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VERIFIED BY NSF
LEEDv4.1
Material Ingredient Reporting

Environmental Product Declaration Action Plan – Syntha Pulvin HD Fine Texture ECO

Syntha Pulvin is the premier architectural powder coatings brand in Europe, setting the industry standard in terms of innovation, quality and service. Syntha Pulvin offers a wide range of Architectural Powder Coatings formulated to decorate and protect architectural Aluminium and Galvanised Steel exposed to extreme weather and ultraviolet conditions.

For additional information, please visit www.sherwinwilliams.com.

Manufacturer	The Sherwin-Williams Company sustainability@sherwin.com	
Declared Product	Syntha Pulvin High Durable Fine Texture ECO	
Product Description	Powder Coating	
Environmental Product Declaration (EPD) Information		
Baseline Life Cycle Assessment/Environmental Product Declaration	Syntha Pulvin High Durable Fine Texture ECO	
EPD Declaration Number and link to publicly available document	EPD10427	
Link to available EPDs	https://www.nsf.org/certified-products-systems	
Program Operator	NSF Certification LLC ncss@nsf.org	
EPD Date of Issue	August 20, 2020	
EPD Type	Product-specific Type III EPD	
EPD Reference PCR	PCR for Powder Coatings	
EPD Scope	Cradle-to-Gate	
LCA Software Used	GaBi (8.6.20)	
Declared Unit	1 kg of coating	
The PCR review was conducted by	Thomas P. Gloria, Ph. D. Industrial Ecology Consultants t.gloria@industrial-ecology.com	
The EPD was independently verified by NSF Certification LLC in accordance with ISO 21930 and ISO 14025. **☐ Internal ☒ External**	Jack Geibig – EcoForm igeibig@ecoform.com	Jack Geibig
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by	Jack Geibig – EcoForm igeibig@ecoform.com	Jack Geibig
Environmental Product Declaration Action Plan (EPD AP) Information		
Action Plan Declaration Number	EPDAP-111	
Action Plan Issue Date	05/15/2024 - 05/15/2027	
Action Plan Expiration Date		
LCA Software Used	GaBi (Most Recent Version)	
LCA Data sets	See Table 2	
Manufacturing Location(s)	Various Plants Throughout the EU	
Scope of Steps Identified in Action Plan	Cradle-to-Gate	
Is this Action Plan applicable to all products listed in the corresponding LCA or EPD, or only a subset?	All products listed in baseline EPD. Table 1 in this document.	
Summary of Largest Life Cycle Impacts identified in the Analysis	Module A1 represented the highest impact across all impact categories observed. Raw Material selection was the primary driver of the Module A1 impacts. *See section "Dominance Analysis and Impact Areas Targeted for Reduction"*	
Description of the Impact Areas Targeted for Reduction	The areas of focus will be raw material substitution and/or enhancement of product performance. Carbon footprint (GWP) will be the principal improvement target for the products disclosed herein.	
Milestones for improvements	See section *"Strategy, Timeline, and Specific Steps"*	
Goal GWP Reduction	>5%	
Prepared By	The Sherwin-Williams Global Sustainability Group sustainability@sherwin.com	

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Purpose

This shall serve as the action plan eligible for credit under LEED v4.1 (BPDO credit - Option 2) for the optimization of the environmental footprint of **Syntha Pulvin HD Fine Texture**, part of the Syntha Pulvin range of highly durable powder coatings designed to protect aluminium and galvinised components used in the fenestration industry, manufactured by The Sherwin-Williams Company.

Sherwin-Williams has a comprehensive Life Cycle Assessment (LCA) program that it utilizes to benchmark and optimize the environmental footprint of its products. To see a listing of Sherwin-Williams Environmental Product Declarations (EPD), which may be used as baseline document for EPD/LCA Action Plans, please visit: https://info.nsf.org/Certified/Sustain/listings.asp?ProdCat=EPD.

Overview of LCA/EPD

To ensure that this optimization process is as accurate as possible, the following information about the LCA/EPD will be considered and is disclosed below. This ensures that any enhancement of the product is because of an actual improvement in the LCIA results to the best of Sherwin-Williams' knowledge. Additionally, both the original and updated formulations shall be assessed using the same version of the LCA software and LCI databases to ensure consistency. Per LEED requirements, any claimed improvement must clearly be linked to a specific formulation and/or supply chain improvement as opposed to an LCI update. However, limitations in LCA still exist and these are further discussed in the limitations section.

Table 1. Baseline EPD Cradle to Gate LCIA Impacts per Formula.

Formula	GWP (kg CO2e)	Acidification (kg SO2e)	Eutrophication (kg P e)	Ozone Depletion (kg R -11e)	Photochemical Ozone Formation (kg NOxe)
20028.90	4.96	0.0575	5.65E-03	4.60E-07	0.0111
18895.90	4.84	0.0533	6.39E-03	5.42E-07	0.0107
51156.90	4.9	0.0491	5.98E-03	5.06E-07	0.0109
44173	5.04	0.0563	5.72E-03	4.57E-07	0.0113
33338	5.54	0.0252	7.20E-03	6.25E-07	0.012
37540	5.07	0.0362	6.20E-03	5.18E-07	0.0112

Other key assumptions include

- Average total transportation distance: 1926 km (1197 miles).
- These products are manufactured at locations across the European Union.
- Energy required for manufacturing: 0.16 MJ/kg of product.

Table 2. Overview of Databases used in LCA Models for Optimized LCA/EPD.

Database	Comments
Sherwin-Williams	Primary source data taken as an average monthly value over a 12-month average of relevant year at the time of LCA calculations during action plan implementation.
Sphera/LCAFE	DB Version 10.7 (or most recent available at the time of LCA calculations during action plan implementation)
ecoinvent	Version 3.3 – (or most recent version available in GaBi at the time of LCA calculations during action plan implementation)
CEPE LCI	Most recent version of industry LCI. Last updated in 2020. (Or most recent version available in GaBi at the time of LCA calculations during action plan implementation)

Dominance Analysis and Impact Areas Targeted for Reduction

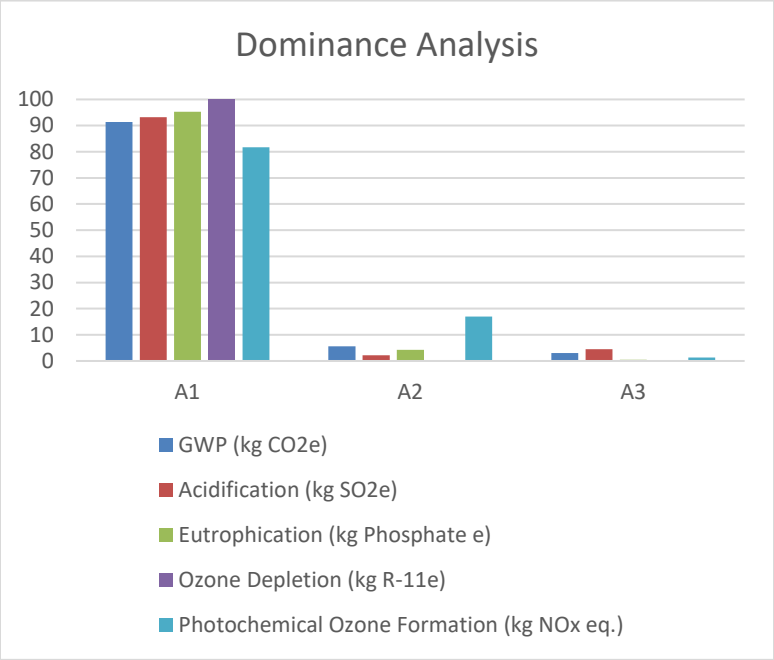


Figure 1. Impact Category Results Breakdown for Average Syntha Pulvin Fine Texture Formulation

	GWP (kg CO2e)
Module A1	85%-94%
Module A2	5%-10%
Module A3	1-5%

Table 3. GWP Impacts by Module

Results indicate that Module A1 represented the highest impact across all impact categories observed. As can be seen in Figure 1 and Table 3 above, Module A1 accounted for 80%-90% of the products' overall GWP impact. Stage 1 included activities such as raw material extraction and processing, raw material transport, packaging raw material extraction and processing, packaging raw material transport, coating manufacturing, and filling packaging with coating. Raw Material selection was the primary driver of the Module A1 GWP impact across all **Syntha Pulvin Fine Texture** products reviewed in this analysis as noted in Table 3. Specifically looking at raw material impact, the primary resin was responsible for the largest contribution to the impact results across all impacts categories.

Given the relevance of the raw materials in the overall footprint of the product**, the areas of focus will be raw material substitution and/or enhancement of product performance.** Since **carbon footprint (GWP) is the primary focus for LEED EPD optimization, it shall be the principal improvement target for Sherwin-Williams,** although burden shifting will still be avoided whenever possible. This product will be assessed to see if material substitutions may be possible without compromising performance or if performance can be improved (i.e. longer lifetime or achieving better coverage) without significantly increasing environmental footprint. Additionally, supply chain enhancements (transportation distance, electricity consumption) will be considered as well.

Limitations

It is important to consider the limitations of LCA when reviewing an EPD, this action plan, or any optimized EPD as a result of an action plan. EPDs currently are limited to midpoint LCA indicators, meaning that they only consider potential impacts as opposed to specifically determining environmental damage at a specific site or region. Additionally, LCA does not have a measure of true uncertainty and its results are changing constantly.

Sherwin-Williams will use the best available data and resources when conducting its assessments and will ensure that any Optimized EPD meets the relevant ISO comparability requirements. However, any LCAs or EPDs shall not be used as a comparative assertion or overall superiority claim per ISO requirements.

Strategy, Timeline, and Specific Steps

Sherwin-Williams has internal processes for assessing product performance using specific ASTM test methods and the environmental footprint using LCA. Tools have been developed to allow formulations to be assessed early in the development process to ensure burden shifting does not occur. The implementation of Sustainability by Design across the enterprise serves as our proactive, foundational process to aid the growth of our "sustainably advantaged products" portfolio.

To improve the environmental footprint of the product a new resin has been developed containing recycled PET (rPET) to replace some of the petroleum-based feedstock.

This has 2 key environmental benefits:

1. Reduction of the GWP of the product
2. The curing temperature is reduced, potentially allowing end users to reduce their natural gas consumption by facilitating a reduction in oven temperature

The project will involve formulating the PE/P/HD FTX onto the rPET containing resin and balancing the formulation to deliver the industry required performance properties. A successful outcome will be certification by the two leading independent bodies, Qualicoat and GSB, to validate the performance complies with industry standards.

The current curing schedule for PE/P/HD/FTX is

Time	Substrate temperature
10-13 min	200°C
15-25 min	190°C
20 - 30 min	180°C

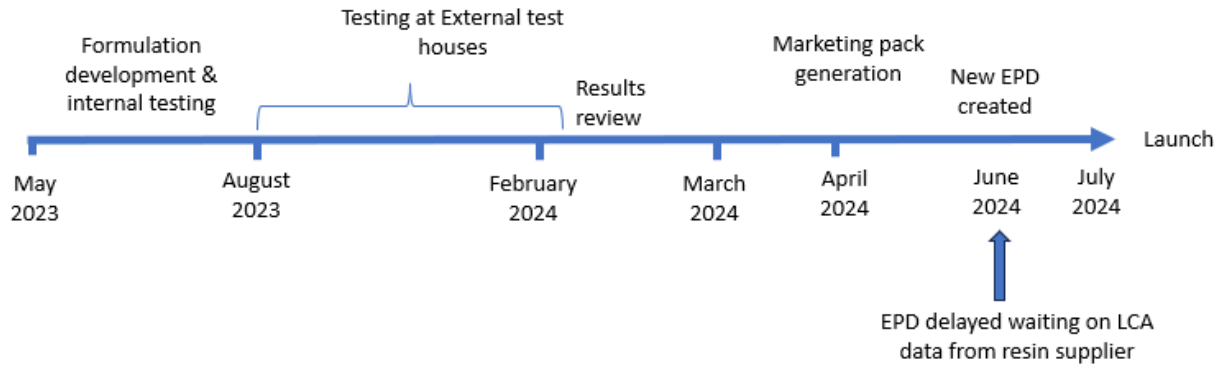
The new low bake curing schedule being targeted is,

Time	Substrate temperature
6-10 mins	190°C
10-15 mins	180°C
12-30 mins	170°C
15-35 mins	160°C

This represents a 20°C reduction in the oven set temperature which is estimated to lead to a 10% reduction* in CO_2e during curing of the coating at the customer facility.
**Based on internal energy calculator taking a standard line loading baseline.*

The estimated timeline for this optimization is shown in the figure below. If at any point it becomes clear that an optimization is not possible because of technical limitations, this action plan shall be taken down by Sherwin-

Williams or the Program Operator. Additionally, if any significant delays occur, the timeline shall be updated to reflect this. The Program Operator shall check to see if the timeline is on target at least once per year.



Formulation Development- Q2 2023

- Further development, review and internal testing.

External Testing - Q3 2023

- Testing at multiple external test houses.

Test Assessment - Q1-Q2 2024

- Review results of all external testing.

New EPD Created- Q2 2024

- Conduct LCA and publish EPD for new Formula.

Marketing pack generation - Q2 2024

- Production of materials to support product launch.

Final Optimized Product Launched- Q2 2024

- Anticipated target GWP reduction: ~10%

The information contained in this action plan is accurate to the best of Sherwin-Williams' knowledge at the time of writing and will be appropriately revised if it becomes outdated or is no longer applicable.

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