

ENVIRONMENTAL PRODUCT DECLARATION

# REGUPOL® RUBBER FLOORING AND UNDERLAYMENT

RUBBER FLOORING AND UNDERLAYMENT PRODUCTS



**REGUPOL® Aktiv™** and **REGUPOL® Revolution™** flooring products are resilient, durable rubber surfaces designed for fitness and commercial applications, respectively. **REGUPOL® Sonus™** is a sound control underlayment used to minimize impact sound transmission.



Caring about the environment is part of the REGUPOL core mission. When it comes to how we conduct our business and develop our products, we think long term. We ask ourselves: How will our actions today impact tomorrow's world? We strive to protect and sustain our environment every step of the way, from development and production to customer use and disposal.

On the road, tires eventually wear down or sustain irreparable damage. But, in the environment, tires can last forever. Each year we reclaim over 9 million tires (or 90,000 tons of SBR) from landfills to make environmentally sound solutions for the sports, acoustics, commercial, construction, and transportation markets. Our products are comprised of either shredded and cleaned SBR tire rubber (100% post-consumer waste) or a combination of SBR tire rubber and vibrant EPDM (post-industrial waste) color granules. The recycled content ranges from 75% to 100% recycled materials.

When you partner with REGUPOL®, you become part of a community with a shared goal of leading with excellence and innovation. With eleven offices in seven countries around the world, we make our collective knowledge, experience, and global network available to you.



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REGUPOL® Aktiv™, Revolution™, and Sonus Series™ Flooring and Underlayment Products  
 REGUPOL® Flooring and Underlayment

According to ISO 14025

This declaration is an environmental product declaration (EPD) in accordance with ISO 14025. EPDs rely on Life Cycle Assessment (LCA) to provide information on a number of environmental impacts of products over their life cycle. **Exclusions:** EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g., Type 1 certifications, health assessments and declarations, environmental impact assessments, etc. **Accuracy of Results:** EPDs regularly rely on estimations of impacts, and the level of accuracy in estimation of effect differs for any product line and reported impact. **Comparability:** EPDs are not comparative assertions and are either not comparable or have limited comparability when they cover different life cycle stages, are based on different product category rules or are missing relevant environmental impacts. EPDs from different programs may not be comparable.



PROGRAM OPERATOR	UL Environment® 2211 Newmarket Pkwy SE Suite 106, Marietta, GA 30067
GENERAL PROGRAM INSTRUCTIONS AND VERSION NUMBER	Program Operator Rules V2.7 2022
MANUFACTURER NAME AND ADDRESS	REGUPOL® 11 Ritter Way, Lebanon, PA 17042
DECLARATION NUMBER	
DECLARED PRODUCT AND FUNCTIONAL UNIT	Aktiv™, Revolution™, and Sonus Series™ Flooring and Underlayment Products 1 m <sup>2</sup> of product
REFERENCE PCR	PCR Guidance-Texts for Building-Related Products and Services: Requirements on the EPD for Floor coverings, UL 10010–7, Second Edition PCR Guidance-Texts for Building-Related Products and Services: Part A: Life Cycle Assessment Calculation Rules and Report Requirements, UL 10010, Version 3.2
DESCRIPTION OF PRODUCT'S INTENDED APPLICATION AND USE (AS IDENTIFIED WHEN DETERMINING PRODUCT RSL)	Aktiv™ and Revolution™ - Flooring products Sonus Series™ - Underlayment Products
PRODUCT RSL DESCRIPTION	Flooring products – 10 years Underlayment Products – 15 years
MARKETS OF APPLICABILITY	Commerical, Residential
DATE OF ISSUE	
PERIOD OF VALIDITY	5 years
EPD TYPE	Product-specific
YEAR(S) OF REPORTED MANUFACTURER PRIMARY DATA	2021
LCA SOFTWARE & VERSION NUMBER	SimaPro v9.2
LCI DATABASE(S) & VERSION NUMBER	Ecoinvent 3, USLCI, US-EI 2.2

Full conformance with the PCR for Products allows EPD comparability only when all stages of a life cycle have been considered. However, variations and deviations are possible.

Comparison of the environmental performance of Flooring Products using EPD information shall be based on the product's use and impacts at the building level, and therefore EPDs may not be used for comparability purposes when not considering the building energy use phase as instructed under this PCR.

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LCIA METHODOLOGY & VERSION NUMBER	TRACI 2.1
CONTENTS OF THE DECLARATION	Product definition and information about building physics, Information about basic material and the material's origin, Description of the product's manufacture, Indication of product processing, Information about the in-use conditions, Life cycle assessment results, Testing results and verifications
EPD SCOPE	Cradle-to-Grave
The PCR review was conducted by:	Jack Geibig
This declaration was independently verified in accordance with ISO 14025:2006. The UL Environment "Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report," v3.2 (September 2018), based on ISO 21930:2017 serves as the core PCR, with additional considerations from the USGBC/UL Environment Part A Enhancement (2017) <input checked="" type="checkbox"/> INTERNAL <input type="checkbox"/> EXTERNAL	
This life cycle assessment was conducted in accordance with ISO 14044 and the reference PCR by:	Jack Geibig
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	Jack Geibig



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## Product Description

### Product Description and Definition

This declaration covers the REGUPOL® Aktiv™ Series, Revolution™ Series, and Sonus™ Series products under the UNSPSC's commodity code 30161705. Aktiv and Revolution Series products are flooring surfaces, while Sonus Series products are flooring underlayment. The specific products within each series are described below:

#### REGUPOL® aktiv essential (formerly core) and intense collections

Our signature fitness flooring REGUPOL® aktiv delivers an exceptional level of performance at affordable pricing. It is our most popular rubber gym flooring because it is easy to install, can last for decades of daily use, and looks and performs great. REGUPOL® aktiv rolls are available in either 1/4", 3/8", or 5/16" thicknesses, with color flecks from 10% to 95%, and customization available by special order. The Aktiv essential series includes Jet Black and patterns with 10% color flecks and is made from 82% post-consumer recycled content. Featuring 95% color flecks, our Aktiv intense series offers high color saturation and 7% post-consumer recycled content.

#### REGUPOL® aktivpro essential and intense collections

Our REGUPOL® aktivpro modular tile is designed to withstand the frequency and impact of weight drops, helping to prevent damage to the floor and equipment. Each 2-foot by 2-foot by 1-inch consists of a factory molded waffle bottom base topped with a wear layer for design and color. Inside is a proprietary inner layer for stability and durability. Its design provides superior noise and shock absorption. REGUPOL® aktivpro tile is recommended for both commercial and residential applications. It's perfect for CrossFit, Olympic style lifting, free weights, cardio, and functional training areas, selectorized strength, and locker rooms at all levels—high school, collegiate, and professional. Available in 17 color patterns. The Aktivpro essential series includes Jet Black and 5 patterns with 10% color flecks and is made from 88% post-consumer recycled content. Our intense series includes 7 patterns with 95% color flecks and is made from 75% post-consumer recycled content.

#### REGUPOL® aktivlok

Our popular REGUPOL® aktiv sports and fitness roll flooring is also available in interlocking tiles. Each 3/8" x 24" x 24" recycled rubber tile interlocks with a fit so precise, its seams are virtually invisible. REGUPOL® aktivLok is performance tested to stand up to the heaviest traffic and will protect the floor underneath from workout equipment, making them ideal for weight rooms, fitness centers and even home gyms. Very simple to assemble, aktivLok rubber gym tiles fit together like puzzle pieces, offering a genuine do-it-yourself installation. Center, border, and corner tiles allow for a finished look whether covering a specific area within a room or laying the tiles wall-to-wall. No adhesive is required allowing for tiles to be easily moved or repositioned. AktivLok is available in Jet Black and four patterns with 10% color flecks and is made from 82% post-consumer recycled content.

#### REGUPOL® sonus core

REGUPOL® sonus core impact sound underlayments are installed under resilient and hard surface floor finishes like ceramic tile, stone, carpet, bamboo, and hardwood flooring to reduce noise and lessen the sound of impact throughout

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buildings. Made from 94% recycled rubber content, the REGUPOL® sonus core portfolio available in 2mm, 3mm, 5mm, 6mm, 10mm, or 12mm cuts noise from walking traffic to the floors below, making for a quieter workplace or peaceful home. Each REGUPOL® sonus core acoustic underlayment delivers proven lab and field-tested results with acoustic ratings up to STC 66, IIC 74, Delta IIC 27 depending on the floor covering and floor-ceiling assembly.

### REGUPOL® sonus curve

Made from 92% post-consumer recycled tire rubber, REGUPOL® sonus curve is a dimpled flooring underlayment designed to reduce the transmission of impact sound generated by footfall noise. REGUPOL® sonus curve is commonly used underneath solid and engineered hardwood floors, concrete, screed, and floating floor systems. It is available in several standard thicknesses: 6mm, 8mm, 10mm, 17mm, and 25mm.

### REGUPOL® revolution (Original 6 and Progress collections)

The low maintenance and contemporary look of REGUPOL® revolution is an attractive combination for virtually any commercial space. Choose from an expansive collection of 46 styles to fit your design needs, including the tried-and-true black background punctuated by colorful speckles and the natural stone-look of marble or terrazzo. Mix and match colors or custom design a floor to fit you. Its appearance and performance will leave everyone standing still. Available in 5/32" (4mm) x 48" wide rolls with standard roll lengths of 25' and 50.' The Original Six collection contains 82% post-consumer recycled content and features 6 patterns, including black and 5 additional patterns with 10% color flecks. The Progress collection is made of 7% total recycled content and features 25 patterns with 95% color flecks, ranging from vibrant colors to subtle neutrals.

### Applicability

The products covered in this declaration are for commercial applications, and conform to the to the following test standards:

- ASTM D3676 *Standard Specification for Rubber Cellular Cushion Used for Carpet or Rug Underlay*
- ASTM D2240 *Standard Test Method for Rubber Property – Durometer Hardness*
- ASTM D624 *Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers*
- ASTM D412 *Standard Test Method for Vulcanized Rubber and Thermoplastic Elastomers - Tension*
- ASTM F137 *Standard Test Method for Flexibility of Resilient Flooring Materials with Cylindrical Mandrel Apparatus*
- ASTM F925 *Standard Test Method for Resistance to Chemicals of Resilient Flooring*



## Product Characteristics

### Technical Data

The following technical data presented in Tables 1, 2, and 3 are the most representative datasets for REGUPOL® flooring and underlayment products:

**Table 1 – Aktiv Series™ Technical Data**

Criteria	Aktiv Core	Aktiv Intense	AktivPro	AktivLok
Density (lb/ft <sup>3</sup> )	60	80	60	60
Hardness (Durometer Shore A)	60 +/- 5	60 +/- 5	60 +/- 5	60 +/- 5
Tear Strength (pli min)	80	70	80	80
Elongation (%)	145	300	145	145
Tensile Strength (psi)	220	200	220	220

**Table 2 – Revolution Series™ Technical Data**

Criteria	Revolution Original 6	Revolution Progress
Density (pcf)	60	80
Hardness (Durometer Shore A)	60 +/- 5	60 +/- 5
Tear Strength (pli min)	80	70
Elongation (%)	145	300
Tensile Strength (PSI)	220	200

**Table 3 – Sonus Series™ Technical Data**

Criteria	Sonus Core	Sonus Curve
Density (lb/ft <sup>3</sup> )	49	39
Thickness	variable	variable
Tensile Strength (psi)	105	44
Elongation (%)	47	60
Temperature Range (degrees F)	-40 to +230	-40 to +230
Thermal Resistance (R-Value)	< 1.0	< 1.0
Impact Sound Resistance (IIC Range)	50 to 74	50 to 65+

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### Scaling Factor

This study is based on the thickest version of all included REGUPOL® products, as those results are the worst-case scenario. In addition to these stated thickness, both Aktiv and Sonus Series products are available in thinner profiles. The following table shows how each product scales to one kilogram of mass or one millimeter of thickness.

**Table 4 – REGUPOL® Products Product Details and Scaling Factors**

Criteria	Aktiv Core	Aktiv Intense	AktivPro	AktivLok	Revolution Original 6	Revolution Progress	Sonus Core	Sonus Curve
Functional Unit	1 m <sup>2</sup>	1 m <sup>2</sup>	1 m <sup>2</sup>	1 m <sup>2</sup>	1 m <sup>2</sup>	1 m <sup>2</sup>	1 m <sup>2</sup>	1 m <sup>2</sup>
Thickness (mm)	12	12	26.7	12	4	4	12	25
Weight per Square Meter (kg)	11.76	16.14	22.46	11.76	3.92	5.38	9.36	14.80
Scaling factor to one mm	0.083	0.083	0.037	0.083	0.250	0.250	0.083	0.040
Scaling factor to one kg	0.085	0.062	0.045	0.085	0.255	0.186	0.107	0.068

### Material Content

#### Material Content of the Product

The raw material content of the REGUPOL® flooring and underlayment products are described below in Tables 5, 6, and 7. All products contain recycled content equivalent to the proportion of the product that is recycled rubber. No products contain known regulated substances or substances that are identified as hazardous.

**Table 5 – Aktiv Series Material Content**

Material Name	Aktiv Core	Aktiv Intense	AktivPro	AktivLok
Recycled Rubber (kg)	9.65	0.81	19.77	9.65
EPDM (kg)	1.05	14.20	0.24	1.05
Binder (kg)	1.06	1.13	2.31	1.06
Fiberglass (kg)	0.00	0.00	0.15	0.00
Total per m <sup>2</sup> (kg)	11.76	16.14	22.47	11.76

**Table 6 – Aktiv Series Material Content Percentages**

Material Name	Aktiv Core	Aktiv Intense	AktivPro	AktivLok
Recycled Rubber (kg)	82.1%	5.0%	88.0%	82.1%
EPDM (kg)	8.9%	88.0%	1.1%	8.9%
Binder (kg)	9.0%	7.0%	10.3%	9.0%



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Material Name	Aktiv Core	Aktiv Intense	AktivPro	AktivLok
Fiberglass (kg)	0.0%	0.0%	0.7%	0.0%
Total per m <sup>2</sup> (kg)	100.0%	100.0%	100.0%	100.0%

**Table 7 – Revolution Series Material Content**

Material Name	Revolution Original 6	Revolution Progress
Recycled Rubber (kg)	3.22	0.27
EPDM (kg)	0.35	4.73
Binder (kg)	0.35	0.38
Total per m <sup>2</sup> (kg)	3.92	5.38

**Table 8 – Revolution Series Material Content Percentages**

Material Name	Revolution Original 6	Revolution Progress
Recycled Rubber (kg)	82.1%	5.0%
EPDM (kg)	8.9%	87.9%
Binder (kg)	8.9%	7.1%
Total per m <sup>2</sup> (kg)	100%	100%

**Table 9 – Sonus Series Material Content**

Material Name	Sonus Core	Sonus Curve
Recycled Rubber (kg)	8.83	13.70
EPDM (kg)	0.00	0.13
Binder (kg)	0.53	1.10
Total per m <sup>2</sup> (kg)	9.36	14.93

**Table 10 – Sonus Series Material Content Percentages**

Material Name	Sonus Core	Sonus Curve
Recycled Rubber (kg)	94.3%	91.8%
EPDM (kg)	0.0%	0.9%
Binder (kg)	5.7%	7.4%
Total per m <sup>2</sup> (kg)	100%	100%

Production of Main Materials





**Recycled SBR Rubber:**

A synthetic rubber derived from styrene and butadiene monomers; this material is recovered from post-consumer tires that are mechanically shredded.

**EPDM Rubber:**

A synthetic rubber: this material is a terpolymer of ethylene, propylene, and a diene component.

**Binder:**

A petroleum derived product used to cross link polymers.

**Fiberglass:**

A strong, lightweight type of fiber-reinforced plastic, utilizing glass fibers as the reinforcement material.

**Life Cycle Assessment Stages**

**Raw Material Acquisition**

This stage includes the extraction and processing of all raw materials used in the REGUPOL® flooring and underlayment products. Additionally, all impacts associated with the inbound transport of raw materials to the manufacturing facility are accounted for in this stage.

**Manufacturing**

This stage includes all processes and flows associated with the manufacture of REGUPOL® flooring and underlayment products. Inputs into the manufacturing process include electricity, natural gas, propane, diesel, and water. Outputs include water and landfilled waste. Additionally, this stage accounts for the production of all materials used to package the REGUPOL® flooring and underlayment products. Included in this stage is the upstream energy required to shred the recycled tires for use as a raw material input into the flooring and underlayment products. Primary data were collected by site personnel at the Lebanon, PA facility for the year 2021.

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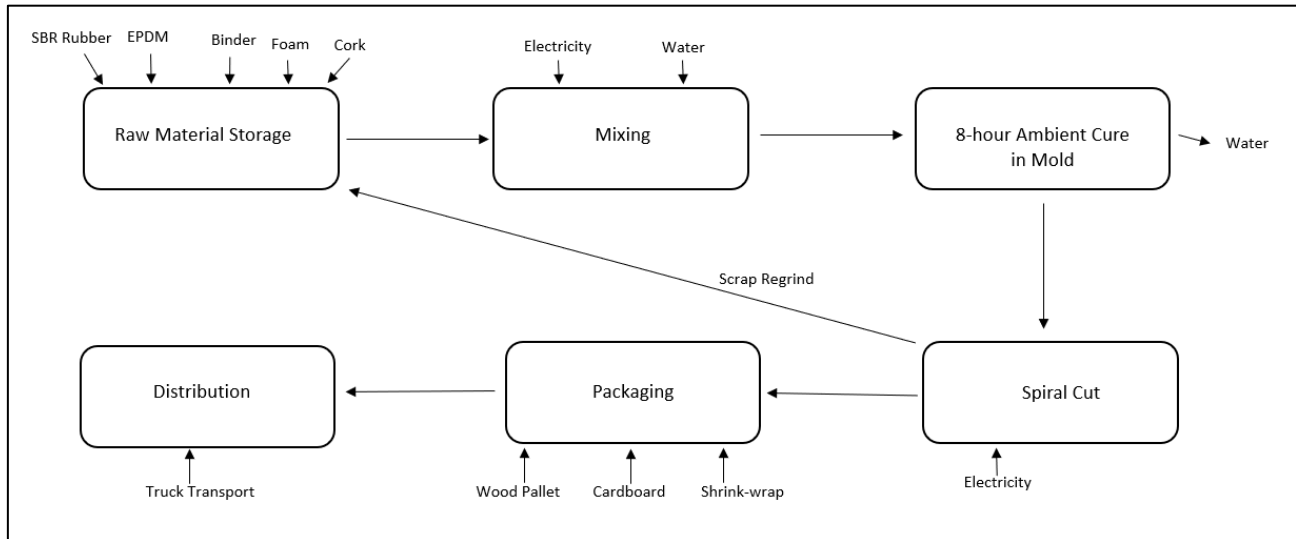


Figure 1 – Product Flow Diagram

### Delivery and Transport

REGUPOL® flooring and underlayment products are primarily distributed throughout North America. An assumption was made that an average product travels a distance of 1000 km by combination truck, average fuel fix from the site of manufacture to the site of installation.

### Installation

A scrap rate of 5% was assumed during installation of the flooring and underlayment products, based on manufacturer expertise. In addition to the use of adhesives for installation, this life cycle phase also includes the disposal of this scrap, along with disposal of packaging materials at the installation site. Please see installation on company website, [here](#).

### Health, Safety, and Environmental Aspects During Installation

Manipulation of the flooring substrate during installation may produce respirable crystalline silica. Actions that may cause dust to become airborne should be avoided. Additionally, ventilation and/or protective equipment should be utilized to reduce exposure below acceptable limits. For more information, please see the REGUPOL® Installation Manual located online at [www.REGUPOL.com](http://www.REGUPOL.com).

### Installation Waste

Disposal of installation scrap and packaging materials was modeled as the average US municipal solid waste disposition (80% landfill, 20% incineration) according to US Environmental Protection Agency data.

### Packaging



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REGUPOL® uses several material types in the packaging of its products, as described below:

**Table 11 – REGUPOL® Packaging Material Types**

Material	Packaging Item
Cardboard	Roll Cores
Wood	Pallets
Low Density Polyethylene	Shrink-wrap

**Table 12 – Packaging Materials Inventory**

Product Type	Cardboard per m <sup>2</sup> (kg)	Wood per m <sup>2</sup> (kg)	Shrink-wrap per m <sup>2</sup> (kg)	Total Weight (kg)
Aktiv Core, Aktiv Intense, Revolution Series	1.22E-01	0.00E+00	5.61E-05	1.22E-01
AktivLok	0.00E+00	2.03E-01	1.87E-05	2.03E-01
AktivPro	0.00E+00	4.58E-01	2.34E-05	4.58E-01
Sonus Series	4.88E-03	9.76E-02	5.61E-06	1.03E-01

### Use of the Floor Covering

Impacts during the use phase of rubber flooring and underlayment products are related to the maintenance of the products. Outside of maintenance, there are no use phase impacts associated with REGUPOL's® products.

### Cleaning and Maintenance

Only the Aktiv™ and Revolution™ series of products require any maintenance, as the Sonus series of products is a flooring underlayment, requiring no maintenance.

The average cleaning routine for the Aktiv and Revolution series products is described in the table below.

**Table 13 – REGUPOL® Flooring Lifetime Maintenance Schedule**

Maintenance Activity	Coverage	Dilution	Frequency Over 10 Year Reference Service Life
Initial Cleaning	2000 ft <sup>2</sup> / gal	10oz detergent / gal water	Once
Daily Cleaning	6000 ft <sup>2</sup> / gal	6oz detergent / gal water	Up to Once Per Day
Restorative Cleaning	1200 ft <sup>2</sup> / gal	10oz detergent / gal water	Once
Disinfecting	10594 ft <sup>2</sup> / gal	½ oz disinfectant / gallon water	Up to Once Per Day

### Recycling, Reuse, or Repurpose

REGUPOL® flooring and underlayment products are not typically reused, repurposed, or recycled after use.

### Disposal

For the disposal phase, the product was modeled according to the average US municipal solid waste disposition (80%



landfill, 20% incineration) according to US Environmental Protection Agency data.

## Life Cycle Assessment

### Functional Unit

Environmental impacts are reported per functional unit of a product. The functional unit is the basis for comparison in an LCA. The functional unit utilized for this study is one square meter of floor covering, or one square meter of rubber flooring/underlayment, with a building service life of 75 years (including replacement), and end-of-life disposition.

**Table 14 – Product Reference Service Life**

Aktiv Core	Aktiv Intense	AktivPro	AktivLok	Sonus Core	Sonus Curve	Revolution Original 6	Revolution Progress
10 years	10 years	10 years	10 years	15 years	15 years	10 years	10 years

### Cut-off Criteria

This EPD is in compliance with the cut-off criteria since no known processes were neglected or excluded outside of capital items for the production processes (machines, buildings, etc.) which were not taken into consideration. In cases of insufficient input data or data gaps for a unit process, the cut-off criteria shall be 1% of renewable primary resource (energy), 1% nonrenewable primary resource (energy) usage, 1% of the total mass input of that unit process and 1% of environmental impacts. The total of neglected input flows per module shall be a maximum of 5% of energy usage, mass and environmental impacts. When assumptions are used in combination with plausibility considerations and expert judgement to demonstrate compliance with these criteria, the assumptions were conservative.

Many assumptions were made in modeling the product system with representative processes and datasets. The authors addressed the uncertainty in modeling decisions by conducting a mass balance and sensitivity analysis as the LCI model was being constructed (data verification/validation relative to cut-off criteria and study goals).

While quality control was undertaken at each step in building the LCI and conducting the LCIA, uncertainty is still present in the results since the data evaluated represents only one year of manufacturing information. Detailed evaluation of multiple manufacturing plants and time periods would reduce the uncertainty. Some level of uncertainty is inherent and decision making must reflect this fact.

### Allocation

The Lebanon, PA plant solely produces rubber flooring and underlayment products of various mass and thickness. Therefore, allocation was performed on a mass basis to capture the variations in manufacturing intensity of products with variable mass. This study utilizes recycled content methodology for the recycled content in this product. A sensitivity analysis was conducted on varying methodologies in the background report to show the variation of results in using this methodology. No co-product allocation was used for this study.

### Background Data

SimaPro v9.02 Software System for Life Cycle Engineering, an internationally recognized LCA modeling software

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program, was used for life cycle impact assessment modeling. Background and secondary datasets were modeled using either the US Life Cycle Inventory Database (USLCI) or ecoinvent v3 databases. Primary data were collected from Regupol for the year 2021. Third party verified ISO 14040/44 secondary LCI data sets contribute more than 67% of total impact (either at the unit process level or in aggregate) to any of the required impact categories identified by the PCR.

## Data Quality

This study was completed using SimaPro v9.02 Software. Wherever secondary data are used, the study adopts critically reviewed data for consistency, precision, and reproducibility to limit uncertainty. The data sources used are complete and representative of North America in terms of the geographic and technological coverage and are a recent vintage (i.e., less than ten years old). Any deviations from these initial data quality requirements for secondary data are documented. Both the ecoinvent v3 and USLCI databases were utilized according to the following table:

**Table 15 – Life Cycle Assessment Data Sources**

Input Type	Database	Year
Materials	Ecoinvent v3	2020
Disposal	Ecoinvent v3	2020
Transportation	USLCI	2020
Energy / Fuels	USLCI	2020

## System Boundaries

The life cycle for REGUPOL® flooring and underlayment products is subdivided into the following stages: sourcing/extraction; manufacturing; delivery and installation; use; and end of life. These stages represent the full cradle-to-grave life cycle for these products. No known flows are deliberately excluded from this EPD.

**Table 16 – System Boundary**

Product Stage			Construction Process Stage		Use Stage							End-of-Life Stage				Benefits and Loads Beyond System Boundary
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Raw materials supply	Transport	Manufacturing	Transport from gate to site	Assembly/install	Use	Maintenance	Repair	Replacement	Refurbishment	Bldg. Operational Energy Use During Product Use	Bldg. Operational Water Use During Product Use	De-construction	Transport	Waste processing	Disposal	Reuse, Recovery, Recycling Potential



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X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	MND
MND – Module Not Declared																
X – Module Declared																

## Life Cycle Impact Assessment

The environmental impacts listed below for each product were assessed throughout the life cycle of the rubber flooring products as defined above, per square meter. Results are reported based on characterization factors from the US EPA Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI 2.1 impact categories). Impact categories taken from the University of Leiden (CML 4.1) methodology are reported to facilitate the use of this EPD outside of North America. These six impact categories are globally deemed mature enough to be included in Type III environmental declarations. Other categories are being developed and defined and LCA should continue making advances in their development, however the EPD users shall not use additional measures for comparative purposes.

LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

### Aktiv Core

The following tables show some additional information regarding the product.

**Table 17 – Aktiv Core™ Transport to Building Site (A4)**

Transport to Building Site (A4)		
Name	Aktiv Core	Unit
Fuel type	Diesel	-
Liters of fuel	38	l/100km
Capacity utilization (including empty runs)	90	%
Capacity utilization volume factor	1	-
Transport distance	800	km
Gross density of products transported	980	kg/m <sup>3</sup>
Weight of products transported	13	kg
Volume of products transported	0.013	m <sup>3</sup>

**Table 18 – Aktiv Core™ Installation into the Building (A5)**

Installation into the building (A5)		
Name	Aktiv Core	Unit
Auxiliary materials	0.55	kg
Water consumption	10.28	m <sup>3</sup>
Other resources	0.00	kg
Electricity consumption	0.038	kWh
Other energy carriers	0.00	MJ



Product loss per functional unit	0.59	kg
Waste materials at construction site	1.93	kg
Output substance (recycle)	0.00	kg
Output substance (landfill)	0.59	kg
Output substance (incineration)	0.00	kg
Packaging waste (recycle)	1.01	kg
Packaging waste (landfill)	0.27	kg
Packaging waste (incineration)	0.07	kg
Direct emissions to ambient air*, soil, and water	1.65	kg CO <sub>2</sub>
VOC emissions	-	kg

Table 19 – Aktiv Core™ Reference Service Life

Reference Service Life		
Name	Value	Unit
Reference Service Life	10	Years
Estimated Building Service Life	75	Years
Number of Replacements	6.5	Replacements

Table 20 – Aktiv Core™ Maintenance (B2)

Maintenance (B2)		
Name	Value	Unit
Maintenance process information	<a href="#">Link</a>	--
Maintenance cycle	Daily	--
Net freshwater consumption by tap and water disposed to sewer	0.039	m <sup>3</sup>
Ancillary materials specified by type	Detergent	1.12
	Disinfectant	0.05
Other resources	0.00	kg
Energy input spec by sprayer	0.79	kWh
Other energy carriers specified	0.00	kWh
Power output of equipment	0.056	kW
Waste materials from maintenance	0.00	kg
Direct emission to ambient air, soil, and water	0.00	kg
Further assumptions for scenario development	Over 10-year period	--

Table 21 – Aktiv Core™ Replacements (B4)

Replacements (B4)		
Name	Value	Unit

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Reference Service Life	10	Years
Replacement cycle	6.5	Replacements
Energy input specified by activity, type, and amount	Daily	Years
Net freshwater consumption by water source and fate	0.00	m <sup>3</sup>
Ancillary materials - adhesives	0.55	kg
Replacement of worn part, specify parts/materials	0.00	kg
Direct emission to ambient air, soil, and water	0.00	kg
Further assumptions for scenario development	<a href="#">Link</a>	--

Table 22 – Aktiv Core™ Operational Energy Use (B6)

Operational Energy Use (B6)		
Name	Value	Unit
Water consumption (from tap, to sewer)	10.3	gal
Electricity consumption	793.9	kWh
Other energy carriers	0.0	MJ
Equipment output	-	kW
Direct emissions to ambient air, soil, and water	-	kg

Table 23 – Aktiv Core™ End of Life (C1-C4)

End of life (C1-C4)		
Name	Aktiv Core	Unit
Collected separately	0.00	kg
Collected as mixed construction waste	11.76	kg
Reuse	0.00	kg
Recycling	0.00	kg
Landfilling	11.76	kg
Incineration with energy recovery	0.00	kg
Energy conversion	44%	%
Material for final deposition	11.76	kg
Removals of biogenic carbon	0.00	kg

The following table discloses the total impacts associated with the activities necessary to bring the Aktiv Core™ product to market, including end of life impacts.





Table 24 – Aktiv Core™ Cradle-to-Grave TRACI 2.1 and CML 4.1 Impacts

TRACI 2.1 Impact Assessment												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
GWP	Global warming potential	kg CO <sub>2</sub> -Eq.	9.3E+00	9.2E-01	3.3E+00	1.2E+02	3.8E+00	0.0E+00	1.8E-01	5.2E-02	2.6E-01	0.0E+00
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	2.3E-06	3.5E-11	2.9E-08	1.6E-05	1.6E-07	0.0E+00	6.7E-12	2.0E-09	1.8E-08	0.0E+00
AP Air	Acidification potential for air emissions	kg SO <sub>2</sub> -Eq.	5.5E-02	5.5E-03	1.3E-02	6.1E-01	1.9E-02	0.0E+00	1.0E-03	5.3E-05	7.6E-04	0.0E+00
EP	Eutrophication potential	kg N-Eq.	3.7E-02	3.0E-04	1.2E-02	4.4E-01	7.6E-03	0.0E+00	5.8E-05	7.6E-03	2.3E-03	0.0E+00
SP	Smog formation potential	kg O <sub>3</sub> -Eq.	7.7E-01	1.5E-01	1.6E-01	8.7E+00	2.1E-01	0.0E+00	2.9E-02	1.2E-03	1.6E-02	0.0E+00
FFD	Fossil Fuel Depletion	MJ-surplus	2.7E+01	1.8E+00	6.8E+00	3.1E+02	1.1E+01	0.0E+00	3.4E-01	2.0E-02	1.8E-01	0.0E+00

CML 4.1 Impact Assessment												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
GWP	Global warming potential	kg CO <sub>2</sub> -Eq.	9.4E+00	9.2E-01	3.3E+00	1.2E+02	3.8E+00	0.0E+00	1.8E-01	5.2E-02	2.6E-01	0.0E+00
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	1.9E-06	3.5E-11	2.3E-08	1.4E-05	1.6E-07	0.0E+00	6.7E-12	2.0E-09	1.8E-08	0.0E+00
AP Air	Acidification potential for air emissions	kg SO <sub>2</sub> -Eq.	5.6E-02	4.5E-03	1.3E-02	6.1E-01	1.9E-02	0.0E+00	1.0E-03	5.3E-05	7.6E-04	0.0E+00
EP	Eutrophication potential	kg(PO <sub>4</sub> ) <sup>3</sup> -Eq.	1.8E-02	8.0E-04	5.5E-03	2.7E-01	7.6E-03	0.0E+00	5.8E-05	7.6E-03	2.3E-03	0.0E+00
POCP	Formation potential of tropospheric ozone	kg ethane-Eq.	7.4E-03	2.1E-04	6.1E-04	1.7E+00	2.1E-01	0.0E+00	2.9E-02	1.2E-03	1.6E-02	0.0E+00
ADPE	Abiotic depletion potential for non-fossil resources	kg Sb-Eq.	1.5E-04	0.0E+00	7.8E-06	7.5E+01	1.1E+01	0.0E+00	3.4E-01	2.0E-02	1.8E-01	0.0E+00
ADPF	Abiotic depletion potential for fossil resources	MJ	2.1E+02	1.2E+01	4.6E+01	1.7E+03	3.8E+00	0.0E+00	1.8E-01	5.6E-02	2.6E-01	0.0E+00

Table 25 – Aktiv Core™ Resource Use Impacts Throughout the Life Cycle of the Product

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REGUPOL® Aktiv™, Revolution™, and Sonus Series™ Flooring and Underlayment Products

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Resource Use												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
RPR <sub>E</sub>	Renewable primary energy as energy carrier	MJ	1.3E+01	0.0E+00	2.0E+00	1.3E+02	5.7E+00	0.0E+00	0.0E+00	3.1E-03	6.9E-02	0.0E+00
RPR <sub>M</sub>	Renewable primary energy resources as material utilization	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NRPR <sub>E</sub>	Nonrenewable primary energy as energy carrier	MJ	9.4E+00	1.2E+01	5.4E+01	1.1E+03	8.9E+01	0.0E+00	2.3E+00	1.5E-01	1.7E+00	0.0E+00
NRPR <sub>M</sub>	Nonrenewable primary energy as material	MJ	4.0E+02	0.0E+00	2.0E+01	2.7E+03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
SM	Use of secondary material	kg	0.0E+00	0.0E+00	5.5E-01	3.6E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
RSF	Use of renewable secondary fuels	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NRSF	Use of nonrenewable secondary fuels	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
RE	Energy recovered from disposed waste	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
FW	Use of net fresh water	m <sup>3</sup>	1.7E-01	0.0E+00	6.8E-02	2.1E+00	8.7E-02	0.0E+00	0.0E+00	1.5E-04	9.5E-04	0.0E+00

Table 26 – Aktiv Core™ Output and Waste Impacts Throughout the Life Cycle of the Product

Output Flows and Waste Categories												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
HWD	Hazardous waste disposed	kg	1.6E-04	0.0E+00	5.9E-06	1.3E-03	3.6E-05	0.0E+00	0.0E+00	2.3E-07	0.0E+00	0.0E+00
NHWD	Non-hazardous waste disposed	kg	9.1E-01	0.0E+00	7.1E-01	1.7E+01	3.4E-01	0.0E+00	0.0E+00	5.9E-01	0.0E+00	0.0E+00
HLRW	High-level radioactive waste	kg or m <sup>3</sup>	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
ILLRW	Intermediate- and low-level radioactive waste	kg or m <sup>3</sup>	6.8E-04	0.0E+00	1.3E-05	4.8E-03	5.1E-05	0.0E+00	0.0E+00	8.9E-07	0.0E+00	0.0E+00
CRU	Components for re-use	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
MR	Materials for recycling	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
MER	Materials for energy recovery	kg	0.0E+00	0.0E+00	6.7E-02	4.4E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
EE	Recovered energy exported from system	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

Table 27– Aktiv Core™ Carbon Emissions and Removals Throughout the Life Cycle of the Product



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REGUPOL® Aktiv™, Revolution™, and Sonus Series™ Flooring and Underlayment Products

REGUPOL® Flooring and Underlayment

According to ISO 14025

Carbon Emissions and Removals												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
BCRP	Biogenic Carbon Removal from Product	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEP	Biogenic Carbon Emissions from Product	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCRK	Biogenic Carbon Removal from Packaging	kg CO <sub>2</sub>	1.65E+00	0.00E+00	0.00E+00	1.07E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEK	Biogenic Carbon Emissions from Packaging	kg CO <sub>2</sub>	0.00E+00	0.00E+00	1.65E+00	1.07E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEW	Biogenic Carbon Emissions from Combustion of Waste from Renewable Sources Used in Production Process	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCE	Calcination Carbon Emissions	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCR	Carbonation Carbon Removal	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CWNR	Carbon Emissions from Combustion of Waste from Non-renewable Sources Used in Production Process	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00



**Aktiv Intense**

The following tables show some additional information regarding the product.

**Table 28– Aktiv Intense™ Transport to Building Site (A4)**

Transport to Building Site (A4)		
Name	Aktiv Intense	Unit
Fuel type	Diesel	-
Liters of fuel	38	l/100km
Capacity utilization (including empty runs)	90	%
Capacity utilization volume factor	1	-
Transport distance	800	km
Gross density of products transported	1345	kg/m <sup>3</sup>
Weight of products transported	17	kg
Volume of products transported	0.013	m <sup>3</sup>

**Table 29– Aktiv Intense™ Installation into the Building (A5)**

Installation into the building (A5)		
Name	Aktiv Intense	Unit
Auxiliary materials	0.55	kg
Water consumption	10.28	m <sup>3</sup>
Other resources	0.00	kg
Electricity consumption	0.038	kWh
Other energy carriers	0.00	MJ
Product loss per functional unit	0.81	kg
Waste materials at construction site	2.96	kg
Output substance (recycle)	0.00	kg
Output substance (landfill)	1.61	kg
Output substance (incineration)	0.00	kg
Packaging waste (recycle)	1.01	kg
Packaging waste (landfill)	0.27	kg
Packaging waste (incineration)	0.07	kg
Direct emissions to ambient air*, soil, and water	1.65	kg CO <sub>2</sub>
VOC emissions	-	kg

**Table 30 – Aktiv Intense™ Maintenance (B2)**

Maintenance (B2)		
Name	Value	Unit
Maintenance process information	<a href="#">Link</a>	--
Maintenance cycle	Daily	--
Net freshwater consumption by tap and water disposed to sewer	0.039	m <sup>3</sup>
Ancillary materials specified by type	Detergent	1.12
	Disinfectant	0.05
Other resources	0.00	kg
Energy input spec by sprayer	0.79	kWh
Other energy carriers specified	0.00	kWh
Power output of equipment	0.056	kW
Waste materials from maintenance	0.00	kg
Direct emission to ambient air, soil, and water	0.00	kg
Further assumptions for scenario development	Over 10-year period	--

**Table 31 – Aktiv Intense™ Replacements (B4)**

Replacements (B4)		
Name	Value	Unit
Reference Service Life	10	Years
Replacement cycle	6.5	Replacements
Energy input specified by activity, type, and amount	Daily	Years
Net freshwater consumption by water source and fate	0.00	m <sup>3</sup>
Ancillary materials - adhesives	0.55	kg
Replacement of worn part, specify parts/materials	0.00	kg
Direct emission to ambient air, soil, and water	0.00	kg
Further assumptions for scenario development	<a href="#">Link</a>	--

**Table 32 – Aktiv Intense™ Operational Energy Use (B6)**

Operational Energy Use (B6)		
Name	Value	Unit
Water consumption (from tap, to sewer)	10.3	gal
Electricity consumption	793.9	kWh
Other energy carriers	0.0	MJ

Operational Energy Use (B6)		
Equipment output	-	kW
Direct emissions to ambient air, soil, and water	-	kg

**Table 33 – Aktiv Intense™ Reference Service Life**

Reference Service Life		
Name	Value	Unit
Reference Service Life	10	Years
Estimated Building Service Life	75	Years
Number of Replacements	6.5	Replacements

**Table 34 – Aktiv Intense™ End of Life (C1-C4)**

End of life (C1-C4)		
Name	Product 1	Unit
Collected separately	0.00	kg
Collected as mixed construction waste	32.28	kg
Reuse	0.00	kg
Recycling	0.00	kg
Landfilling	32.28	kg
Incineration with energy recovery	0.00	kg
Energy conversion	44%	%
Material for final deposition	32.28	kg
Removals of biogenic carbon	0.00	kg

The following table discloses the total impacts associated with the activities necessary to bring the Aktiv Intense™ product to market, including end of life impacts.

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REGUPOL® Aktiv™, Revolution™, and Sonus Series™ Flooring and Underlayment Products  
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Table 35– Aktiv Intense™ Cradle-to-Grave TRACI 2.1 and CML 4.1 Impacts

TRACI 2.1 Impact Assessment												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
GWP	Global warming potential	kg CO <sub>2</sub> -Eq.	5.0E+01	1.3E+00	3.4E+00	3.8E+02	3.8E+00	0.0E+00	2.4E-01	7.1E-02	2.6E-01	0.0E+00
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	1.2E-05	4.8E-11	3.0E-08	7.8E-05	1.6E-07	0.0E+00	9.2E-12	2.8E-09	1.8E-08	0.0E+00
AP Air	Acidification potential for air emissions	kg SO <sub>2</sub> -Eq.	2.8E-01	7.5E-03	1.3E-02	2.1E+00	1.9E-02	0.0E+00	1.4E-03	7.3E-05	7.6E-04	0.0E+00
EP	Eutrophication potential	kg N-Eq.	1.4E-01	4.2E-04	1.5E-02	1.1E+00	7.6E-03	0.0E+00	8.0E-05	1.0E-02	2.3E-03	0.0E+00
SP	Smog formation potential	kg O <sub>3</sub> -Eq.	4.0E+00	2.1E-01	1.6E-01	3.0E+01	2.1E-01	0.0E+00	3.9E-02	1.6E-03	1.6E-02	0.0E+00
FFD	Fossil Fuel Depletion	MJ-surplus	1.7E+02	2.4E+00	6.8E+00	1.2E+03	1.1E+01	0.0E+00	4.6E-01	2.8E-02	1.8E-01	0.0E+00
CML 4.1 Impact Assessment												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
GWP	Global warming potential	kg CO <sub>2</sub> -Eq.	5.0E+01	1.3E+00	3.5E+00	3.9E+02	3.8E+00	0.0E+00	2.4E-01	7.1E-02	2.6E-01	0.0E+00
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	9.1E-06	4.7E-11	2.3E-08	6.1E-05	1.6E-07	0.0E+00	9.2E-12	2.8E-09	1.8E-08	0.0E+00
AP Air	Acidification potential for air emissions	kg SO <sub>2</sub> -Eq.	2.7E-01	6.2E-03	1.3E-02	2.0E+00	1.9E-02	0.0E+00	1.4E-03	7.3E-05	7.6E-04	0.0E+00
EP	Eutrophication potential	kg(PO <sub>4</sub> ) <sup>3</sup> -Eq.	7.3E-02	1.1E-03	6.4E-03	6.6E-01	7.6E-03	0.0E+00	8.0E-05	1.0E-02	2.3E-03	0.0E+00
POCP	Formation potential of tropospheric ozone	kg ethane-Eq.	1.8E-02	2.9E-04	6.1E-04	1.9E+00	2.1E-01	0.0E+00	3.9E-02	1.6E-03	1.6E-02	0.0E+00
ADPE	Abiotic depletion potential for non-fossil resources	kg Sb-Eq.	8.4E-04	0.0E+00	7.8E-06	7.6E+01	1.1E+01	0.0E+00	4.6E-01	2.8E-02	1.8E-01	0.0E+00
ADPF	Abiotic depletion potential for fossil resources	MJ	1.3E+03	1.6E+01	4.6E+01	8.7E+03	3.8E+00	0.0E+00	2.4E-01	7.7E-02	2.6E-01	0.0E+00

Table 36– Aktiv Intense™ Resource Use Impacts Throughout the Life Cycle of the Product

Resource Use												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
RPR <sub>E</sub>	Renewable primary energy as energy carrier	MJ	5.4E+01	0.0E+00	2.0E+00	4.0E+02	5.7E+00	0.0E+00	0.0E+00	4.3E-03	6.9E-02	0.0E+00
RPR <sub>M</sub>	Renewable primary energy resources as material utilization	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NRPR <sub>E</sub>	Nonrenewable primary energy as energy carrier	MJ	7.1E+02	1.6E+01	5.4E+01	5.7E+03	8.9E+01	0.0E+00	3.1E+00	2.1E-01	1.7E+00	0.0E+00
NRPR <sub>M</sub>	Nonrenewable primary energy as material	MJ	6.2E+02	0.0E+00	3.1E+01	4.2E+03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
SM	Use of secondary material	kg	1.6E+01	0.0E+00	5.5E-01	1.1E+02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
RSF	Use of renewable secondary fuels	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NRSF	Use of nonrenewable secondary fuels	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
RE	Energy recovered from disposed waste	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
FW	Use of net fresh water	m <sup>3</sup>	7.7E-01	0.0E+00	6.8E-02	6.0E+00	8.7E-02	0.0E+00	0.0E+00	2.1E-04	9.5E-04	0.0E+00



ENVIRONMENTAL PRODUCT DECLARATION



REGUPOL® Aktiv™, Revolution™, and Sonus Series™ Flooring and Underlayment Products

REGUPOL® Flooring and Underlayment

According to ISO 14025

Table 37- Aktiv Intense™ Output and Waste Impacts Throughout the Life Cycle of the Product

Output Flows and Waste Categories												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
HWD	Hazardous waste disposed	kg	7.6E-04	0.0E+00	6.0E-06	5.2E-03	3.6E-05	0.0E+00	0.0E+00	3.1E-07	0.0E+00	0.0E+00
NHWD	Non-hazardous waste disposed	kg	4.2E+00	0.0E+00	8.9E-01	4.0E+01	3.4E-01	0.0E+00	0.0E+00	8.1E-01	0.0E+00	0.0E+00
HLRW	High-level radioactive waste	kg or m <sup>3</sup>	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
ILLRW	Intermediate- and low-level radioactive waste	kg or m <sup>3</sup>	4.8E-03	0.0E+00	1.3E-05	3.2E-02	5.1E-05	0.0E+00	0.0E+00	1.2E-06	0.0E+00	0.0E+00
CRU	Components for re-use	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
MR	Materials for recycling	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
MER	Materials for energy recovery	kg	0.0E+00	0.0E+00	6.7E-02	4.4E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
EE	Recovered energy exported from system	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

Table 38- Aktiv Intense™ Carbon Emissions and Removals Throughout the Life Cycle of the Product

Resource Use												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
BCRP	Biogenic Carbon Removal from Product	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEP	Biogenic Carbon Emissions from Product	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCRK	Biogenic Carbon Removal from Packaging	kg CO <sub>2</sub>	1.65E+00	0.00E+00	0.00E+00	1.07E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEK	Biogenic Carbon Emissions from Packaging	kg CO <sub>2</sub>	0.00E+00	0.00E+00	1.65E+00	1.07E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEW	Biogenic Carbon Emissions from Combustion of Waste from Renewable Sources Used in Production Process	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCE	Calcination Carbon Emissions	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCR	Carbonation Carbon Removal	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CWNR	Carbon Emissions from Combustion of Waste from Non-renewable Sources Used in Production Process	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00





**AktivLok**

The following tables provide additional information about the product.

**Table 39 – AktivLok™ Transport to Building Site (A4)**

Transport to Building Site (A4)		
Name	Aktiv Lok	Unit
Fuel type	Diesel	-
Liters of fuel	38	l/100km
Capacity utilization (including empty runs)	90	%
Capacity utilization volume factor	1	-
Transport distance	800	km
Gross density of products transported	980	kg/m <sup>3</sup>
Weight of products transported	14	kg
Volume of products transported	0.0143	m <sup>3</sup>

**Table 40 – AktivLok™ Installation into the Building (A5)**

Installation into the building (A5)		
Name	Aktiv Lok	Unit
Auxiliary materials	0.55	kg
Water consumption	10.28	m <sup>3</sup>
Other resources	0.00	kg
Electricity consumption	0.038	kWh
Other energy carriers	0.00	MJ
Product loss per functional unit	0.59	kg
Waste materials at construction site	0.59	kg
Output substance (recycle)	0.00	kg
Output substance (landfill)	0.59	kg
Output substance (incineration)	0.00	kg
Packaging waste (recycle)	0.00	kg
Packaging waste (landfill)	0.00	kg
Packaging waste (incineration)	0.00	kg
Direct emissions to ambient air*, soil, and water	4.10	kg CO <sub>2</sub>
VOC emissions	-	kg

**Table 41 – AktivLok™ Maintenance (B2)**

Maintenance (B2)		
Name	Value	Unit
Maintenance process information	<a href="#">Link</a>	--

ENVIRONMENTAL PRODUCT DECLARATION



REGUPOL® Aktiv™, Revolution™, and Sonus Series™ Flooring and Underlayment Products  
 REGUPOL® Flooring and Underlayment

According to ISO 14025

Maintenance (B2)		
Maintenance cycle	Daily	--
Net freshwater consumption by tap and water disposed to sewer	0.039	m <sup>3</sup>
Ancillary materials specified by type	Detergent	1.12
	Disinfectant	0.05
Other resources	0.00	kg
Energy input spec by sprayer	0.79	kWh
Other energy carriers specified	0.00	kWh
Power output of equipment	0.056	kW
Waste materials from maintenance	0.00	kg
Direct emission to ambient air, soil, and water	0.00	kg
Further assumptions for scenario development	Over 10-year period	--

Table 42 – AktivLok™ Replacements (B4)

Replacements (B4)		
Name	Value	Unit
Reference Service Life	10	Years
Replacement cycle	6.5	Replacements
Energy input specified by activity, type, and amount	Daily	Years
Net freshwater consumption by water source and fate	0.00	m <sup>3</sup>
Ancillary materials - adhesives	0.55	kg
Replacement of worn part, specify parts/materials	0.00	kg
Direct emission to ambient air, soil, and water	0.00	kg
Further assumptions for scenario development	<a href="#">Link</a>	--

Table 43 – AktivLok™ Operational Energy Use (B6)

Operational Energy Use (B6)		
Name	Value	Unit
Water consumption (from tap, to sewer)	10.3	gal
Electricity consumption	793.9	kWh
Other energy carriers	0.0	MJ
Equipment output	-	kW
Direct emissions to ambient air, soil, and water	-	kg



**Table 44 – AktivLok™ Reference Service Life**

Reference Service Life		
Name	Value	Unit
Reference Service Life	10	years
Estimated Building Service Life	75	years
Number of Replacements	6.5	replacements

**Table 45 – AktivLok™ End of Life (C1-C4)**

End of life (C1-C4)		
Name	AktivLok	Unit
Collected separately	0.00	kg
Collected as mixed construction waste	11.76	kg
Reuse	0.00	kg
Recycling	0.00	kg
Landfilling	11.76	kg
Incineration with energy recovery	0.00	kg
Energy conversion	44%	%
Material for final deposition	11.76	kg
Removals of biogenic carbon	0.00	kg

The following table discloses the total impacts associated with the activities necessary to bring the AktivLok™ product to market, including end of life impacts.

**Table 46– AktivLok™ Cradle-to-Grave TRACI 2.1 and CML 4.1 Impacts**

TRACI 2.1 Impact Assessment												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
GWP	Global warming potential	kg CO <sub>2</sub> -Eq.	9.3E+00	9.2E-01	3.3E+00	1.2E+02	3.8E+00	0.0E+00	1.8E-01	5.2E-02	2.6E-01	0.0E+00
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	2.2E-06	3.5E-11	2.9E-08	1.6E-05	1.6E-07	0.0E+00	6.7E-12	2.0E-09	1.8E-08	0.0E+00
AP Air	Acidification potential for air emissions	kg SO <sub>2</sub> -Eq.	5.5E-02	5.5E-03	1.3E-02	6.1E-01	1.9E-02	0.0E+00	1.0E-03	5.3E-05	7.6E-04	0.0E+00
EP	Eutrophication potential	kg N-Eq.	3.6E-02	3.0E-04	1.3E-02	4.4E-01	7.6E-03	0.0E+00	5.8E-05	7.6E-03	2.3E-03	0.0E+00
SP	Smog formation potential	kg O <sub>3</sub> -Eq.	7.7E-01	1.5E-01	1.6E-01	8.7E+00	2.1E-01	0.0E+00	2.9E-02	1.2E-03	1.6E-02	0.0E+00
FFD	Fossil Fuel Depletion	MJ-surplus	2.7E+01	1.8E+00	6.8E+00	3.1E+02	1.1E+01	0.0E+00	3.4E-01	2.0E-02	1.8E-01	0.0E+00

ENVIRONMENTAL PRODUCT DECLARATION



REGUPOL® Aktiv™, Revolution™, and Sonus Series™ Flooring and Underlayment Products

REGUPOL® Flooring and Underlayment

According to ISO 14025

CML 4.1 Impact Assessment												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
GWP	Global warming potential	kg CO <sub>2</sub> -Eq.	9.4E+00	9.2E-01	3.4E+00	1.2E+02	3.8E+00	0.0E+00	1.8E-01	5.2E-02	2.6E-01	0.0E+00
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	1.9E-06	3.5E-11	2.3E-08	1.4E-05	1.6E-07	0.0E+00	6.7E-12	2.0E-09	1.8E-08	0.0E+00
AP Air	Acidification potential for air emissions	kg SO <sub>2</sub> -Eq.	5.6E-02	4.5E-03	1.3E-02	6.1E-01	1.9E-02	0.0E+00	1.0E-03	5.3E-05	7.6E-04	0.0E+00
EP	Eutrophication potential	kg(PO <sub>4</sub> ) <sup>3</sup> -Eq.	1.8E-02	8.0E-04	5.8E-03	2.7E-01	7.6E-03	0.0E+00	5.8E-05	7.6E-03	2.3E-03	0.0E+00
POCP	Formation potential of tropospheric ozone	kg ethane-Eq.	7.4E-03	2.1E-04	6.1E-04	1.7E+00	2.1E-01	0.0E+00	2.9E-02	1.2E-03	1.6E-02	0.0E+00
ADPE	Abiotic depletion potential for non-fossil resources	kg Sb-Eq.	1.5E-04	0.0E+00	7.8E-06	7.5E+01	1.1E+01	0.0E+00	3.4E-01	2.0E-02	1.8E-01	0.0E+00
ADPF	Abiotic depletion potential for fossil resources	MJ	2.1E+02	1.2E+01	4.6E+01	1.7E+03	3.8E+00	0.0E+00	1.8E-01	5.6E-02	2.6E-01	0.0E+00

Table 47– AktivLok™ Resource Use Impacts Throughout the Life Cycle of the Product

Resource Use												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
RPR <sub>E</sub>	Renewable primary energy as energy carrier	MJ	2.1E+01	0.0E+00	2.0E+00	1.9E+02	5.7E+00	0.0E+00	0.0E+00	3.1E-03	6.9E-02	0.0E+00
RPR <sub>M</sub>	Renewable primary energy resources as material utilization	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NRPR <sub>E</sub>	Nonrenewable primary energy as energy carrier	MJ	9.4E+00	1.2E+01	5.4E+01	1.1E+03	8.9E+01	0.0E+00	2.3E+00	1.5E-01	1.7E+00	0.0E+00
NRPR <sub>M</sub>	Nonrenewable primary energy as material	MJ	4.0E+02	0.0E+00	2.0E+01	2.7E+03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
SM	Use of secondary material	kg	0.0E+00	0.0E+00	5.5E-01	3.6E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
RSF	Use of renewable secondary fuels	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NRSF	Use of nonrenewable secondary fuels	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
RE	Energy recovered from disposed waste	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
FW	Use of net fresh water	m <sup>3</sup>	1.7E-01	0.0E+00	6.8E-02	2.1E+00	8.7E-02	0.0E+00	0.0E+00	1.5E-04	9.5E-04	0.0E+00



ENVIRONMENTAL PRODUCT DECLARATION



REGUPOL® Aktiv™, Revolution™, and Sonus Series™ Flooring and Underlayment Products  
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According to ISO 14025

Table 48 – AktivLok™ Output and Waste Impacts Throughout the Life Cycle of the Product

Output Flows and Waste Categories												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
HWD	Hazardous waste disposed	kg	1.6E-04	0.0E+00	6.0E-06	1.3E-03	3.6E-05	0.0E+00	0.0E+00	2.3E-07	0.0E+00	0.0E+00
NHWD	Non-hazardous waste disposed	kg	9.1E-01	0.0E+00	7.7E-01	1.7E+01	3.4E-01	0.0E+00	0.0E+00	5.9E-01	0.0E+00	0.0E+00
HLRW	High-level radioactive waste	kg or m <sup>3</sup>	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
ILLRW	Intermediate- and low-level radioactive waste	kg or m <sup>3</sup>	6.8E-04	0.0E+00	1.3E-05	4.8E-03	5.1E-05	0.0E+00	0.0E+00	8.9E-07	0.0E+00	0.0E+00
CRU	Components for re-use	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
MR	Materials for recycling	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
MER	Materials for energy recovery	kg	0.0E+00	0.0E+00	3.5E-05	2.3E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
EE	Recovered energy exported from system	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

Table 49 – AktivLok™ Carbon Emissions and Removals Throughout the Life Cycle of the Product

Resource Use												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
BCRP	Biogenic Carbon Removal from Product	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEP	Biogenic Carbon Emissions from Product	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCRK	Biogenic Carbon Removal from Packaging	kg CO <sub>2</sub>	4.10E+00	0.00E+00	0.00E+00	2.66E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEK	Biogenic Carbon Emissions from Packaging	kg CO <sub>2</sub>	0.00E+00	0.00E+00	4.10E+00	2.66E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEW	Biogenic Carbon Emissions from Combustion of Waste from Renewable Sources Used in Production Process	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCE	Calcination Carbon Emissions	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCR	Carbonation Carbon Removal	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CWNR	Carbon Emissions from Combustion of Waste from Non-renewable Sources Used in Production Process	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00



**Aktiv Pro**

The following tables provide additional information about the product.

**Table 50 – Aktiv Pro™ Transport to Building Site (A4)**

Transport to Building Site (A4)		
Name	Aktiv Pro	Unit
Fuel type	Diesel	-
Liters of fuel	38	l/100km
Capacity utilization (including empty runs)	90	%
Capacity utilization volume factor	1	-
Transport distance	800	km
Gross density of products transported	1800	kg/m <sup>3</sup>
Weight of products transported	28	kg
Volume of products transported	0.0153	m <sup>3</sup>

**Table 51 – Aktiv Pro™ Installation into the Building (A5)**

Installation into the building (A5)		
Name	Aktiv Pro	Unit
Auxiliary materials	0.55	kg
Water consumption	10.28	m <sup>3</sup>
Other resources	0.00	kg
Electricity consumption	0.038	kWh
Other energy carriers	0.00	MJ
Product loss per functional unit	1.12	kg
Waste materials at construction site	1.13	kg
Output substance (recycle)	0.00	kg
Output substance (landfill)	1.13	kg
Output substance (incineration)	0.00	kg
Packaging waste (recycle)	0.00	kg
Packaging waste (landfill)	0.00	kg
Packaging waste (incineration)	0.00	kg
Direct emissions to ambient air*, soil, and water	9.24	kg CO <sub>2</sub>
VOC emissions	-	kg

**Table 52 – Aktiv Pro™ Maintenance (B2)**

Maintenance (B2)		
Name	Value	Unit
Maintenance process information	<a href="#">Link</a>	--
Maintenance cycle	Daily	--
Net freshwater consumption by tap and water disposed to sewer	0.039	m <sup>3</sup>
Ancillary materials specified by type	Detergent	1.12
	Disinfectant	0.05
Other resources	0.00	kg
Energy input spec by sprayer	0.79	kWh
Other energy carriers specified	0.00	kWh
Power output of equipment	0.056	kW
Waste materials from maintenance	0.00	kg
Direct emission to ambient air, soil, and water	0.00	kg
Further assumptions for scenario development	Over 10-year period	--

**Table 53 – Aktiv Pro™ Replacements (B4)**

Replacements (B4)		
Name	Value	Unit
Reference Service Life	10	Years
Replacement cycle	6.5	Replacements
Energy input specified by activity, type, and amount	Daily	Years
Net freshwater consumption by water source and fate	0.00	m <sup>3</sup>
Ancillary materials - adhesives	0.55	kg
Replacement of worn part, specify parts/materials	0.00	kg
Direct emission to ambient air, soil, and water	0.00	kg
Further assumptions for scenario development	<a href="#">Link</a>	--

**Table 54 – Aktiv Pro™ Operational Energy Use (B6)**

Operational Energy Use (B6)		
Name	Value	Unit
Water consumption (from tap, to sewer)	10.3	gal
Electricity consumption	793.9	kWh

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Operational Energy Use (B6)		
Other energy carriers	0.0	MJ
Equipment output	-	kW
Direct emissions to ambient air, soil, and water	-	kg

Table 55 – Aktiv Pro™ Reference Service Life

Reference Service Life		
Name	Value	Unit
Reference Service Life	10	Years
Estimated Building Service Life	75	Years
Number of Replacements	6.5	Replacements

Table 56 – Aktiv Pro™ End of Life (C1-C4)

End of life (C1-C4)		
Name	Aktiv Pro	Unit
Collected separately	0.00	kg
Collected as mixed construction waste	22.55	kg
Reuse	0.00	kg
Recycling	0.00	kg
Landfilling	22.55	kg
Incineration with energy recovery	0.00	kg
Energy conversion	44%	%
Material for final deposition	22.55	kg
Removals of biogenic carbon	0.00	kg

The following table discloses the total impacts associated with the activities necessary to bring the AktivPro™ product to market, including end of life impacts.





Table 57 – AktivPro<sup>™</sup> Cradle-to-Grave TRACI 2.1 and CML 4.1 Impacts

TRACI 2.1 Impact Assessment												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
GWP	Global warming potential	kg CO <sub>2</sub> -Eq.	1.5E+01	1.8E+00	3.8E+00	1.6E+02	3.8E+00	0.0E+00	3.4E-01	9.9E-02	2.6E-01	0.0E+00
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	3.4E-06	6.7E-11	3.2E-08	2.4E-05	1.6E-07	0.0E+00	1.3E-11	3.8E-09	1.8E-08	0.0E+00
AP Air	Acidification potential for air emissions	kg SO <sub>2</sub> -Eq.	9.0E-02	1.0E-02	1.3E-02	8.8E-01	1.9E-02	0.0E+00	2.0E-03	1.0E-04	7.6E-04	0.0E+00
EP	Eutrophication potential	kg N-Eq.	6.6E-02	5.8E-04	2.2E-02	7.3E-01	7.6E-03	0.0E+00	1.1E-04	1.5E-02	2.3E-03	0.0E+00
SP	Smog formation potential	kg O <sub>3</sub> -Eq.	1.3E+00	2.9E-01	1.6E-01	1.3E+01	2.1E-01	0.0E+00	5.5E-02	2.2E-03	1.6E-02	0.0E+00
FFD	Fossil Fuel Depletion	MJ-surplus	3.9E+01	3.4E+00	6.8E+00	4.0E+02	1.1E+01	0.0E+00	6.4E-01	3.9E-02	1.8E-01	0.0E+00
CML 4.1 Impact Assessment												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
GWP	Global warming potential	kg CO <sub>2</sub> -Eq.	1.6E+01	1.8E+00	3.8E+00	1.7E+02	3.8E+00	0.0E+00	3.4E-01	9.9E-02	2.6E-01	0.0E+00
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	3.2E-06	6.6E-11	2.5E-08	2.2E-05	1.6E-07	0.0E+00	1.3E-11	3.8E-09	1.8E-08	0.0E+00
AP Air	Acidification potential for air emissions	kg SO <sub>2</sub> -Eq.	9.3E-02	8.6E-03	1.3E-02	8.9E-01	1.9E-02	0.0E+00	2.0E-03	1.0E-04	7.6E-04	0.0E+00
EP	Eutrophication potential	kg(PO <sub>4</sub> ) <sup>3</sup> -Eq.	3.2E-02	1.5E-03	8.9E-03	4.3E-01	7.6E-03	0.0E+00	1.1E-04	1.5E-02	2.3E-03	0.0E+00
POCP	Formation potential of tropospheric ozone	kg ethane-Eq.	1.5E-02	4.0E-04	6.2E-04	2.0E+00	2.1E-01	0.0E+00	5.5E-02	2.2E-03	1.6E-02	0.0E+00
ADPE	Abiotic depletion potential for non-fossil resources	kg Sb-Eq.	2.3E-04	0.0E+00	7.9E-06	7.7E+01	1.1E+01	0.0E+00	6.4E-01	3.9E-02	1.8E-01	0.0E+00
ADPF	Abiotic depletion potential for fossil resources	MJ	3.0E+02	2.3E+01	4.6E+01	2.4E+03	3.8E+00	0.0E+00	3.4E-01	1.1E-01	2.6E-01	0.0E+00

Table 58 – AktivPro<sup>™</sup> Resource Use Impacts Throughout the Life Cycle of the Product

Resource Use												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
RPR <sub>E</sub>	Renewable primary energy as energy carrier	MJ	4.1E+01	0.0E+00	2.0E+00	3.2E+02	5.7E+00	0.0E+00	0.0E+00	6.0E-03	6.9E-02	0.0E+00
RPR <sub>M</sub>	Renewable primary energy resources as material utilization	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NRPR <sub>E</sub>	Nonrenewable primary energy as energy carrier	MJ	1.6E+01	2.3E+01	5.4E+01	1.2E+03	8.9E+01	0.0E+00	4.3E+00	2.9E-01	1.7E+00	0.0E+00
NRPR <sub>M</sub>	Nonrenewable primary energy as material	MJ	7.5E+02	0.0E+00	3.7E+01	5.1E+03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
SM	Use of secondary material	kg	0.0E+00	0.0E+00	5.5E-01	3.6E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
RSF	Use of renewable secondary fuels	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NRSF	Use of nonrenewable secondary fuels	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
RE	Energy recovered from disposed waste	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
FW	Use of net fresh water	m <sup>3</sup>	3.1E-01	0.0E+00	6.8E-02	3.0E+00	8.7E-02	0.0E+00	0.0E+00	2.9E-04	9.5E-04	0.0E+00

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Table 59 – AktivPro™ Output and Waste Impacts Throughout the Life Cycle of the Product

Output Flows and Waste Categories												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
HWD	Hazardous waste disposed	kg	2.6E-04	0.0E+00	6.4E-06	1.9E-03	3.6E-05	0.0E+00	0.0E+00	4.3E-07	0.0E+00	0.0E+00
NHWD	Non-hazardous waste disposed	kg	1.6E+00	0.0E+00	1.4E+00	2.9E+01	3.4E-01	0.0E+00	0.0E+00	1.1E+00	0.0E+00	0.0E+00
HLRW	High-level radioactive waste	kg or m <sup>3</sup>	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
ILLRW	Intermediate- and low-level radioactive waste	kg or m <sup>3</sup>	8.5E-04	0.0E+00	1.4E-05	6.0E-03	5.1E-05	0.0E+00	0.0E+00	1.7E-06	0.0E+00	0.0E+00
CRU	Components for re-use	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
MR	Materials for recycling	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
MER	Materials for energy recovery	kg	0.0E+00	0.0E+00	4.4E-05	2.8E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
EE	Recovered energy exported from system	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

Table 60 – AktivPro™ Carbon Emissions and Removals Throughout the Life Cycle of the Product

Resource Use												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
BCRP	Biogenic Carbon Removal from Product	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEP	Biogenic Carbon Emissions from Product	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCRK	Biogenic Carbon Removal from Packaging	kg CO <sub>2</sub>	9.24E+00	0.00E+00	0.00E+00	6.01E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEK	Biogenic Carbon Emissions from Packaging	kg CO <sub>2</sub>	0.00E+00	0.00E+00	9.24E+00	6.01E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEW	Biogenic Carbon Emissions from Combustion of Waste from Renewable Sources Used in Production Process	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCE	Calcination Carbon Emissions	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCR	Carbonation Carbon Removal	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CWNR	Carbon Emissions from Combustion of Waste from Non-renewable Sources Used in Production Process	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00



**Revolution Original 6**

The following tables provide additional information about the product.

**Table 61 – Revolution Original 6™ Transport to Building Site (A4)**

Transport to Building Site (A4)		
Name	Revolution Original 6	Unit
Fuel type	Diesel	-
Liters of fuel	38	l/100km
Capacity utilization (including empty runs)	90	%
Capacity utilization volume factor	1	-
Transport distance	800	km
Gross density of products transported	980	kg/m <sup>3</sup>
Weight of products transported	5	kg
Volume of products transported	0.0054	m <sup>3</sup>

**Table 62 – Revolution Original 6™ Installation into the Building (A5)**

Installation into the building (A5)		
Name	Revolution Original 6	Unit
Auxiliary materials	0.55	kg
Water consumption	10.28	m <sup>3</sup>
Other resources	0.00	kg
Electricity consumption	0.038	kWh
Other energy carriers	0.00	MJ
Product loss per functional unit	0.20	kg
Waste materials at construction site	1.54	kg
Output substance (recycle)	0.00	kg
Output substance (landfill)	0.20	kg
Output substance (incineration)	0.00	kg
Packaging waste (recycle)	1.01	kg
Packaging waste (landfill)	0.27	kg
Packaging waste (incineration)	0.07	kg
Direct emissions to ambient air*, soil, and water	1.65	kg CO <sub>2</sub>
VOC emissions	-	kg

**Table 63 – Revolution Original 6™ Maintenance (B2)**

Maintenance (B2)		
Name	Value	Unit
Maintenance process information	<a href="#">Link</a>	--
Maintenance cycle	Daily	--
Net freshwater consumption by tap and water disposed to sewer	0.039	m <sup>3</sup>
Ancillary materials specified by type	Detergent	1.12
	Disinfectant	0.05
Other resources	0.00	kg
Energy input spec by sprayer	0.79	kWh
Other energy carriers specified	0.00	kWh
Power output of equipment	0.056	kW
Waste materials from maintenance	0.00	kg
Direct emission to ambient air, soil, and water	0.00	kg
Further assumptions for scenario development	Over 10-year period	--

**Table 64 – Revolution Original 6™ Replacements (B4)**

Replacements (B4)		
Name	Value	Unit
Reference Service Life	10	Years
Replacement cycle	6.5	Replacements
Energy input specified by activity, type, and amount	Daily	Years
Net freshwater consumption by water source and fate	0.00	m <sup>3</sup>
Ancillary materials - adhesives	0.55	kg
Replacement of worn part, specify parts/materials	0.00	kg
Direct emission to ambient air, soil, and water	0.00	kg
Further assumptions for scenario development	<a href="#">Link</a>	--

**Table 65 – Revolution Original 6™ Operational Energy Use (B6)**

Operational Energy Use (B6)		
Name	Value	Unit
Water consumption (from tap, to sewer)	10.3	gal
Electricity consumption	793.9	kWh

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Operational Energy Use (B6)		
Other energy carriers	0.0	MJ
Equipment output	-	kW
Direct emissions to ambient air, soil, and water	-	kg

Table 66 – Revolution Original 6™ Reference Service Life

Reference Service Life		
Name	Value	Unit
Reference Service Life	10	Years
Estimated Building Service Life	75	Years
Number of Replacements	6.5	Replacements

Table 67 – Revolution Original 6™ End of Life (C1-C4)

End of life (C1-C4)		
Name	Revolution Original 6	Unit
Collected separately	0.00	kg
Collected as mixed construction waste	3.92	kg
Reuse	0.00	kg
Recycling	0.00	kg
Landfilling	3.92	kg
Incineration with energy recovery	0.00	kg
Energy conversion	44%	%
Material for final deposition	3.92	kg
Removals of biogenic carbon	0.00	kg

The following table discloses the total impacts associated with the activities necessary to bring the Revolution Original 6™ product to market, including end of life impacts.



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Table 68 – Revolution Original 6™ Cradle-to-Grave TRACI 2.1 and CML 4.1 Impacts

TRACI 2.1 Impact Assessment												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
GWP	Global warming potential	kg CO <sub>2</sub> -Eq.	3.1E+00	3.1E-01	3.3E+00	7.0E+01	3.8E+00	0.0E+00	1.7E-02	5.9E-02	2.6E-01	0.0E+00
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	7.5E-07	1.2E-11	2.9E-08	6.2E-06	1.6E-07	0.0E+00	6.7E-10	2.2E-12	1.8E-08	0.0E+00
AP Air	Acidification potential for air emissions	kg SO <sub>2</sub> -Eq.	1.8E-02	1.8E-03	1.3E-02	3.4E-01	1.9E-02	0.0E+00	1.8E-05	3.5E-04	7.6E-04	0.0E+00
EP	Eutrophication potential	kg N-Eq.	1.2E-02	1.0E-04	1.2E-02	2.4E-01	7.6E-03	0.0E+00	2.5E-03	1.9E-05	2.3E-03	0.0E+00
SP	Smog formation potential	kg O <sub>3</sub> -Eq.	2.6E-01	5.0E-02	1.6E-01	4.6E+00	2.1E-01	0.0E+00	3.9E-04	9.6E-03	1.6E-02	0.0E+00
FFD	Fossil Fuel Depletion	MJ-surplus	9.0E+00	5.8E-01	6.8E+00	1.8E+02	1.1E+01	0.0E+00	6.8E-03	1.1E-01	1.8E-01	0.0E+00
CML 4.1 Impact Assessment												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
GWP	Global warming potential	kg CO <sub>2</sub> -Eq.	3.1E+00	3.1E-01	3.3E+00	7.1E+01	3.8E+00	0.0E+00	1.7E-02	5.9E-02	2.6E-01	0.0E+00
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	6.5E-07	1.2E-11	2.3E-08	5.5E-06	1.6E-07	0.0E+00	6.7E-10	2.2E-12	1.8E-08	0.0E+00
AP Air	Acidification potential for air emissions	kg SO <sub>2</sub> -Eq.	1.9E-02	1.5E-03	1.3E-02	3.5E-01	1.9E-02	0.0E+00	1.8E-05	3.5E-04	7.6E-04	0.0E+00
EP	Eutrophication potential	kg(PO <sub>4</sub> ) <sup>3</sup> -Eq.	6.0E-03	2.7E-04	5.5E-03	1.6E-01	7.6E-03	0.0E+00	2.5E-03	1.9E-05	2.3E-03	0.0E+00
POCP	Formation potential of tropospheric ozone	kg ethane-Eq.	2.5E-03	6.9E-05	6.1E-04	1.6E+00	2.1E-01	0.0E+00	3.9E-04	9.6E-03	1.6E-02	0.0E+00
ADPE	Abiotic depletion potential for non-fossil resources	kg Sb-Eq.	5.1E-05	0.0E+00	7.8E-06	7.3E+01	1.1E+01	0.0E+00	6.8E-03	1.1E-01	1.8E-01	0.0E+00
ADPF	Abiotic depletion potential for fossil resources	MJ	6.9E+01	3.9E+00	4.6E+01	8.0E+02	3.8E+00	0.0E+00	1.9E-02	5.9E-02	2.6E-01	0.0E+00

Table 69 – Revolution Original 6™ Resource Use Impacts Throughout the Life Cycle of the Product

Resource Use												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
RPR <sub>E</sub>	Renewable primary energy as energy carrier	MJ	8.6E+00	0.0E+00	2.0E+00	1.1E+02	5.7E+00	0.0E+00	1.0E-03	0.0E+00	6.9E-02	0.0E+00
RPR <sub>M</sub>	Renewable primary energy resources as material utilization	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NRPR <sub>E</sub>	Nonrenewable primary energy as energy carrier	MJ	3.1E+00	3.9E+00	5.4E+01	9.9E+02	8.9E+01	0.0E+00	5.0E-02	7.5E-01	1.7E+00	0.0E+00
NRPR <sub>M</sub>	Nonrenewable primary energy as material	MJ	1.3E+02	0.0E+00	6.7E+00	9.2E+02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
SM	Use of secondary material	kg	0.0E+00	0.0E+00	5.5E-01	3.6E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
RSF	Use of renewable secondary fuels	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NRSF	Use of nonrenewable secondary fuels	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
RE	Energy recovered from disposed waste	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
FW	Use of net fresh water	m <sup>3</sup>	5.7E-02	0.0E+00	6.8E-02	1.4E+00	8.7E-02	0.0E+00	5.1E-05	0.0E+00	9.5E-04	0.0E+00



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**Table 70 – Revolution Original 6™ Output and Waste Impacts Throughout the Life Cycle of the Product**

Output Flows and Waste Categories												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
HWD	Hazardous waste disposed	kg	5.2E-05	0.0E+00	5.9E-06	6.1E-04	3.6E-05	7.5E-08	7.5E-08	0.0E+00	0.0E+00	0.0E+00
NHWD	Non-hazardous waste disposed	kg	3.0E-01	0.0E+00	7.1E-01	1.1E+01	3.4E-01	2.0E-01	2.0E-01	0.0E+00	0.0E+00	0.0E+00
HLRW	High-level radioactive waste	kg or m <sup>3</sup>	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
ILLRW	Intermediate- and low-level radioactive waste	kg or m <sup>3</sup>	2.3E-04	0.0E+00	1.3E-05	1.9E-03	5.1E-05	3.0E-07	3.0E-07	0.0E+00	0.0E+00	0.0E+00
CRU	Components for re-use	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
MR	Materials for recycling	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
MER	Materials for energy recovery	kg	0.0E+00	0.0E+00	6.7E-02	4.4E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
EE	Recovered energy exported from system	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

**Table 71 – Revolution Original 6™ Carbon Emissions and Removals Throughout the Life Cycle of the Product**

Resource Use												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
BCRP	Biogenic Carbon Removal from Product	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEP	Biogenic Carbon Emissions from Product	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCRK	Biogenic Carbon Removal from Packaging	kg CO <sub>2</sub>	1.65E+00	0.00E+00	0.00E+00	1.07E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEK	Biogenic Carbon Emissions from Packaging	kg CO <sub>2</sub>	0.00E+00	0.00E+00	1.65E+00	1.07E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEW	Biogenic Carbon Emissions from Combustion of Waste from Renewable Sources Used in Production Process	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCE	Calcination Carbon Emissions	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCR	Carbonation Carbon Removal	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CWNR	Carbon Emissions from Combustion of Waste from Non-renewable Sources Used in Production Process	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00



**Revolution Progress**

The following tables provide additional information about the product.

**Table 72 – Revolution Progress™ Transport to Building Site (A4)**

Transport to Building Site (A4)		
Name	Revolution Progress	Unit
Fuel type	Diesel	-
Liters of fuel	38	l/100km
Capacity utilization (including empty runs)	90	%
Capacity utilization volume factor	1	-
Transport distance	800	km
Gross density of products transported	1345	kg/m <sup>3</sup>
Weight of products transported	7	kg
Volume of products transported	0.0050	m <sup>3</sup>

**Table 73 – Revolution Progress™ Installation into the Building (A5)**

Installation into the building (A5)		
Name	Revolution Progress	Unit
Auxiliary materials	0.55	kg
Water consumption	10.28	m <sup>3</sup>
Other resources	0.00	kg
Electricity consumption	0.038	kWh
Other energy carriers	0.00	MJ
Product loss per functional unit	0.27	kg
Waste materials at construction site	1.61	kg
Output substance (recycle)	0.00	kg
Output substance (landfill)	0.27	kg
Output substance (incineration)	0.00	kg
Packaging waste (recycle)	1.01	kg
Packaging waste (landfill)	0.27	kg
Packaging waste (incineration)	0.07	kg
Direct emissions to ambient air*, soil, and water	1.65	kg CO <sub>2</sub>
VOC emissions	-	kg



**Table 74 – Revolution Progress™ Maintenance (B2)**

Maintenance (B2)		
Name	Value	Unit
Maintenance process information	<a href="#">Link</a>	--
Maintenance cycle	Daily	--
Net freshwater consumption by tap and water disposed to sewer	0.039	m <sup>3</sup>
Ancillary materials specified by type	Detergent	1.12
	Disinfectant	0.05
Other resources	0.00	kg
Energy input spec by sprayer	0.79	kWh
Other energy carriers specified	0.00	kWh
Power output of equipment	0.056	kW
Waste materials from maintenance	0.00	kg
Direct emission to ambient air, soil, and water	0.00	kg
Further assumptions for scenario development	Over 10-year period	--

**Table 75 – Revolution Progress™ Replacements (B4)**

Replacements (B4)		
Name	Value	Unit
Reference Service Life	10	Years
Replacement cycle	6.5	Replacements
Energy input specified by activity, type, and amount	Daily	Years
Net freshwater consumption by water source and fate	0.00	m <sup>3</sup>
Ancillary materials - adhesives	0.55	kg
Replacement of worn part, specify parts/materials	0.00	kg
Direct emission to ambient air, soil, and water	0.00	kg
Further assumptions for scenario development	<a href="#">Link</a>	--

**Table 76 – Revolution Progress™ Operational Energy Use (B6)**

Operational Energy Use (B6)		
Name	Value	Unit
Water consumption (from tap, to sewer)	10.3	gal
Electricity consumption	793.9	kWh
Other energy carriers	0.0	MJ

Operational Energy Use (B6)		
Equipment output	-	kW
Direct emissions to ambient air, soil, and water	-	kg

**Table 77 – Revolution Progress™ Reference Service Life**

Reference Service Life		
Name	Value	Unit
Reference Service Life	10	Years
Estimated Building Service Life	75	Years
Number of Replacements	6.5	Replacements

**Table 78 – Revolution Progress™ End of Life (C1-C4)**

End of life (C1-C4)		
Name	Revolution Progress	Unit
Collected separately	0.00	kg
Collected as mixed construction waste	5.38	kg
Reuse	0.00	kg
Recycling	0.00	kg
Landfilling	5.38	kg
Incineration with energy recovery	0.00	kg
Energy conversion	44%	%
Material for final deposition	5.38	kg
Removals of biogenic carbon	0.00	kg

The following table discloses the total impacts associated with the activities necessary to bring the Revolution Progress™ product to market, including end of life impacts.

**Table 79 – Revolution Progress™ Cradle-to-Grave TRACI 2.1 and CML 4.1 Impacts**

TRACI 2.1 Impact Assessment												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
GWP	Global warming potential	kg CO <sub>2</sub> -Eq.	1.7E+01	4.2E-01	3.0E+00	1.6E+02	3.8E+00	0.0E+00	8.0E-02	2.4E-02	2.6E-01	0.0E+00
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	3.9E-06	1.6E-11	2.7E-08	2.7E-05	1.6E-07	0.0E+00	3.1E-12	9.2E-10	1.8E-08	0.0E+00
AP Air	Acidification potential for air emissions	kg SO <sub>2</sub> -Eq.	9.2E-02	2.5E-03	1.3E-02	8.3E-01	1.9E-02	0.0E+00	4.8E-04	2.4E-05	7.6E-04	0.0E+00
EP	Eutrophication potential	kg N-Eq.	4.7E-02	1.4E-04	7.4E-03	4.4E-01	7.6E-03	0.0E+00	2.7E-05	3.5E-03	2.3E-03	0.0E+00
SP	Smog formation potential	kg O <sub>3</sub> -Eq.	1.3E+00	6.9E-02	1.5E-01	1.2E+01	2.1E-01	0.0E+00	1.3E-02	5.3E-04	1.6E-02	0.0E+00
FFD	Fossil Fuel Depletion	MJ-surplus	5.7E+01	8.0E-01	6.7E+00	4.9E+02	1.1E+01	0.0E+00	1.5E-01	9.3E-03	1.8E-01	0.0E+00

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REGUPOL® Aktiv™, Revolution™, and Sonus Series™ Flooring and Underlayment Products  
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CML 4.1 Impact Assessment												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
GWP	Global warming potential	kg CO <sub>2</sub> -Eq.	1.7E+01	4.2E-01	3.1E+00	1.6E+02	3.8E+00	0.0E+00	8.0E-02	2.4E-02	2.6E-01	0.0E+00
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	3.0E-06	1.6E-11	2.1E-08	2.1E-05	1.6E-07	0.0E+00	3.1E-12	9.2E-10	1.8E-08	0.0E+00
AP Air	Acidification potential for air emissions	kg SO <sub>2</sub> -Eq.	9.1E-02	2.1E-03	1.3E-02	8.2E-01	1.9E-02	0.0E+00	4.8E-04	2.4E-05	7.6E-04	0.0E+00
EP	Eutrophication potential	kg(PO <sub>4</sub> ) <sup>3</sup> -Eq.	2.5E-02	3.7E-04	3.7E-03	2.7E-01	7.6E-03	0.0E+00	2.7E-05	3.5E-03	2.3E-03	0.0E+00
POCP	Formation potential of tropospheric ozone	kg ethane-Eq.	6.0E-03	9.5E-05	6.0E-04	1.6E+00	2.1E-01	0.0E+00	1.3E-02	5.3E-04	1.6E-02	0.0E+00
ADPE	Abiotic depletion potential for non-fossil resources	kg Sb-Eq.	2.8E-04	0.0E+00	7.8E-06	7.3E+01	1.1E+01	0.0E+00	1.5E-01	9.3E-03	1.8E-01	0.0E+00
ADPF	Abiotic depletion potential for fossil resources	MJ	4.2E+02	5.4E+00	4.6E+01	3.1E+03	3.8E+00	0.0E+00	8.1E-02	2.6E-02	2.6E-01	0.0E+00

Table 80 – Revolution Progress™ Resource Use Impacts Throughout the Life Cycle of the Product

Resource Use												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
RPR <sub>E</sub>	Renewable primary energy as energy carrier	MJ	1.9E+01	0.0E+00	2.0E+00	1.8E+02	5.7E+00	0.0E+00	0.0E+00	1.4E-03	6.9E-02	0.0E+00
RPR <sub>M</sub>	Renewable primary energy resources as material utilization	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NRPR <sub>E</sub>	Nonrenewable primary energy as energy carrier	MJ	2.4E+02	5.4E+00	5.3E+01	2.5E+03	8.9E+01	0.0E+00	1.0E+00	6.9E-02	1.7E+00	0.0E+00
NRPR <sub>M</sub>	Nonrenewable primary energy as material	MJ	2.1E+02	0.0E+00	1.0E+01	1.4E+03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
SM	Use of secondary material	kg	0.0E+00	0.0E+00	5.5E-01	3.6E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
RSF	Use of renewable secondary fuels	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NRSF	Use of nonrenewable secondary fuels	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
RE	Energy recovered from disposed waste	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
FW	Use of net fresh water	m <sup>3</sup>	2.6E-01	0.0E+00	6.7E-02	2.7E+00	8.7E-02	0.0E+00	0.0E+00	7.1E-05	9.5E-04	0.0E+00

Table 81 – Revolution Progress™ Output and Waste Impacts Throughout the Life Cycle of the Product

Output Flows and Waste Categories												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
HWD	Hazardous waste disposed	kg	2.5E-04	0.0E+00	5.6E-06	1.9E-03	3.6E-05	0.0E+00	0.0E+00	1.0E-07	0.0E+00	0.0E+00
NHWD	Non-hazardous waste disposed	kg	1.4E+00	0.0E+00	3.2E-01	1.5E+01	3.4E-01	0.0E+00	0.0E+00	2.7E-01	0.0E+00	0.0E+00
HLRW	High-level radioactive waste	kg or m <sup>3</sup>	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
ILLRW	Intermediate- and low-level radioactive waste	kg or m <sup>3</sup>	1.6E-03	0.0E+00	1.2E-05	1.1E-02	5.1E-05	0.0E+00	0.0E+00	4.1E-07	0.0E+00	0.0E+00
CRU	Components for re-use	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
MR	Materials for recycling	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
MER	Materials for energy recovery	kg	0.0E+00	0.0E+00	6.7E-02	4.4E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
EE	Recovered energy exported from system	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00



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**Table 82 – Revolution Progress™ Carbon Emissions and Removals Throughout the Life Cycle of the Product**

Resource Use												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
BCRP	Biogenic Carbon Removal from Product	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEP	Biogenic Carbon Emissions from Product	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCRK	Biogenic Carbon Removal from Packaging	kg CO <sub>2</sub>	1.65E+00	0.00E+00	0.00E+00	1.07E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEK	Biogenic Carbon Emissions from Packaging	kg CO <sub>2</sub>	0.00E+00	0.00E+00	1.65E+00	1.07E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEW	Biogenic Carbon Emissions from Combustion of Waste from Renewable Sources Used in Production Process	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCE	Calcination Carbon Emissions	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCR	Carbonation Carbon Removal	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CWNR	Carbon Emissions from Combustion of Waste from Non-renewable Sources Used in Production Process	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00



Sonus Core

The following tables provide additional information about the product.

**Table 83 – Sonus Core™ Transport to Building Site (A4)**

Transport to Building Site (A4)		
Name	Sonus Core	Unit
Fuel type	Diesel	-
Liters of fuel	38	l/100km
Capacity utilization (including empty runs)	90	%
Capacity utilization volume factor	1	-
Transport distance	800	km
Gross density of products transported	780	kg/m <sup>3</sup>
Weight of products transported	10	kg
Volume of products transported	0.0134	m <sup>3</sup>

**Table 84 – Sonus Core™ Installation into the Building**

Installation into the building (A5)		
Name	Sonus Core	Unit
Auxiliary materials	0.55	kg
Water consumption	0.00	m <sup>3</sup>
Other resources	0.00	kg
Electricity consumption	10.28	kWh
Other energy carriers	0.00	MJ
Product loss per functional unit	0.47	kg
Waste materials at construction site	0.52	kg
Output substance (recycle)	0.00	kg
Output substance (landfill)	0.47	kg
Output substance (incineration)	0.00	kg
Packaging waste (recycle)	0.04	kg
Packaging waste (landfill)	0.01	kg
Packaging waste (incineration)	0.00	kg
Direct emissions to ambient air*, soil, and water	2.04	kg CO <sub>2</sub>
VOC emissions	-	kg

**Table 85 – Sonus Core™ Replacements (B4)**

Replacements (B4)		
Name	Value	Unit
Reference Service Life	15	Years
Replacement cycle	4	Replacements
Energy input specified by activity, type, and amount	0.00	kwh
Net freshwater consumption by water source and fate	0.00	m <sup>3</sup>
Ancillary materials - adhesives	0.55	kg
Replacement of worn part, specify parts/materials	0.00	kg
Direct emission to ambient air, soil, and water	0.00	kg
Further assumptions for scenario development	--	--

**Table 86 – Sonus Core™ Operational Energy Use (B6)**

Operational Energy Use (B6)		
Name	Value	Unit
Water consumption (from tap, to sewer)	-	gal
Electricity consumption	-	kWh
Other energy carriers	-	MJ
Equipment output	-	kW
Direct emissions to ambient air, soil, and water	-	kg

**Table 87 – Sonus Core™ Reference Service Life**

Reference Service Life		
Name	Value	Unit
Reference Service Life	15	Years
Estimated Building Service Life	75	Years
Number of Replacements	4	Replacements

**Table 88 – Sonus Core™ End of Life (C1-C4)**

End of life (C1-C4)		
Name	Sonus Core	Unit
Collected separately	0.00	kg

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End of life (C1-C4)		
Collected as mixed construction waste	9.36	kg
Reuse	0.00	kg
Recycling	0.00	kg
Landfilling	9.36	kg
Incineration with energy recovery	0.00	kg
Energy conversion	44%	%
Material for final deposition	9.36	kg
Removals of biogenic carbon	0.00	kg

The following table discloses the total impacts associated with the activities necessary to bring the Sonus Core™ product to market, including end of life impacts.

Table 89 – Sonus Core™ Cradle-to-Grave TRACI 2.1 and CML 4.1 Impacts

TRACI 2.1 Impact Assessment												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
GWP	Global warming potential	kg CO <sub>2</sub> -Eq.	3.2E+00	7.3E-01	3.2E+00	3.0E+01	1.4E-01	0.0E+00	4.1E-02	2.4E-02	2.6E-01	0.0E+00
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	7.5E-07	2.8E-11	2.8E-08	3.2E-06	5.3E-12	0.0E+00	1.6E-09	9.2E-10	1.8E-08	0.0E+00
AP Air	Acidification potential for air emissions	kg SO <sub>2</sub> -Eq.	2.0E-02	4.4E-03	1.3E-02	1.5E-01	8.3E-04	0.0E+00	4.2E-05	2.4E-05	7.6E-04	0.0E+00
EP	Eutrophication potential	kg N-Eq.	1.4E-02	2.4E-04	1.1E-02	1.5E-01	4.6E-05	0.0E+00	6.1E-03	3.5E-03	2.3E-03	0.0E+00
SP	Smog formation potential	kg O <sub>3</sub> -Eq.	2.6E-01	1.2E-01	1.6E-01	2.3E+00	2.3E-02	0.0E+00	9.3E-04	5.3E-04	1.6E-02	0.0E+00
FFD	Fossil Fuel Depletion	MJ-surplus	8.1E+00	1.4E+00	6.8E+00	6.7E+01	2.7E-01	0.0E+00	1.6E-02	9.3E-03	1.8E-01	0.0E+00

CML 4.1 Impact Assessment												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
GWP	Global warming potential	kg CO <sub>2</sub> -Eq.	3.2E+00	7.3E-01	3.3E+00	3.1E+01	1.4E-01	0.0E+00	4.1E-02	2.4E-02	2.6E-01	0.0E+00
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	6.9E-07	2.8E-11	2.2E-08	2.9E-06	5.3E-12	0.0E+00	1.6E-09	9.2E-10	1.8E-08	0.0E+00
AP Air	Acidification potential for air emissions	kg SO <sub>2</sub> -Eq.	2.0E-02	3.6E-03	1.3E-02	1.5E-01	8.3E-04	0.0E+00	4.2E-05	2.4E-05	7.6E-04	0.0E+00
EP	Eutrophication potential	kg(PO <sub>4</sub> ) <sup>3</sup> -Eq.	6.8E-03	6.4E-04	5.0E-03	9.7E-02	4.6E-05	0.0E+00	6.1E-03	3.5E-03	2.3E-03	0.0E+00
POCP	Formation potential of tropospheric ozone	kg ethane-Eq.	3.4E-03	1.7E-04	6.0E-04	1.8E-01	2.3E-02	0.0E+00	9.3E-04	5.3E-04	1.6E-02	0.0E+00
ADPE	Abiotic depletion potential for non-fossil resources	kg Sb-Eq.	4.9E-05	0.0E+00	7.8E-06	1.9E+00	2.7E-01	0.0E+00	1.6E-02	9.3E-03	1.8E-01	0.0E+00
ADPF	Abiotic depletion potential for fossil resources	MJ	6.2E+01	9.4E+00	4.6E+01	4.7E+02	1.4E-01	0.0E+00	4.5E-02	2.6E-02	2.6E-01	0.0E+00



# ENVIRONMENTAL PRODUCT DECLARATION



REGUPOL® Aktiv™, Revolution™, and Sonus Series™ Flooring and Underlayment Products  
 REGUPOL® Flooring and Underlayment

According to ISO 14025

**Table 90 – Sonus Core™ Resource Use Impacts Throughout the Life Cycle of the Product**

Resource Use												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
RPR <sub>E</sub>	Renewable primary energy as energy carrier	MJ	8.7E+00	0.0E+00	2.0E+00	4.3E+01	0.0E+00	0.0E+00	2.5E-03	1.4E-03	6.9E-02	0.0E+00
RPR <sub>M</sub>	Renewable primary energy resources as material utilization	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NRPR <sub>E</sub>	Nonrenewable primary energy as energy carrier	MJ	5.4E+00	9.4E+00	5.4E+01	2.9E+02	1.8E+00	0.0E+00	1.2E-01	6.9E-02	1.7E+00	0.0E+00
NRPR <sub>M</sub>	Nonrenewable primary energy as material	MJ	3.3E+02	0.0E+00	1.6E+01	1.4E+03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
SM	Use of secondary material	kg	0.0E+00	0.0E+00	5.5E-01	2.2E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
RSF	Use of renewable secondary fuels	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NRSF	Use of nonrenewable secondary fuels	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
RE	Energy recovered from disposed waste	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
FW	Use of net fresh water	m <sup>3</sup>	6.1E-02	0.0E+00	6.7E-02	5.2E-01	0.0E+00	0.0E+00	1.2E-04	7.1E-05	9.5E-04	0.0E+00

**Table 91 – Sonus Core™ Output and Waste Impacts Throughout the Life Cycle of the Product**

Output Flows and Waste Categories												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
HWD	Hazardous waste disposed	kg	5.4E-05	0.0E+00	5.8E-06	2.4E-04	0.0E+00	1.8E-07	1.8E-07	1.0E-07	0.0E+00	0.0E+00
NHWD	Non-hazardous waste disposed	kg	3.3E-01	0.0E+00	5.9E-01	8.5E+00	0.0E+00	4.7E-01	4.7E-01	2.7E-01	0.0E+00	0.0E+00
HLRW	High-level radioactive waste	kg or m <sup>3</sup>	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
ILLRW	Intermediate- and low-level radioactive waste	kg or m <sup>3</sup>	1.7E-04	0.0E+00	1.3E-05	7.5E-04	0.0E+00	7.1E-07	7.1E-07	4.1E-07	0.0E+00	0.0E+00
CRU	Components for re-use	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
MR	Materials for recycling	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
MER	Materials for energy recovery	kg	0.0E+00	0.0E+00	2.7E-03	1.1E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
EE	Recovered energy exported from system	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00





ENVIRONMENTAL PRODUCT DECLARATION



REGUPOL® Aktiv™, Revolution™, and Sonus Series™ Flooring and Underlayment Products

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Table 92 – Sonus Core™ Carbon Emissions and Removals Throughout the Life Cycle of the Product

Resource Use												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
BCRP	Biogenic Carbon Removal from Product	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEP	Biogenic Carbon Emissions from Product	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCRK	Biogenic Carbon Removal from Packaging	kg CO <sub>2</sub>	2.04E+00	0.00E+00	0.00E+00	1.32E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEK	Biogenic Carbon Emissions from Packaging	kg CO <sub>2</sub>	0.00E+00	0.00E+00	2.04E+00	1.32E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEW	Biogenic Carbon Emissions from Combustion of Waste from Renewable Sources Used in Production Process	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCE	Calcination Carbon Emissions	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCR	Carbonation Carbon Removal	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CWNR	Carbon Emissions from Combustion of Waste from Non-renewable Sources Used in Production Process	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00



**Sonus Sound**

The following tables provide additional information about the product.

**Table 93 – Sonus Curve™ Transport to Building Site (A4)**

Transport to Building Site (A4)		
Name	Sonus Curve	Unit
Fuel type	Diesel	-
Liters of fuel	38	l/100km
Capacity utilization (including empty runs)	90	%
Capacity utilization volume factor	1	-
Transport distance	800	km
Gross density of products transported	592	kg/m <sup>3</sup>
Weight of products transported	16	kg
Volume of products transported	0.027	m <sup>3</sup>

**Table 94 – Sonus Curve™ Installation into the Building (A5)**

Installation into the building (A5)		
Name	Sonus Curve	Unit
Auxiliary materials	0.55	kg
Water consumption	10.28	m <sup>3</sup>
Other resources	0.00	kg
Electricity consumption	0.038	kWh
Other energy carriers	0.00	MJ
Product loss per functional unit	0.74	kg
Waste materials at construction site	0.79	kg
Output substance (recycle)	0.00	kg
Output substance (landfill)	0.74	kg
Output substance (incineration)	0.00	kg
Packaging waste (recycle)	0.04	kg
Packaging waste (landfill)	0.01	kg
Packaging waste (incineration)	0.00	kg
Direct emissions to ambient air*, soil, and water	2.04	kg CO <sub>2</sub>
VOC emissions	-	kg

**Table 95 – Sonus Curve™ Replacements (B4)**

Replacements (B4)		
Name	Value	Unit
Reference Service Life	15	Years
Replacement cycle	4	Replacements
Energy input specified by activity, type, and amount	0.00	kwh
Net freshwater consumption by water source and fate	0.00	m <sup>3</sup>
Ancillary materials - adhesives	0.55	kg
Replacement of worn part, specify parts/materials	0.00	kg
Direct emission to ambient air, soil, and water	0.00	kg
Further assumptions for scenario development	--	--

**Table 96 – Sonus Curve™ Operational Energy Use (B6)**

Operational Energy Use (B6)		
Name	Value	Unit
Water consumption (from tap, to sewer)	-	gal
Electricity consumption	-	kWh
Other energy carriers	-	MJ
Equipment output	-	kW
Direct emissions to ambient air, soil, and water	-	kg

**Table 97 – Sonus Curve™ Reference Service Life**

Reference Service Life		
Name	Value	Unit
Reference Service Life	15	Years
Estimated Building Service Life	75	Years
Number of Replacements	4	Replacements

**Table 98 – Sonus Curve™ End of Life (C1-C4)**

End of life (C1-C4)		
Name	Sonus Curve	Unit
Collected separately	0.00	kg
Collected as mixed construction waste	14.80	kg
Reuse	0.00	kg
Recycling	0.00	kg
Landfilling	14.80	kg
Incineration with energy recovery	0.00	kg
Energy conversion	44%	%
Material for final deposition	14.80	kg
Removals of biogenic carbon	0.00	kg

The following table discloses the total impacts associated with the activities necessary to bring the Sonus Curve™ product to market, including end of life impacts.

**Table 99 – Sonus Curve™ Cradle-to-Grave TRACI 2.1 and CML 4.1 Impacts**

TRACI 2.1 Impact Assessment												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
GWP	Global warming potential	kg CO <sub>2</sub> -Eq.	6.4E+00	1.2E+00	3.4E+00	4.6E+01	0.0E+00	0.0E+00	2.2E-01	6.5E-02	2.6E-01	0.0E+00
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	1.5E-06	4.4E-11	2.9E-08	6.4E-06	0.0E+00	0.0E+00	8.4E-12	2.5E-09	1.8E-08	0.0E+00
AP Air	Acidification potential for air emissions	kg SO <sub>2</sub> -Eq.	3.9E-02	6.9E-03	1.3E-02	2.4E-01	0.0E+00	0.0E+00	1.3E-03	6.7E-05	7.6E-04	0.0E+00
EP	Eutrophication potential	kg N-Eq.	2.9E-02	3.8E-04	1.4E-02	2.2E-01	0.0E+00	0.0E+00	7.4E-05	9.6E-03	2.3E-03	0.0E+00
SP	Smog formation potential	kg O <sub>3</sub> -Eq.	5.3E-01	1.9E-01	1.6E-01	3.7E+00	0.0E+00	0.0E+00	3.6E-02	1.5E-03	1.6E-02	0.0E+00
FFD	Fossil Fuel Depletion	MJ-surplus	1.6E+01	2.2E+00	6.8E+00	1.0E+02	0.0E+00	0.0E+00	4.2E-01	2.6E-02	1.8E-01	0.0E+00
CML 4.1 Impact Assessment												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
GWP	Global warming potential	kg CO <sub>2</sub> -Eq.	6.5E+00	1.2E+00	3.4E+00	4.6E+01	0.0E+00	0.0E+00	2.2E-01	6.5E-02	2.6E-01	0.0E+00
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	1.4E-06	4.4E-11	2.3E-08	5.9E-06	0.0E+00	0.0E+00	8.4E-12	2.5E-09	1.8E-08	0.0E+00
AP Air	Acidification potential for air emissions	kg SO <sub>2</sub> -Eq.	4.1E-02	5.7E-03	1.3E-02	2.5E-01	0.0E+00	0.0E+00	1.3E-03	6.7E-05	7.6E-04	0.0E+00
EP	Eutrophication potential	kg(PO <sub>4</sub> ) <sup>3</sup> -Eq.	1.4E-02	1.0E-03	6.0E-03	1.3E-01	0.0E+00	0.0E+00	7.4E-05	9.6E-03	2.3E-03	0.0E+00
POCP	Formation potential of tropospheric ozone	kg ethane-Eq.	6.9E-03	2.6E-04	6.1E-04	2.4E-01	0.0E+00	0.0E+00	3.6E-02	1.5E-03	1.6E-02	0.0E+00
ADPE	Abiotic depletion potential for non-fossil resources	kg Sb-Eq.	1.0E-04	0.0E+00	7.8E-06	2.5E+00	0.0E+00	0.0E+00	4.2E-01	2.6E-02	1.8E-01	0.0E+00
ADPF	Abiotic depletion potential for fossil resources	MJ	1.3E+02	1.5E+01	4.6E+01	7.5E+02	0.0E+00	0.0E+00	2.2E-01	7.1E-02	2.6E-01	0.0E+00

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REGUPOL® Aktiv™, Revolution™, and Sonus Series™ Flooring and Underlayment Products

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Table 100 – Sonus Curve™ Resource Use Impacts Throughout the Life Cycle of the Product

Resource Use												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
RPR <sub>E</sub>	Renewable primary energy as energy carrier	MJ	1.3E+01	0.0E+00	2.0E+00	5.9E+01	0.0E+00	0.0E+00	0.0E+00	4.0E-03	6.9E-02	0.0E+00
RPR <sub>M</sub>	Renewable primary energy resources as material utilization	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NRPR <sub>E</sub>	Nonrenewable primary energy as energy carrier	MJ	8.9E+00	1.5E+01	5.4E+01	3.3E+02	0.0E+00	0.0E+00	2.8E+00	1.9E-01	1.7E+00	0.0E+00
NRPR <sub>M</sub>	Nonrenewable primary energy as material	MJ	5.1E+02	0.0E+00	2.5E+01	2.1E+03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
SM	Use of secondary material	kg	0.0E+00	0.0E+00	5.5E-01	2.2E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
RSF	Use of renewable secondary fuels	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NRSF	Use of nonrenewable secondary fuels	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
RE	Energy recovered from disposed waste	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
FW	Use of net fresh water	m <sup>3</sup>	1.3E-01	0.0E+00	6.8E-02	7.8E-01	0.0E+00	0.0E+00	0.0E+00	1.9E-04	9.5E-04	0.0E+00

Table 101 – Sonus Curve™ Output and Waste Impacts Throughout the Life Cycle of the Product

Output Flows and Waste Categories												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
HWD	Hazardous waste disposed	kg	1.1E-04	0.0E+00	6.0E-06	4.8E-04	0.0E+00	2.8E-07	2.8E-07	1.0E-07	0.0E+00	0.0E+00
NHWD	Non-hazardous waste disposed	kg	6.8E-01	0.0E+00	8.2E-01	1.3E+01	0.0E+00	7.4E-01	7.4E-01	2.7E-01	0.0E+00	0.0E+00
HLRW	High-level radioactive waste	kg or m <sup>3</sup>	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
ILLRW	Intermediate- and low-level radioactive waste	kg or m <sup>3</sup>	3.6E-04	0.0E+00	1.3E-05	1.5E-03	0.0E+00	1.1E-06	1.1E-06	4.1E-07	0.0E+00	0.0E+00
CRU	Components for re-use	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
MR	Materials for recycling	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
MER	Materials for energy recovery	kg	0.0E+00	0.0E+00	2.7E-03	1.1E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
EE	Recovered energy exported from system	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00



Table 102 – Sonus Curve™ Carbon Emissions and Removals Throughout the Life Cycle of the Product

Resource Use												
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	B6	C1	C2	C3	C4	D
BCRP	Biogenic Carbon Removal from Product	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEP	Biogenic Carbon Emissions from Product	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCRK	Biogenic Carbon Removal from Packaging	kg CO <sub>2</sub>	2.04E+00	0.00E+00	0.00E+00	1.32E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEK	Biogenic Carbon Emissions from Packaging	kg CO <sub>2</sub>	0.00E+00	0.00E+00	2.04E+00	1.32E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEW	Biogenic Carbon Emissions from Combustion of Waste from Renewable Sources Used in Production Process	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCE	Calcination Carbon Emissions	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCR	Carbonation Carbon Removal	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CWNR	Carbon Emissions from Combustion of Waste from Non-renewable Sources Used in Production Process	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

**Interpretation**

The breakdown of environmental impacts across all REGUPOL® products follows a similar trend. In all impact categories excluding eutrophication, sourcing and extraction (of raw materials) is the primary driver of impacts. Meanwhile, in the eutrophication category, end-of-life disposal is the primary driver of the impacts. End-of-life impacts are also significant in the global warming category. Installation and delivery impacts are the second most impactful life cycle phase in every impact category excluding global warming and ozone depletion.

For Aktiv™ and Revolution™ series products, the use phase is a secondary driver of impacts, contributing between 10% and 25% of all impacts. Sonus series products have no use phase impacts due to their function as a flooring underlayment. These products are installed under the finished floor and do not require maintenance. In general, products such as the Aktiv Intense or Revolution Progress that have a higher ratio of EPDM to recycled SVR rubber also have a higher relative environmental impact across all categories.

**References**

- (ILCD, 2010) Joint Research Commission, 2010, ILCD Handbook: General Guide for Life Cycle Assessment
- Intergovernmental Panel on Climate Change (IPCC)
- ISO 14025:2006 *Environmental labels and declarations – Type III environmental declarations – Principles and Procedures*
- ISO 14040:2006 *Environmental management - Life cycle assessment – Principles and framework*



## ENVIRONMENTAL PRODUCT DECLARATION



REGUPOL® Aktiv™, Revolution™, and Sonus Series™ Flooring and Underlayment Products  
REGUPOL® Flooring and Underlayment

According to ISO 14025

- ISO 14044:2006 *Environmental management - Life cycle assessment – Requirements and guidelines*
- ISO 21930:2017 Second edition *Sustainability in buildings and civil engineering works — Core rules for environmental product declarations of construction products and services*
- ISO 9001 *Quality Management System*
- ISO 14001 *Environmental Management System*
- PCR Guidance-Texts for Building-Related Products and Services: Requirements on the EPD for Floor coverings, UL 10010–7, Second edition
- PCR Guidance-Texts for Building-Related Products and Services: Part A: Life Cycle Assessment Calculation Rules and Report Requirements, UL 10010, Version 3.2
- REGUPOL® Aktiv Maintenance Information, REGUPOL® America
- REGUPOL® Aktiv Installation Guide, REGUPOL® America
- ASTM D3676 *Standard Specification for Rubber Cellular Cushion Used for Carpet or Rug Underlay*
- ASTM D2240 *Standard Test Method for Rubber Property – Durometer Hardness*
- ASTM D624 *Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers*
- ASTM D412 *Standard Test Method for Vulcanized Rubber and Thermoplastic Elastomers - Tension*
- ASTM F137 *Standard Test Method for Flexibility of Resilient Flooring Materials with Cylindrical Mandrel Apparatus*
- ASTM F925 *Standard Test Method for Resistance to Chemicals of Resilient Flooring*



## ENVIRONMENTAL PRODUCT DECLARATION



REGUPOL® Aktiv™, Revolution™, and Sonus Series™ Flooring and Underlayment Products  
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According to ISO 14025

### LCA Development

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This EPD and corresponding LCA were prepared by Sustainable Solutions Corporation in Royersford, Pennsylvania.



### Contact REGUPOL®

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For more information, please visit [www.REGUPOL.com](http://www.REGUPOL.com) or contact REGUPOL® at [info@REGUPOL.com](mailto:info@REGUPOL.com).

