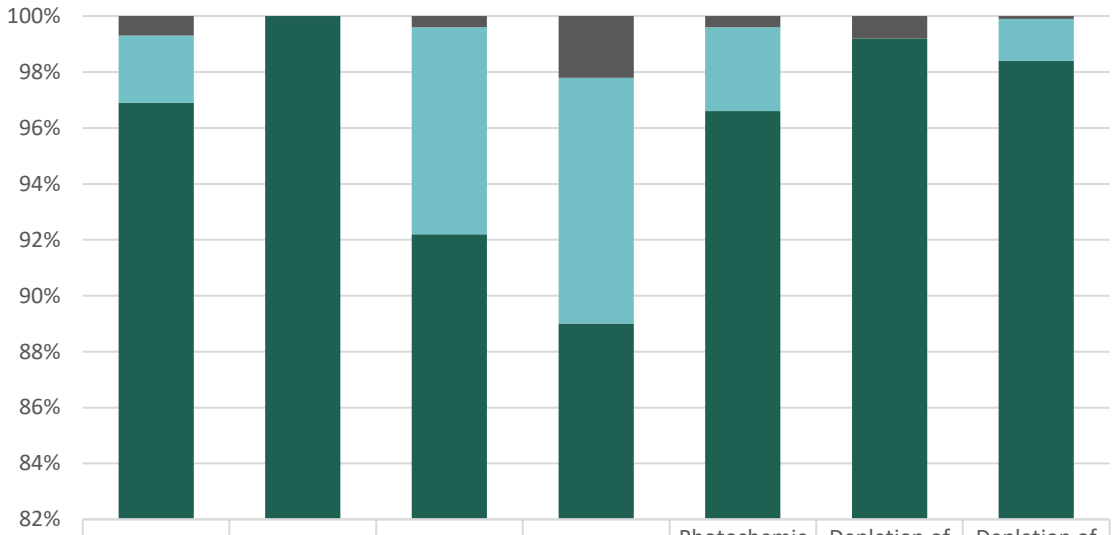
Environmental Impacts – PP600/ 9005



	Global Warming Potential	Ozone Depletion Potential	Acidification Potential	Eutrophication Potential	Photochemical Ozone Creation Potential	Depletion of Abiotic resources (element)	Depletion of Abiotic resources (fossil)
A3	0,7	0	0,4	2,4	0,3	1,1	0,1
A2	2,7	0	8,2	10	3	0,1	1,5
A1	96,6	100	91,4	87,6	96,7	98,8	98,4

Interpretation

Environmental Impacts – PP600/ 8014



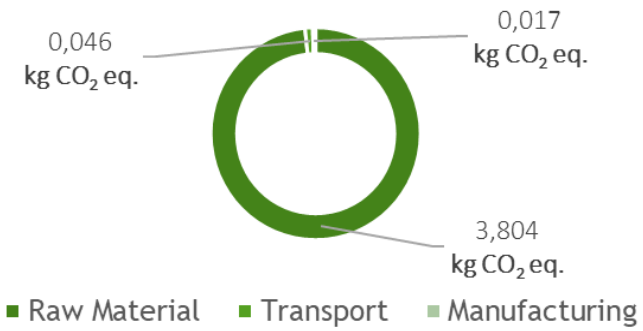
	Global Warming Potential	Ozone Depletion Potential	Acidification Potential	Eutrophication Potential	Photochemical Ozone Creation Potential	Depletion of Abiotic resources (element)	Depletion of Abiotic resources (fossil)
A3	0,7	0	0,4	2,2	0,4	0,8	0,1
A2	2,4	0	7,4	8,8	3	0	1,5
A1	96,9	100	92,2	89	96,6	99,2	98,4

- Specifically, almost every impact category is largely dominant by raw material supply stage, whereas ODP is exclusively influenced by raw material extraction and production stage.
- The Global Warming Potential (GWP) of 1 kg of PP600 Powder Coating is dominated by approximately 96-98% by the information module A1 – Raw material supply. Module A2 – Transportation contributes slightly to the impact category. Unlikely, Module A3 – Manufacturing stage has less than 1% influence in the formation of the GWP impact.
- Acidification Potential is mainly influenced by Raw material supply stage. More specifically, Stage A1 is accounted for the 91-98% of the impact, whereas Stage A2 influences the total impact indicator less than 10%.
- A slightly similar pattern is followed regarding the formation of Eutrophication Potential. Stage A2 is responsible for the contribution of 2-10% of the total impact, where contributions from raw material extraction and production stage (A1) still are the most dominant.
- Manufacturing stage (A3) holds a small share on each impact indicator, due to the fact that the electricity used is totally renewable, derived from 100% wind power. Thus, there is no significant emissions generation or fossil resources depletion.

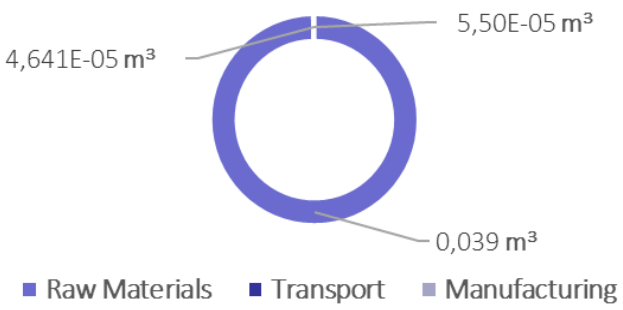
Interpretation

PP600/ 9010 Powder Coatings

Global Warming Potential
kg CO_2 eq. per kg of product

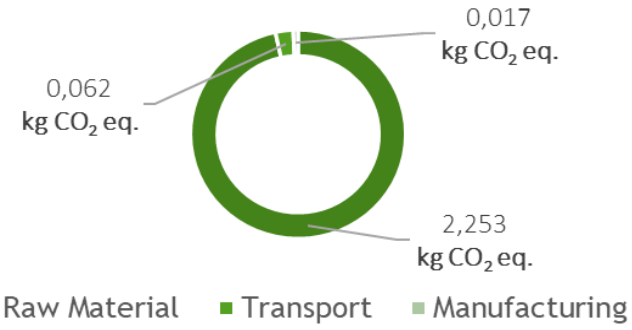


Use of Water
m³ per kg of product

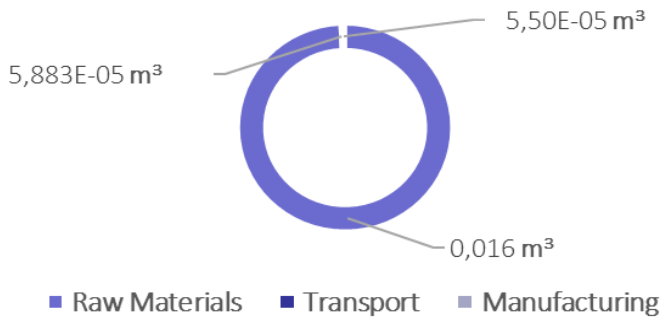


PP600/ 9005 Powder Coatings

Global Warming Potential
kg CO_2 eq. per kg of product

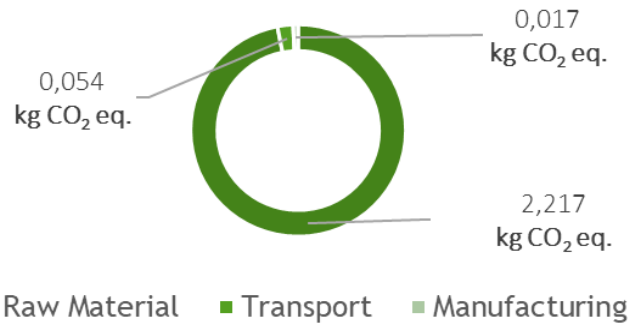


Use of Water
m³ per kg of product

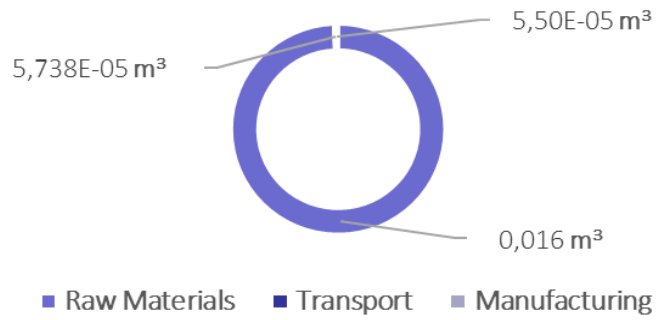


PP600/ 8014 Powder Coatings

Global Warming Potential
kg CO_2 eq. per kg of product



Use of Water
m³ per kg of product



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- International EPD® System, PCR 2012:01 Construction products and construction services, version 2.33
- International Organization for Standardization (ISO), Environmental labels and declarations – Type III environmental declarations – Principles and procedures. ISO 14025:2006
- International Organization for Standardization (ISO), Environmental management – Life Cycle assessment – Principles and framework. ISO 14040:2006
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- The International EPD® System – The International EPD System is a programme for type III environmental declarations, maintaining a system to verify and register EPDs as well as keeping a library of EPDs and PCRs in accordance with ISO 14025. www.environdec.com
- EN ISO 14001 – Environmental Management Systems – Requirements
- ISO 14020 – Environmental Labels and Declarations – General Principles
- Sphera – GaBi Life Cycle Assessment (LCA) software – www.sphera.com

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