Eco Footprint

SC803 Intumescent Coating

Nullifire Smart Protection

Product Description

Nullifire SC803 Intumescent Coating

Production Process Description

The cradle-to-gate production process of coatings starts with the extraction of feedstock and the production of raw materials.

The raw materials are then transported from the supplier to the coating producer, where they undergo various grinding and mixing processes. Finally, the coating is filled into packaging units. The production process is illustrated in figure 1 on the right.

Functional Unit

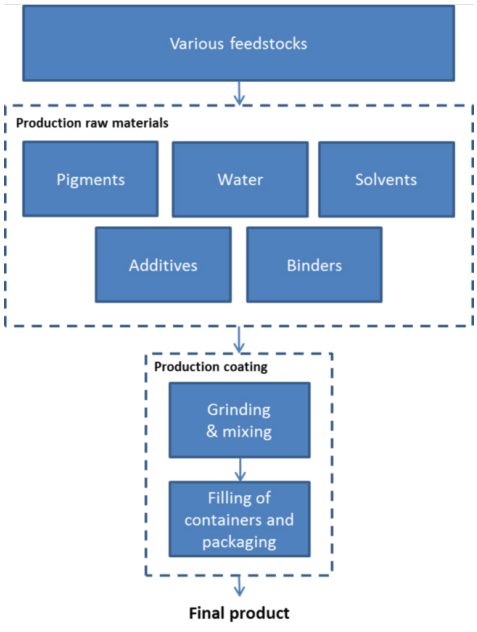
This Eco footprint is based upon life cycle inventory (LCI) data from IVL/CEPE. It reports the environmental performance indicators associated with the production of 1 kg of product from cradle-to-gate. This is equivalent to a coating surface covering of: 1.4 m2.

At the gate, the product is packaged and ready for shipment. The weight corresponds to the actual product weight, excluding the weight of the packaging material.

System Boundaries

The scope of this Eco footprint is cradle-to-gate. This means that the extraction of feedstock, the production of raw materials and the paint production (cradle-to-gate) are covered. The use phase and end of life are not covered in this Eco footprint (gate-to-grave).

Figure One. Production process waterborne coating.



Information

This Carbon footprint was produced in August 2020. For more information about this product, please contact:

CPG Europe
Michael Hollman (michael.hollman@cpg-europe.com)

Environmental Performance

The table below reports the main environmental indicators for the production of 1 kg of product (cradle-to-gate). The main impact categories are listed (global warming, ozone depletion, photochemical smog, acidification, and eutrophication), as well as the energy content (renewable and non-renewable), waste (hazardous and non-hazardous) and resource consumption (renewable, non-renewable and water). A more extensive list of environmental indicators is provided in the impact table in Annex I.

Impact Categories		
Global Warming Potential or Carbon Footprint (GWP)	3714.3	g CO_2 eq
Ozone Depletion	323.3	µg CFC-11 eq
Photochemical Ozone Creation Potential (POCP)	230.4	mg C2H4 eq
Acidification Potential (AP)	39.3	g SO2 eq
Eutrophication Potential (EP)	19627.8	mg PO4 eq
Energy Content		
Non-Renewable	58.5	MJ
Renewable	3.3	MJ
Waste		
Non-Hazardous	26	g
Hazardous	11	g
Resource Consumption		
Non-Renewable	2.7	kg
Renewable	6.9	kg
Water	4801.7	kg

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Glossary

Global Warming Potential: This category is also referred to as Carbon Footprint (CF). It is the index used to translate the level of emissions of various gases into a common measure to compare their contributions to the atmospheric absorption of infrared radiation.

Ozone Depletion Potential: The index used to translate the level of emissions of various substances into a common measure to compare their contributions to the breakdown of the ozone layer.

Photochemical Ozone Creation Potential: The index used to translate the level of emissions of various gases into a common measure to compare their contributions to the change of ground-level ozone concentration (photochemical smog).

Acidification Potential: Chemical alternation of the environment, resulting in hydrogen ions being produced more rapidly than they are dispersed or neutralized. It occurs mainly through fallout of Sulphur and nitrogen compounds from combustion processes. Acidification can be harmful to terrestrial and aquatic life.

Eutrophication Potential: Enrichment of bodies of water by nitrates and phosphates from organic material or the surface runoff. This increases the growth of aquatic plants and can produce phytoplankton blooms that deoxygenate water and smother other aquatic life.

Energy Content, Waste and Resource Consumption: The total energy, mass of feedstock and water consumed, and the total mass of waste produced in the cradle-to-gate coating production.

Notes:

This ECO footprint is created using the CEPE ECO Footprint tool v.2.0, based on the CEPE RM Database v.3 released in April 2016 (see www.CEPE.org/ecofootprint). This ECO Footprint does not automatically meet all LCA and EPD requirements and should not be used in market claims or external communciation without a review.

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Annex I - Impact Table

The impact table below shows an extensive list of environmental indicators. The values for each indicator are calculated for three separate scopes, in accordance to the GHG Protocol (for a more complete definition of the GHG protocol scopes, please see the reference manual of the tool). A distinction is made between direct and indirect emissions. Direct emissions are discharged by sources that are owned or controlled by the reporting entity. Indirect emissions occur at sources owned or controlled by another entity. In scope 1, 'Coating production', the direct environmental impact of the coating manufacturing process is calculated. Scope 2, 'energy use', covers the indirect GHG emissions related to the coating production that originate from purchased electricity, heat or steam. Scope 3, 'raw materials', includes the various environmental impacts related to the extraction of feedstock, production of raw material and transport. The cradle-to-gate total is the sum of the indicator values for each of the separate scopes.

Environmental Indicator	Raw Materials (Scope 3)	Energy Use (Scope 2)	Coating Production (Scope 1)	Total (Cradle to Exit Gate)	Unit
		Impact Category			
Global Warming Potential or Carbon Footprint (GWP)	3440.9 92.6%	190.4 5.1%	83 2.2%	3714.3 100%	g CO2 eq
Ozone Depletion Potential (ODP)	293.4 90.8%	29.9 9.2%	0 0%	323.3 100%	µg CFC-11 eq
Photochemical Ozone Creation Potential (POCP)	166.4 72.2%	59.7 25.9%	4.2 1.8%	230.4 100%	mg C2H4 eq
Acidification Potential (AP)	38.1 97%	1.1 2.9%	0.1 0.2%	39.3 100%	g SO2 eq
Eutrophication Potential (EP)	19561.1 99.7%	52.2 0.3%	14.5 0.1%	19627.8 100%	mg PO4 eq
Abiotic Depletion Potential (ADP)	12.7 100%	0 0%	0 0%	12.7 100%	mg Sb eq
Dust and Particulate Matter (PM)	337.9 54.4%	258.7 41.7%	24.1 3.9%	620.7 100%	mg PM10 eq
Human Toxicity Potential (HTP)	1709.1 99.2%	13.3 0.8%	0.1 0%	1722.5 100%	g 1,4-DB eq
Freshwater Toxicity Potential	1442.2 100%	0.3 0%	0 0%	1442.5 100%	g 1,4-DB eq
Marine Aquatic Toxicity Potential	3632.2 99.7%	9.3 0.3%	0 0%	3641.6 100%	kg 1,4-DB eq
Terrestrial Eco Toxicity Potential	0.7 84.3%	0.1 15.7%	0 0%	0.9 100%	g 1,4-DB eq
		Energy Content			
Non-Renewable	55 94.1%	3.4 5.9%	0 0%	58.5 100%	MJ
Renewable	3.2 98.4%	0.1 1.6%	0 0%	3.3 100%	MJ
		Resource Comsumption			
Non-Renewable	2.5 90.6%	0.3 9.4%	0 0%	2.7 100%	kg
Renewable	5.9 85.5%	1 14.5%	0 0%	6.9 100%	kg
Water	4801.2 100%	0.5 0%	0 0%	4801.7 100%	kg
		Waste			
Non-Hazardous	0 0%	0 0%	26 100%	26 100%	g
Human Toxicity Potential (HTP)	0 0%	0 0%	11 100%	11 100%	g

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Annex II - Extended Impact Table

The extended impact table below gives a detailed overview of the consumptions and emissions to air and water related to the cradle-to-gate production process of 1 kg of product. Based on these consumptions and emissions, the indicator values as listed in the impact table (Annex I) are calculated.

Environmental Indicator	Raw Materials (Scope 3)	Energy Use (Scope 2)	Coating Production (Scope 1)	Total (Cradle to Exit Gate)	Unit
Impact Category					
Coal	8.5	1.1	0	9.6	MJ
Crude Oil	14.9	0.1	0	15	MJ
Natural Gas	30.8	1.2	0	32	MJ
Hydro Energy	0.2	0.2	0	0.2	MJ
Nuclear Energy	3.9	1	0	5	MJ
Lignite	1.5	0	0	1.6	MJ
Recovered / Other	0	0	0	0	MJ
Biomass	0.6	0	0	0.6	MJ
Resource Consumption					
Barium Sulphate	0.4	0	0	0.4	g
Copper	1.4	0	0	1.4	g
Ilmenite	0.1	0	0	0.1	g
Iron	25.4	0	0	25.4	g
Molybdenum	0	0	0	0	g
Nickel	1.8	0	0	1.8	g
Rutile	0	0	0	0	g
Sand, rock and clay	1314.7	254.1	0	1568.8	g
Zirconium	9.9	0	0	9.9	g
Other resource use	6986.9	998.9	0	7985.8	g
Water	4801.2	0.5	0	4801.7	kg
Emissions to Air					
CO2	3160.2	178.7	82.1	3421	g
SOx	19.7	0.8	0	20.4	g
NOx	6.6	0.4	0.1	7.1	g
CH4	1.1	0.4	0	1.5	g
VOC	11.8	0.4	0	12.2	g
HCFC	4.7	0	0	4.8	mg
NH3	0.1	0	0	0.1	g
N2O	0.2	0	0	0.2	g
HCl	0.2	0	0	0.2	g

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Environmental Indicator	Raw Materials (Scope 3)	Energy Use (Scope 2)	Coating Production (Scope 1)	Total (Cradle to Exit Gate)	Unit
Emissions to Water					
COD	97.5	0	0	97.6	g
BOD	167.5	0	0	167.5	g
N total	1.9	0	0	1.9	g
NH4-N	1.3	0	0	1.3	g
P total	8.2	0	0	8.2	g
AOX	0	0	0	0	g
HM	3.7	0	0	3.7	g
HC	1.3	0	0	1.3	g
SO42-	361.8	0	0	361.9	g
Cl-	65.1	0.1	0	65.7	g

Notes:

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