

Environmental Product Declaration



THE INTERNATIONAL EPD® SYSTEM



In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

Granulate DecoTech

from

Chemical Technologies SIA



Programme:	The International EPD® System, www.environdec.com
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An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com



General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
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Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): <i>Construction Products, PCR 2019:14 Version 1.3.3</i>
PCR review was conducted by: <i>The Technical Committee of the International EPD System. See www.environdec.com for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact</i>
Life Cycle Assessment (LCA)
LCA accountability: <i>Bureau Veritas Latvia SIA, riga@bureauveritas.com</i>
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: <input checked="" type="checkbox"/> EPD verification by individual verifier
Third-party verifier: <i>Elisabet Amat Guasch, GREENIZE</i> 
Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD: Chemical Technologies SIA

Contact: Valters Frēlihs, Head of Business Support Process Department
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Description of the organisation:

Chemical Technologies SIA (ChemTech) was founded in 2012 and is headquartered in Riga, Latvia (EU).

We are dedicated to bringing creativity and innovation to various types of décor, fostering "out-of-the-box" thinking among our team, customers, and partners. Our continuous efforts in research and development lead to the expansion of our wide range of Special Effect Materials and their applications. With a passion for creating cozy ambience, our special effect materials are designed to enhance surfaces with captivating contrasts and accents. Our goal is to provide creative solutions for crafting unique décor experiences.

Name and location of production site(s): Udens 16 k-2, LV-1007, Riga, Latvia

Product information

Product name:

Granulate DecoTech

Product identification:

Granulate DecoTech 0002P

Granulate DecoTech 0203P

Granulate DecoTech 0305P

Granulate DecoTech 0507P

Granulate DecoTech 0712P

Granulate DecoTech 1220P

Granulate DecoTech 2000P

Product illustrations:



Product description:

Granulate DecoTech is a whitish irregular shape particles made of 100% recycled PVC. The raw material is obtained from the recovery of window profile waste. Narrow particle size distribution ensures reproducible properties for coatings. Chemically resistant in water-based and solvent-based systems. Good light stability, which enables indoor, outdoor and other applications. Suitable for printing, scattering and coating, depending on the particle size. Can be mixed with colours and special effect materials. Granulates are used to give surfaces rough structures and volume. Various types of “sand” and “stone” effects can be achieved.

DecoTech Granulates offer a myriad of possibilities, available in a range of particle sizes from $\leq 200 \mu\text{m}$ to $\geq 2000 \mu\text{m}$, and an array of captivating colours, as well as effects. Whether you seek a mesmerizing depth, metallic sheen, or vibrant glittering sparkle, Granulate DecoTech provides a versatile selection of granulometries and chromatic options. They seamlessly integrate into any portfolio of effects, elevating decorative finishes and enhancing various artistic applications, while effortlessly creating natural-looking contrasts.

Product-related or management system-related certifications:

- ISO 9001:2015 - Quality management system
- ISO 14001:2015 - Environmental management system

The technical parameters of the **Granulate DecoTech** considered as a declared unit are:

Appearance	Granulate, powder	
Colour	White	
Available particle sizes:		
Granulate DecoTech 0002P	≤ 200	μm
Granulate DecoTech 0203P	200-300	μm
Granulate DecoTech 0305P	300-500	μm
Granulate DecoTech 0507P	500-700	μm
Granulate DecoTech 0712P	700-1200	μm
Granulate DecoTech 1220P	1200-2000	μm
Granulate DecoTech 2000P	≥ 2000	μm
Bulk density	0.4 – 0.7	g/cm^3
Absolute density	1.5 – 1.6	g/cm^3
Oil absorption	100-200	$\text{g}/100\text{g powder}$
Shelf life	Unlimited term	

UN CPC code: 34730 – Polymers of vinyl chloride or other halogenated olefins, in primary forms

Geographical scope: This EPD has a European Scope.

LCA information

Functional unit / declared unit: 1 kg of Granulate DecoTech

Reference service life: The reference service life of such products is usually not dependent on the properties of the products themselves, but rather by the service life of the building or building part to which they are attached. Therefore, RSL of the product included in this LCA study has not been defined.

Time representativeness: Data represents the manufacturing of the product in the time period of 2023. The database used for proxy data is Ecoinvent v3.8. This database data is compiled in November 2021, i.e., no data is older than ten years.

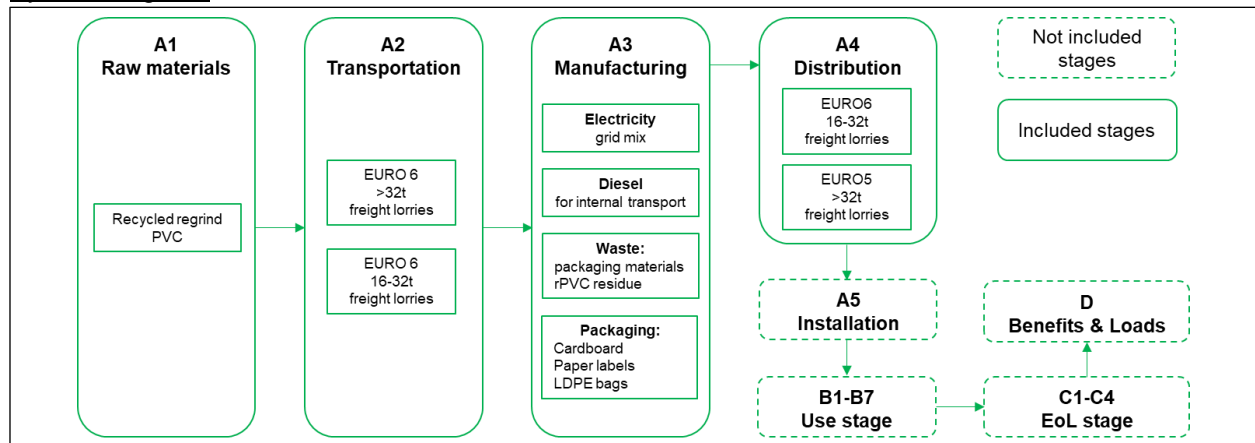
Database(s) and LCA software used: Ecoinvent v3.8 has been used to conduct the quantitative evaluation in this study. This database provided the background system's life cycle inventory data for raw and processed materials. The LCA software used - SimaPro 9.5.

Description of system boundaries: LCA study has been performed in the “Cradle-to-gate with options”, also considering Transportation module A4. Since there are various applications of the product, Installation module A5 has not been declared. Use stage (B1-B7), End-of-Life stage (C1-C4) and module D have not been considered for the purpose of this study. The processes related to infrastructure, construction, and production of equipment, as well as tools that are not directly consumed in the production process, have been excluded. Personnel-related activities, such as transportation to and from work, have also been excluded.

As per PCR 2019:14 v1.3.3, EPDs of type e) cradle to gate with options, considered in this LCA study, can be used because the following three conditions are valid:

1. the product or material is physically integrated with other products during installation so it cannot be physically separated from them at End-of-Life;
2. the product or material is no longer identifiable at End-of-Life as a result of a physical or chemical transformation process;
3. the product or material does not contain biogenic carbon.

System diagram:



Data quality: The foreground data has been collected internally, considering the latest available average production amounts and measurements during the time period of 2023. Data regarding waste processing has been taken from waste scenarios for closest locations in Ecoinvent v3.8. The quality level in this study is qualified as Very good according to the UN Environment Global Guidance criteria on LCA database development. Data quality rating procedure has been performed using a rating system where “1” means Excellent quality, and “5” means Poor quality.

Technological Representativeness, TeR	Geographic representativeness, GeR	Time Representativeness, TiR	Precision, P	Average DQR
1,6	1,8	2,0	2,1	1,9

Cut-off criteria:

All materials have been accounted for in the LCA according to the data provided by manufacturer. To LCA practitioner knowledge there is no missing data for processes within the system boundaries.

Allocation:

Only consumption of Diesel and Electricity has been allocated and allocation shares are based on independent measurements conducted on-site. General allocation principles have been applied according to ISO 14044:2006 4.3.4 and in line with the provisions of EN 15804:2012+A2.

Stages and Production description

Product Stage

In **module A1** extraction and processing of raw materials and generation of electricity and heat from primary energy resources, used to produce these raw materials, are included. The only raw material for manufacturing purposes of Granulate DecoTech is recycled Polyvinylchloride, i.e., shredded PVC window frames.

For **module A2**, the transportation of raw materials to the production plant, following assumptions have been made (see Table below). Supply of ingredients necessary to produce Granulate DecoTech are conducted with the use of Freight lorries. Data considered in module A2 is listed in the Table below:

Material	Type of vehicle	kg*km	Distance, km	Fuel consumption, l/tkm	Value, l/t
rPVC	Lorry >32t, EURO6	6,28E+02	620	0,0226	14,00
Cardboard+	Lorry 16-32t, EURO6	5,76E-01	10	0,0431	0,43
LDPE bags	Lorry 16-32t, EURO6	1,11E-01	278	0,0431	11,99

The manufacturing process (module A3) includes consumption of Fuel and Electricity, use of packaging materials (paper, cardboard, LDPE) and waste treatment of raw material packaging and technological waste. The types of packaging required for the final product are LDPE bags, cardboard boxes and paper labels. National residual grid mix of Electricity is the only source of energy. Internal transportation of materials and products is conducted with Diesel powered equipment.

Greenhouse gas emissions from the use of Electricity in the manufacturing phase are represented by the National Residual mix of Latvia. GWP-GHG of Electricity consumed in Manufacturing module A3 is 0,532 kgCO₂eq per 1 kWh.

Construction process Stage

Table below describes the scenarios for **module A4** transportation of the final product with its respective packaging. Distribution process involves the use of 16-32t EURO6 and >32t EURO5 Freight lorries with multiple destinations.

Scenarios of module A4 are presented in the Tables below:

Vehicle	kg per DU	Distance, km	Fuel consumption, l/tkm	Value, l/t
Lorry 16-32t, EURO6	4,53E-03	2320	0,0431	100,02
Lorry >32t, EURO5	1,49E-01	513	0,0226	11,57
Lorry >32t, EURO5	2,65E-01	2050	0,0226	46,24
Lorry >32t, EURO5	2,99E-01	3050	0,0226	68,79
Lorry >32t, EURO5	3,36E-01	2850	0,0226	64,28

Since there are various applications of the product, Installation **module A5** has not been declared.

Use Stage:

Modules B1-B7, that define use stage of the product, are not declared for this study – these are not mandatory for LCA “Cradle-to-gate with options” form.

End of Life Stage:

Modules C1-C4 have not been considered for the purpose of this study as there are various applications of the product.

Benefits and loads beyond the system boundaries:

Module D has not been considered for the purpose of this study.

Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage	
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential	
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
Modules declared	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Geography	EU	EU	LV	GLO	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Specific data used	>90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
rPVC	1,00	100%	0% and 0.0
TOTAL	1,00	100%	0% and 0.0
Packaging materials	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/kg
LDPE	0,0004	0,04%	0,000
Paper	0,0001	0,01%	0,500
Cardboard	0,0535	5,35%	0,500
TOTAL	0,0540	5,40%	0,496

During the life cycle of the product any hazardous substance listed in the “Candidate List of Substances of Very High Concern (SVHC) for authorization” has not been used in a percentage higher than 0,1% of the weight of the product.

Environmental Information

Potential environmental impact – mandatory indicators according to EN 15804 (EF 3.0 reference package)

Results per declared unit – 1 kg of Granulate DecoTech			
Indicator	Unit	A1-A3	A4
GWP-fossil	kg CO ₂ eq.	3,0E-01	1,8E-01
GWP-biogenic	kg CO ₂ eq.	5,2E-03	1,0E-05
GWP-luluc	kg CO ₂ eq.	4,9E-04	1,4E-06
GWP-total	kg CO ₂ eq.	3,1E-01	1,8E-01
ODP	kg CFC 11 eq.	3,7E-08	4,2E-08
AP	mol H ⁺ eq.	1,1E-03	6,0E-04
EP-freshwater	kg P eq.	7,9E-06	9,1E-08
EP-marine	kg N eq.	3,8E-04	1,9E-04
EP-terrestrial	mol N eq.	3,4E-03	2,1E-03
POCP	kg NMVOC eq.	9,5E-04	5,7E-04
ADP-minerals&metals*	kg Sb eq.	1,8E-08	7,7E-09
ADP-fossil*	MJ	3,0E+00	2,5E+00
WDP*	m ³	3,3E-02	-4,2E-04
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption		

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Potential environmental impact – additional mandatory and voluntary indicators

Results per declared unit – 1 kg of Granulate DecoTech			
Indicator	Unit	A1-A3	A4
GWP-GHG ¹	kg CO ₂ eq.	3,1E-01	1,8E-01
EP-freshwater	kg PO ₄ ³ eq.	2,4E-05	2,7E-07

Additional voluntary indicators e.g., the voluntary indicators from EN 15804 or the global indicators according to ISO 21930:2017

Use of resources

Results per declared unit – 1 kg of Granulate DecoTech			
Indicator	Unit	A1-A3	A4
PERE	MJ	1,8E-01	2,9E-03
PERM	MJ	1,5E-01	9,6E-04
PERT	MJ	3,3E-01	3,9E-03
PENRE	MJ	3,0E+00	2,5E+00
PENRM	MJ	5,4E-04	1,1E-06
PENRT	MJ	3,0E+00	2,5E+00
SM	kg	1,1E+00	0,0E+00
RSF	MJ	0,0E+00	0,0E+00
NRSF	MJ	0,0E+00	0,0E+00
FW	m ³	1,3E-03	6,5E-06
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water		

¹ This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO₂ is set to zero.

Waste production and output flows

Waste production

Results per declared unit – 1 kg of Granulate DecoTech			
Indicator	Unit	A1-A3	A4
Hazardous waste disposed	kg	5,4E-06	6,6E-06
Non-hazardous waste disposed	kg	2,1E-02	1,0E-04
Radioactive waste disposed	kg	1,6E-05	1,8E-05

Output flows

Results per declared unit – 1 kg of Granulate DecoTech			
Indicator	Unit	A1-A3	A4
Components for re-use	kg	0,0E+00	0E+00
Material for recycling	kg	1,3E-03	0E+00
Materials for energy recovery	kg	7,7E-05	0E+00
Exported energy, electricity	MJ	2,8E-04	0E+00
Exported energy, thermal	MJ	5,6E-04	0E+00

Other environmental performance indicators

Biogenic carbon content

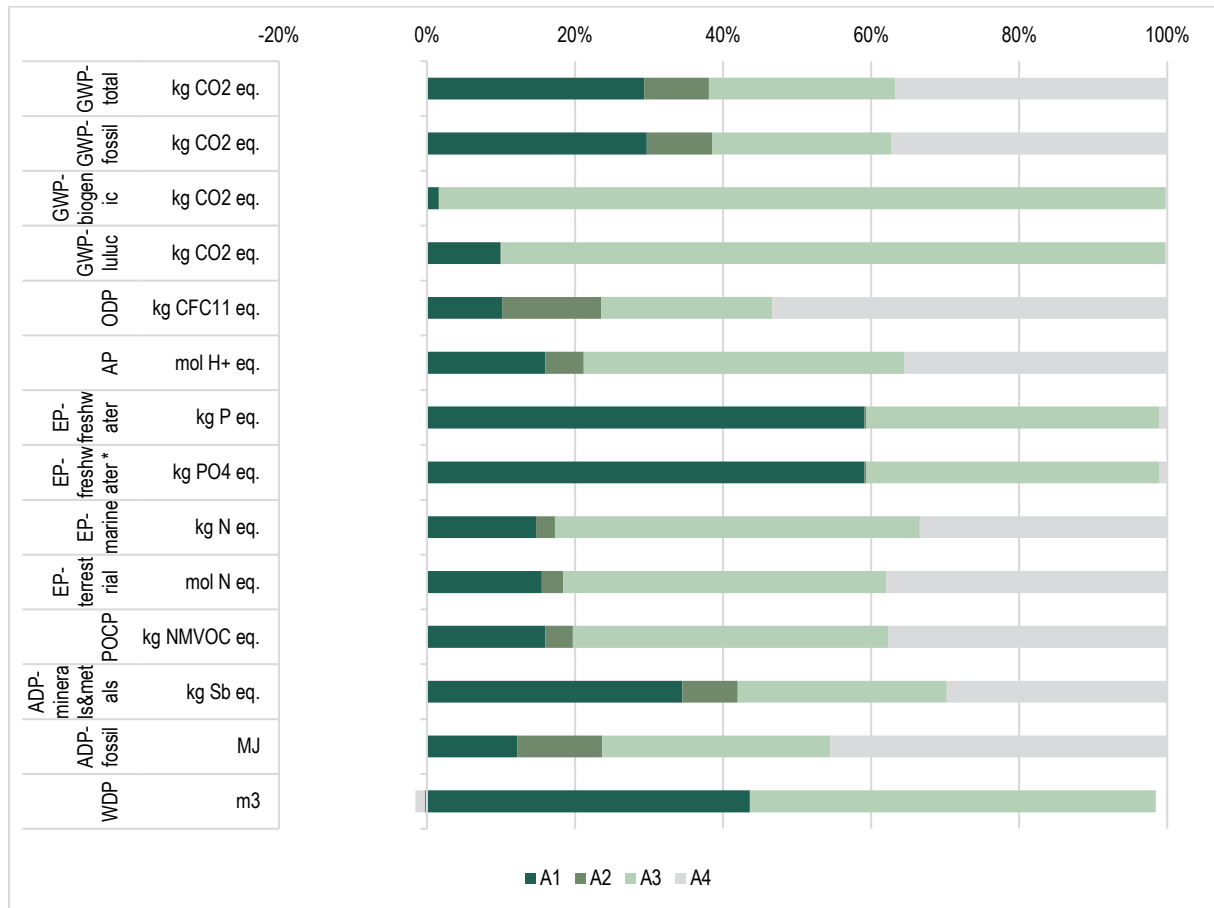
Results per declared unit – 1 kg of Granulate DecoTech	
Biogenic carbon content	Quantity
Carbon content in product, kg C	0,0E-00
Carbon content in accompanying packaging, kg C	2,7E-02

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg CO₂

LCA Interpretation

The estimated impact assessment results are only relative statements that do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins, or risks.

Contribution to environmental impact per each module for the declared unit of **Granulate DecoTech** from Chemical Technologies SIA is displayed in following Figure:

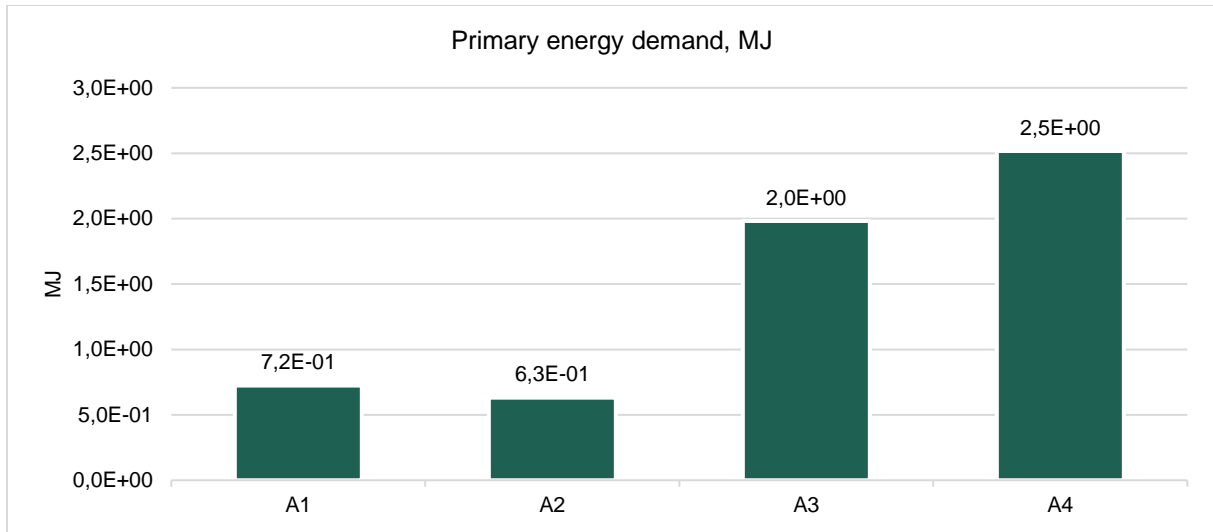


Contribution to environmental impact per each module for 1 kg of Granulate DecoTech

Considering Climate change (GWP-total), the highest impact (37%) is generated in Module A4 representing distribution of the product. Raw material module A1 is the second biggest contributor, resulting in more than 29% share of the total impact. Manufacturing module A3 is generating almost similar impact (25%) to raw material module A1. Impact of manufacturing module A3 is standing out in such impact categories GWP-biogenic & GWP-LULUC, Eutrophication and Acidification.

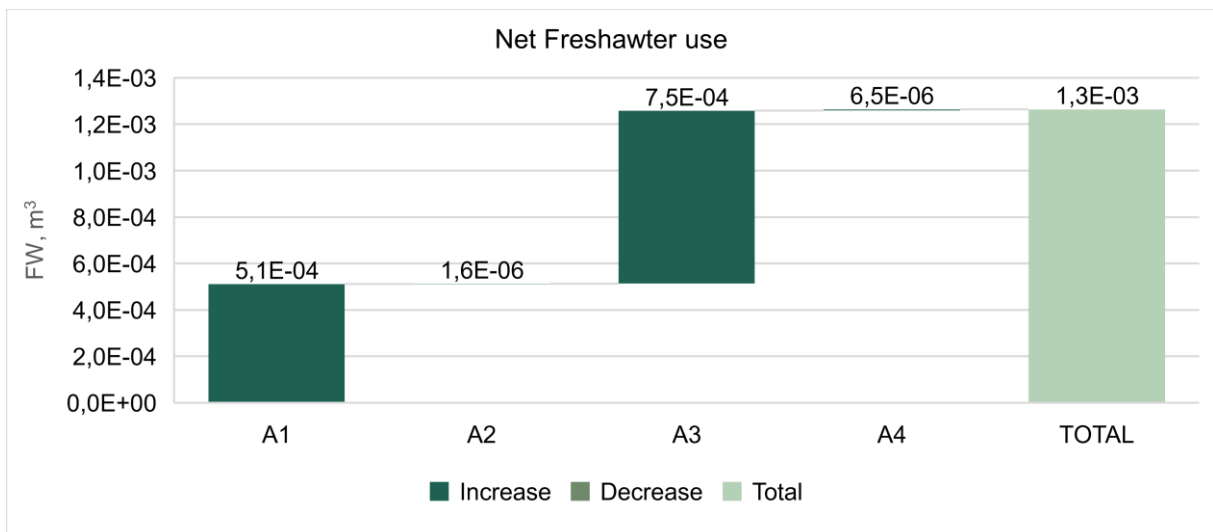
Considering total demand of primary energy per declared unit, that has been calculated using Cumulative Energy Demand (LHV) V1.00 impact assessment method, demand of primary energy is displayed in following Figure. With 57.0% resulting in Product stage (A1-A3), demand of primary energy for Granulate DecoTech is distributed as follows:

- 12.3% for Raw material (A1);
- 10.8% for Transport (A2);
- 33.9% for Manufacturing (A3);
- 43.0% for Transport (A4).



Primary energy demand per 1 kg of Granulate DecoTech

Other key effect factor is Freshwater consumption, that is displayed in following Figure as a Waterfall chart. A waterfall chart shows a running total as values are added or subtracted. It's useful for understanding how an initial value of net Freshwater use is affected by a series of positive and negative values. In case of DecoTech, no decrease has been observed in any considered module. In terms of freshwater use levels, the Product stage (A1-A3) is still responsible for most of its demand with module A1 accounting for 40% and module A3 – for 59% of the freshwater use in the production of Granulate DecoTech.



Net freshwater use for 1 kg of Granulate DecoTech

Additional environmental and social information

As an environmentally and socially responsible company, we not only comply with relevant ISO standards, but also actively integrate green technologies, recycling initiatives, bio-based and biodegradable materials into our products. We firmly believe that these efforts contribute to a sustainable future for our planet and generations to come.

With a passion for creating cozy ambience, our special effect materials are designed to enhance surfaces with captivating contrasts and accents. Our goal is to provide creative and sustainable solutions for crafting unique and pleasant décor experiences.

Information related to Sector EPD

This is an individual EPD.

Differences versus previous versions

v1.3 of 2024-05-24

Cover page picture and product pictures updated.

References

General Programme Instructions of the International EPD® System. Version 4.0.

PCR 2019:14 Construction products v1.3.3

LCA software SimaPro 9.5.0.2, Ecoinvent v3.8

ISO 14040:2006. Environmental management – Life cycle assessment – Principles and framework

ISO 14044:2006. Environmental management – Life cycle assessment – Requirements and guidelines

ISO 14025:2006: Environmental labels and declarations - Type III environmental declarations - Principles and procedures

Yahong D. et al., (2021). Developing Conversion Factors of LCIA Methods for Comparison of LCA Results in the Construction Sector.

Šiškins A., (2024) LCA background report v1.3 for Chemical Technologies SIA for Granulate DecoTech

