SENTINEL HOLDING
INSTITUT

SHI-PRODUKTPASS

Produkte finden - Gebäude zertifizieren

SHI-Produktpass-Nr.:

14635-10-1012

Hvac Lamella Mat AluCoat

Warengruppe: Dämmstoffe - Bodenbeläge / Wandbeläge / Deckensysteme

PAROC

Paroc GmbH
Heidenkampsweg 51
20097 Hamburg

Produktqualitäten:

- SHI-Produkt bewertung 2024 ✓
- QNG Qualitätssiegel Nachhaltiges Gebäude ✓
- DGNB NEUBAU 2023 ✓
- DGNB NEUBAU 2018 ✓
- BNB-BN NEUBAU V2015 ✓
- EU-Taxonomie ✓
- BREEAM DE NEUBAU 2018 ✓
- LEED v4.1 (outside US) ✓

GEPRÜFT NACHHALTIGES PRODUKT – SHI PRODUKT PASS – SENTINEL HOLDING INSTITUT – www.sentinel-holding.eu

Köttner

Helmut Köttner
Wissenschaftlicher Leiter
Freiburg, den 30.03.2026

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Wir sind stolz darauf, dass die SHI-Datenbank, die erste und einzige Datenbank für Bauprodukte ist, die ihre umfassenden Prozesse sowie die Aktualität regelmäßig von dem unabhängigen Prüfunternehmen SGS-TÜV Saar überprüfen lässt.

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SHI-Produktbewertung 2024

Seit 2008 etabliert die Sentinel Holding Institut GmbH (SHI) einen einzigartigen Standard für schadstoffgeprüfte Produkte. Experten führen unabhängige Produktprüfungen nach klaren und transparenten Kriterien durch. Zusätzlich überprüft das unabhängige Prüfunternehmen SGS-TÜV Saar regelmäßig die Prozesse und Aktualität.

Kriterium	Produktkategorie	Schadstoffgrenzwert	Bewertung
SHI-Produktbewertung	Dämmstoffe	TVOC ≤ 300 µg/m³ Formaldehyd ≤ 24 µg/m³	Schadstoffgeprüft
Gültig bis: 28.08.2026			

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QNG - Qualitätssiegel Nachhaltiges Gebäude

Das Qualitätssiegel Nachhaltiges Gebäude, entwickelt durch das Bundesministerium für Wohnen, Stadtentwicklung und Bauwesen (BMWSB), legt Anforderungen an die ökologische, soziokulturelle und ökonomische Qualität von Gebäuden fest. Das Sentinel Holding Institut prüft Bauprodukte gemäß den QNG-Anforderungen für eine Zertifizierung und vergibt das QNG-ready Siegel. Das Einhalten des QNG-Standards ist Voraussetzung für den KfW-Förderkredit. Für bestimmte Produktgruppen hat das QNG derzeit keine spezifischen Anforderungen definiert. Diese Produkte sind als nicht bewertungsrelevant eingestuft, können jedoch in QNG-Projekten genutzt werden.

Kriterium	Pos. / Bauproduktgruppe	Betrachtete Stoffe	QNG Freigabe
3.1.3 Schadstoffvermeidung in Baumaterialien	12.3 Dämmstoffe aus Künstlichen Mineralfasern (KMF)	Gefährliche Stoffe / Emissionen	QNG-ready
Nachweis: Blauer Engel (DE-UZ 132) Zertifikat Nr. 37257 vom 07.12.2021			

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DGNB Neubau 2023

Das DGNB-System (Deutsche Gesellschaft für Nachhaltiges Bauen) bewertet die Nachhaltigkeit von Gebäuden verschiedener Art. Das System ist sowohl anwendbar für private und gewerbliche Großprojekte als auch für kleinere Wohngebäude. Die Version 2023 setzt hohe Standards für ökologische, ökonomische, soziokulturelle und funktionale Aspekte während des gesamten Lebenszyklus eines Gebäudes.

Kriterium	Pos. / Relevante Bauteile / Bau-Materialien / Flächen	Betrachtete Stoffe / Aspekte	Qualitätsstufe
ENV 1.2 Risiken für die lokale Umwelt, 03.05.2024 (3. Auflage)			nicht bewertungsrelevant

Kriterium	Pos. / Relevante Bauteile / Bau-Materialien / Flächen	Betrachtete Stoffe / Aspekte	Qualitätsstufe
ENV 1.2 Risiken für die lokale Umwelt, 29.05.2025 (4. Auflage)	40b Dämmstoff-Platten und -Matten aus Künstlichen Mineralfasern (KMF) für Gebäude (ohne Haustechnik)	Gefährliche Stoffe / Emissionen	Qualitätsstufe: 4
Nachweis: Blauer Engel (DE-UZ 132) Zertifikat Nr. 37257 vom 07.12.2021			

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DGNB Neubau 2018

Das DGNB-System (Deutsche Gesellschaft für Nachhaltiges Bauen) bewertet die Nachhaltigkeit von Gebäuden verschiedener Art. Das System ist sowohl anwendbar für private und gewerbliche Großprojekte als auch für kleinere Wohngebäude.

Kriterium	Pos. / Relevante Bauteile / Bau-Materialien / Flächen	Betrachtete Stoffe / Aspekte	Qualitätsstufe
ENV 1.2 Risiken für die lokale Umwelt			nicht bewertungsrelevant

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BNB-BN Neubau V2015

Das Bewertungssystem Nachhaltiges Bauen ist ein Instrument zur Bewertung von Büro- und Verwaltungsgebäuden, Unterrichtsgebäuden, Laborgebäuden sowie Außenanlagen in Deutschland. Das BNB wurde vom damaligen Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit (BMUB) entwickelt und unterliegt heute dem Bundesministerium für Wohnen, Stadtentwicklung und Bauwesen.

Kriterium	Pos. / Bauprodukttyp	Betrachtete Schadstoffgruppe	Qualitätsniveau
1.1.6 Risiken für die lokale Umwelt	36b mineralische und nicht mineralische Innendämmungen	VOC / Biozide / gefährliche Stoffe / gefährliche Einzelstoffe (Formaldehyd) halogenierte Treibmittel	Qualitätsniveau 5
Nachweis: Blauer Engel (DE-UZ 132) Zertifikat Nr. 37257 vom 07.12.2021			

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EU-Taxonomie

Die EU-Taxonomie klassifiziert wirtschaftliche Aktivitäten und Produkte nach ihren Umweltauswirkungen. Auf der Produktebene gibt es gemäß der EU-Verordnung klare Anforderungen zu Formaldehyd und flüchtigen organischen Verbindungen (VOC). Die Sentinel Holding Institut GmbH kennzeichnet qualifizierte Produkte, die diesen Standard erfüllen.

Kriterium	Produkttyp	Betrachtete Stoffe	Bewertung
DNSH - Vermeidung und Verminderung der Umweltverschmutzung	Innendämmung	Stoffe nach Anlage C, Formaldehyd, Karzinogene VOC Kategorie 1A/1B	EU-Taxonomie konform
Nachweis: Blauer Engel (DE-UZ 132) Zertifikat Nr. 37257 vom 07.12.2021			

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BREEAM DE Neubau 2018

BREEAM (Building Research Establishment Environmental Assessment Methodology) ist ein britisches Gebäudebewertungssystem, welches die Nachhaltigkeit von Neubauten, Sanierungsprojekten und Umbauten einstuft. Das Bewertungssystem wurde vom Building Research Establishment (BRE) entwickelt und zielt darauf ab, ökologische, ökonomische und soziale Auswirkungen von Gebäuden zu bewerten und zu verbessern.

Kriterium	Produktkategorie	Betrachtete Stoffe	Qualitätsstufe
Hea 02 Qualität der Innenraumluft	Materialien für Decken, Wände, sowie Schall- und Wärmedämm-Materialien	Emissionen: Formaldehyd, TVOC, Krebserregende Stoffe	herausragende Qualität
Nachweis: Eurofins-Zertifikat Nr. IACG-339-01-01-2020 vom 21.03.2021.			

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LEED v4.1

LEED (Leadership in Energy and Environmental Design) ist ein international anerkanntes Gebäudezertifizierungssystem des U.S. Green Building Council. Es zählt zu den weltweit am weitesten verbreiteten Nachhaltigkeitsstandards für Gebäude und wird insbesondere bei international ausgerichteten Projekten eingesetzt. LEED bewertet Gebäude ganzheitlich in Kategorien wie Energieeffizienz, Ressourcenschonung, Materialauswahl, Innenraumqualität und Standortqualität. Je nach erreichter Punktzahl werden die Zertifizierungsstufen LEED Certified, Silver, Gold oder Platinum vergeben.

Kriterium	Produktkategorie	Bewertung
EQ Credit: Low-Emitting Materials	Dämmstoffe	Erfüllt
Nachweis: Eurofins-Zertifikat Nr. IACG-339-01-01-2020 vom 21.03.2021.		

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OWENS CORNING PAROC

Produktsiegel

In der Baubranche spielt die Auswahl qualitativ hochwertiger Materialien eine zentrale Rolle für die Gesundheit in Gebäuden und deren Nachhaltigkeit. Produktlabels und Zertifikate bieten Orientierung, um diesen Anforderungen gerecht zu werden. Allerdings besitzt jedes Zertifikat und Label eigene Prüfkriterien, die genau betrachtet werden sollten, um sicherzustellen, dass sie den spezifischen Bedürfnissen eines Bauvorhabens entsprechen.

Der vom Umweltbundesamt als Zeichengeber und vom RAL e.V. als verantwortliche Prüforganisation verliehene „Blaue Engel" ist eines der ältesten und in Deutschland das am häufigsten vorkommende Umweltzeichen. Den „Blauen Engel" gibt es in zahlreichen Ausprägungen für die unterschiedlichsten Produktgruppen. Die zugrunde liegenden Prüfkriterien der jeweiligen Umweltzeichen (UZ) sollten in gesundheitlicher Hinsicht individuell betrachtet werden, da es durchaus Unterschiede in der Relevanz und Strenge gibt.

Produkte mit dem QNG-ready Siegel des Sentinel Holding Instituts eignen sich für Projekte, für welche das Qualitätssiegel Nachhaltiges Gebäude (QNG) angestrebt wird. QNG-ready Produkte erfüllen die Anforderungen des QNG Anhangdokument 3.1.3 "Schadstoffvermeidung in Baumaterialien". Das KfW-Kreditprogramm Klimafreundlicher Neubau mit QNG kann eine höhere Fördersumme ermöglichen.

Dieses Produkt ist schadstoffgeprüft und wird vom Sentinel Holding Institut empfohlen. Gesundes Bauen, Modernisieren und Betreiben von Immobilien erfolgt dank des Sentinel Holding Konzepts nach transparenten und nachvollziehbaren Kriterien.

EPD-Norge ist der norwegische Programmbetreiber für Environmental Product Declarations (EPDs). Das Programm richtet sich nach ISO 14025 und EN 15804 und stellt sicher, dass EPDs für Bau- und Industrieprodukte einheitlich, geprüft und vergleichbar veröffentlicht werden. Vor der Veröffentlichung wird jede EPD unabhängig verifiziert; EPD-Norge führt dafür klare Verfahren, Product Category Rules (PCR/NPCR) und ein öffentliches Register.

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Rechtliche Hinweise

(*) Die Kriterien dieses Steckbriefs beziehen sich auf das gesamte Bauobjekt. Die Bewertung erfolgt auf der Ebene des Gebäudes. Im Rahmen einer sachgemäßen Planung und fachgerechten Installation können einzelne Produkte einen positiven Beitrag zum Gesamtergebnis der Bewertung leisten. Das Sentinel Holding Institut stützt sich einzig auf die Angaben des Herstellers.

Alle Kriterien finden Sie unter:
https://www.sentinel-holding.eu/de/Themenwelten/Pr%C3%BCfkriterien%20f%C3%BCr%20Produkte

Wir sind stolz darauf, dass die SHI-Datenbank, die erste und einzige Datenbank für Bauprodukte ist, die ihre umfassenden Prozesse sowie die Aktualität regelmäßig von dem unabhängigen Prüfunternehmen SGS-TÜV Saar überprüfen lässt.

Herausgeber

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URKUNDE

PAROC GmbH
20097 Hamburg, Deutschland

wird aufgrund des Zeichenbenutzungsvertrages Nr. 37256 zur DE-UZ 132 Ausgabe 2020 das Recht verliehen, für das Produkt

Paroc Hvac Section AluCoat T
Paroc Hvac Combi AluCoat T
Paroc Hvac Bend AluCoat T
Paroc Hvac Lamella Mat AluCoat

das nachstehend abgebildete Umweltzeichen als Ausweis für die besondere Umweltfreundlichkeit zu führen.

Bonn, den 07. Dezember 2021

Geschäftsführer
RAL gGmbH

Bundesministerium für Umwelt, Naturschutz und nukleare Sicherheit

Umwelt Bundesamt

Jury Umweltzeichen

RAL gGmbH

CERTIFICATE

PAROC GmbH
20097 Hamburg, Germany

is granted the right, on the basis of the contract on the use of the environmental label no. 37256 based on DE-UZ 132 Edition 2020, for the product

Paroc Hvac Section AluCoat T
Paroc Hvac Combi AluCoat T
Paroc Hvac Bend AluCoat T
Paroc Hvac Lamella Mat AluCoat

to use the Blue Angel Ecolabel shown below as a sign of special environmental friendliness.

Bonn, 07 December 2021

Managing Director
RAL gGmbH

Bundesministerium für Umwelt, Naturschutz und nukleare Sicherheit

Umwelt Bundesamt

Jury Umweltzeichen

RAL gGmbH

DATENBLATT

PAROC Hvac Lamella Mat AluCoat

Steinwolle Lamellenmatte einseitig mit einer gitternetzverstärkten Aluminiumfolie kaschiert

Heizungs- und Brauchwasserlangen, Klima- und Lüftungsleitungen, Rohrleitungen in betriebstechnischen Anlagen, Behälter und Apparate.

Die Oberflächentemperatur der Kaschierung ist auf 80 °C zu begrenzen.

PAROC Steinwolle sind für besonders hohe Temperaturen geeignet. Ab einer Temperatur von ca. 200 °C erfolgt eine Bindemittelverflüchtigung. Die Dämmeigenschaften bleiben bei gleichzeitigem Abschwächen der Druckspannung aber unverändert. Der Schmelzpunkt von Steinwolle liegt bei 1000 °C.

Zulassungsnummer 0809-CPR-1016 Eurofins Expert Services Ltd, Kivimiehentie 4, FI-02150 Espoo. Finland

Bezeichnungsschlüssel MW-EN 14303-T4-ST(+)250-WS1-MV2-CL10

Verpackungen Folienverpackung, Palette

Palettengröße 1000 x 2400 mm

ABMESSUNGEN	
BREITE X LÄNGE	**DÄMMDICKE**
1000 x 10000 mm	20 mm
1000 x 9000 mm	25 mm
1000 x 8000 mm	30 mm
1000 x 6000 mm	40 mm
1000 x 5000 mm	50 mm
1000 x 4000 mm	60 mm
1000 x 3500 mm	70 mm
1000 x 3000 mm	80 mm
1000 x 2500 mm	90 mm
1000 x 2500 mm	100 mm
Gemäss EN 822	Gemäss EN 823
Andere Dimensionen: 1000 mm Breite auf Anfrage.	
AT/98-01-0382-03	

EIGENSCHAFT	WERT	GEMÄSS
FORMSTABILITÄT		
Obere Anwendungsgrenztemperatur - Dimensionsstabilität	250 °C	EN 14303:2009+A1:2013 (EN 14706)

Eigenschaften

EIGENSCHAFT	WERT	GEMÄSS
BRANDKLASSE		
Brandverhalten, Euroklasse	A1	EN 14303:2009+A1:2013 (EN 13501-1)
Glimmverhalten	NPD	EN 14303:2009+A1:2013
WÄRMELEITFÄHIGKEIT		
Wärmeleitfähigkeit bei 10 °C, λ_{10}	0,038 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Wärmeleitfähigkeit bei 50 °C, λ_{50}	0,047 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Wärmeleitfähigkeit bei 100 °C, λ_{100}	0,059 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Wärmeleitfähigkeit bei 150 °C, λ_{150}	0,074 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Wärmeleitfähigkeit bei 200 °C, λ_{200}	0,091 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Wärmeleitfähigkeit bei 250 °C, λ_{250}	0,110 W/mK	EN 14303:2009+A1:2013 (EN 12667)
Abmessungen und Toleranzen	T4	EN 14303:2009+A1:2013 (EN 823)
Wärmeleitfähigkeit bei 40 °C, λ_{40}	0,040 W/mK	GEG
FEUCHTIGKEIT		
Kurzzeitige Wasseraufnahme WS, (W_p)	≤ 1 kg/m²	EN 14303:2009+A1:2013 (EN 1609)
Wasserdampf-Diffusionswiderstandszahl MU, μ	NPD	EN 14303:2009+A1:2013
Wasserdampf-Diffusionswiderstand	MV2	EN 14303:2009+A1:2013 (EN 12086)
Chlorid-Ionen, Cl-	< 10 ppm	EN 14303:2009+A1:2013 (EN 13468)
SCHALLDÄMMEIGENSCHAFTEN		
Schallabsorption	NPD	EN 14303:2009+A1:2013 (EN ISO 354)
MECHANISCHE EIGENSCHAFTEN		
Druckspannung bei 10% Kompression CS(10), σ_{10}	NPD	EN 14303:2009+A1:2013 (EN 826)
EMISSION		
Freisetzung gefährlicher Stoffe	NPD	EN 14303:2009+A1:2013
BESTÄNDIGKEIT DER THERMISCHEN UND BRANDEIGENSCHAFTEN		
Dauerhaftigkeit des Brandverhaltens unter Einfluss von Alterung/Abbau	Bei Produkten aus Mineralwolle verändern sich die Brandverhaltenseigenschaften nicht. Das Brandverhalten von Produkten aus Mineralwolle verschlechtert sich nicht im Laufe der Zeit. Die Einstufung des Produkts in eine bestimmte Euroklasse bezieht sich auf den Gehalt an organischen Bestandteilen, der sich im Laufe der Zeit nicht erhöhen kann.	
Dauerhaftigkeit des Brandverhaltens unter Einfluss von hohen Temperaturen	Bei hohen Temperaturen erfolgt keine Verschlechterung des Brandverhaltens von Mineralwolle. Die Einstufung des Produkts in eine bestimmte Euroklasse bezieht sich auf den Gehalt an organischen Bestandteilen, der bei hohen Temperaturen gleich bleibt oder sich verringert.	
Dauerhaftigkeit des Wärmedurchlasswiderstandes unter Einfluss von Alterung/Abbau	Die Wärmeleitfähigkeit von Produkten aus Mineralwolle verändert sich nicht im Laufe der Zeit. Die Erfahrung hat gezeigt, dass die Faserstruktur stabil ist und die Porosität ausschließlich atmosphärische Luft enthält.	

PAROC GmbH, Heidenkampsweg 51, 20097 Hamburg, Telefon 0 40 88 30760,Telefax 0 40 88 307 6199, www.paroc.de

HINWEISE ZUR SICHEREN VERWENDUNG

Erstellungsdatum 14.3.2018 **Revisionsdatum** 02.12.2022 **Version 3**

0. ALLGEMEINE INFORMATION

Diese Anleitung für sicheren Gebrauch ist das Dokument, das von Paroc AB bereitgestellt wird, um Empfehlungen für die sichere Handhabung und den sicheren Gebrauch für hergestellte Erzeugnisse zu geben.

Die am 1. Juni 2007 in Kraft getretene Europäische Chemikalienverordnung (EG) Nr. 1907/2006 (REACH) erfordert ein Sicherheitsdatenblatt (SDB) nur für gefährliche Stoffe und Zubereitungen. Dieses Produkt gilt als Erzeugnis im Sinne von REACH, und daher ist ein SDB gesetzlich nicht vorgeschrieben.

1. BEZEICHNUNG

Produktname	Steinwolleprodukte
Synonyme	Steinwolleplatten, -matten, -rollen, Einblassteinwolle oder Steinwolle-Rohrstücke
Produktcode	OCPG00001
Empfohlene Verwendung	Gebäude-, technische, industrielle, Schall- und Brandschutzdämmung
Anschrift des Lieferanten	Paroc Group Oy Enegiakuja 3 00180 Helsinki
Anschrift des Herstellers	Paroc GmbH Heidenkampsweg 51 D-20097 Hamburg, Germany
Telefonnummer des Unternehmens	+49 (0) 40 33 49 60000
E-Mail-Adresse	emelia.samuelsson@owenscorning.com safetydatasheet@owenscorning.com
Unternehmenswebsite	http://paroc.de http://owenscorning.com

2. MÖGLICHE GEFAHREN

Rechtlicher Status	Dieses Produkt ist als Erzeugnis eingestuft. „Erzeugnis“ ist ein Gegenstand, der bei der Herstellung eine spezifische Form, Oberfläche oder Gestalt erhält, die in größerem Maße als die chemische Zusammensetzung seine Funktion bestimmt (Artikel 3 Absatz 3 REACH).
GHS-Einstufung	Dieses Produkt ist nach GHS-Kriterien nicht als gefährlich eingestuft. Dieses Produkt ist nach GHS der Vereinten Nationen 1.3.2.1.1 als Erzeugnis eingestuft.

3. ZUSAMMENSETZUNG / ANGABEN ZU BESTANDTEILEN

Bemerkungen

- Das Produkt enthält keine Stoffe, die in ihrer gegebenen Konzentration als gesundheitsgefährdend gelten.
- Mineralwolle kann aufgrund der mechanischen Abrasionswirkung der Fasern vorübergehenden Juckreiz auf der Haut und den Schleimhäuten verursachen.

4. ERSTE-HILFE-MASSNAHMEN

Beschreibung der Erste-Hilfe-Maßnahmen

Augenkontakt

- Die Augen NICHT reiben oder kratzen.
- Sofort mindestens 15 Minuten lang mit reichlich Wasser, auch unter den Augenlidern, ausspülen.
- Bei anhaltender Augenreizung ärztlichen Rat / ärztliche Hilfe einholen.

Hautkontakt

- Sofort mit reichlich kaltem Wasser und Seife abwaschen.
- Einen Waschlappen verwenden, um Fasern und Staub zu entfernen.
- Den betroffenen Bereich NICHT reiben oder kratzen.
- Kontaminierte Kleidung und Schuhe ausziehen.

Einatmen

- An die frische Luft gehen.

Verschlucken

- Den Mund mit Wasser ausspülen und Wasser trinken, um Fasern aus der Kehle zu entfernen.

5. MASSNAHMEN ZUR BRANDBEKÄMPFUNG

Entzündliche Eigenschaften

- Unverkleidete Materialien sind nicht brennbar. Verkleidungen und Verpackungen können brennbar sein.

Geeignete Löschmittel

- Löschmaßnahmen anwenden, die für die örtlichen Gegebenheiten und die Umgebung angemessen sind.

Schutzausrüstung und Vorsichtsmaßnahmen für die Brandbekämpfung

- Wie bei jedem Brand sind ein umluftunabhängiges Atemschutzgerät (positiv), MSHA-/NIOSH-zugelassen (oder gleichwertig), und vollständige Schutzausrüstung zu tragen.

6. MASSNAHMEN BEI UNBEABSICHTIGTER FREISETZUNG

Personenbezogene Vorsichtsmaßnahmen

- Augen- und Hautkontakt vermeiden.

Methoden für Reinigung

- Die vorgeschriebene persönliche Schutzausrüstung tragen.
- Entstehung von Staub vermeiden.
- Bei direktem Kontakt mit dem Produkt kontaminierte Schutzausrüstung reinigen.

7. HANDHABUNG UND LAGERUNG

Schutzmaßnahmen zur sicheren Lagerung

- Staubbildung verhindern und/oder minimieren, Staub NICHT einatmen.
- Bei direktem Kontakt mit dem Produkt geeignete persönliche Schutzausrüstung tragen (Atemfiltermaske).
- Gemäß guter Arbeitshygiene- und Sicherheitspraxis handhaben.

Lagerbedingungen

- Das Produkt bis zur Verwendung in der Verpackung lassen, um etwaige Staubbildung zu minimieren.
- Die Produkte sollten trocken und unter Abdeckung aufbewahrt werden.

Unverträgliche Materialien

- Basierend auf den gelieferten Informationen keine bekannt.

8. BEGRENZUNG UND ÜBERWACHUNG DER EXPOSITION / PERSÖNLICHE SCHUTZAUSRÜSTUNG

Expositionsrichtlinien

Bestandteil	ACGIH	Deutschland	Österreich	Schweiz
Mineralwolle 65997-17-3 (95-99)	Gesamtstaub: 10 mg/m^3 Lungengängiger Staub: 3 mg/m^3	Gesamtstaub: 10 mg/m^3 Lungengängiger Staub: 1,255 mg/m^3	Staub TWA: 10 mg/m^3 Lungengängige MMMF: 2 mg/m^3	Gesamtstaub: 10 mg/m^3 Lungengängiger Staub 3 mg/ m^3 Lungengängige MMMF: 0,5 f/cm^3

(ACGIH – American Conference of Governmental Industrial Hygienists)

(MMMF – Man-Made Mineral Fiber [künstlich hergestellte Fasern])

Technische Maßnahmen

- Für örtliche Absaugung und/oder allgemeine Belüftung sorgen, um die Exposition unter den gesetzlichen und empfohlenen Grenzwerten zu halten.
- Bei Übertragungsvorgängen, beim Schneiden oder anderen stauberzeugenden Prozessen, wie z. B. bei der Verwendung von kraftbetriebenen Werkzeugen, muss ein Staubsammelsystem verwendet werden.
- Für die Reinigung ist ein Staubsauger zu verwenden.

Personenbezogene Schutzmaßnahmen, wie persönliche Schutzausrüstung

Augen-/Gesichtsschutz

- Bei Überkopfarbeiten Schutzbrille mit Seitenschutz tragen.

Haut- und Körperschutz

- Schutzhandschuhe tragen.
- Unbedeckte Hautpartien schützen.

Atemschutz

- Wenn Arbeiter Feinstaub-/Staubkonzentrationen oberhalb der Expositionsgrenzwerte ausgesetzt sind, müssen sie geeigneten zertifizierten Atemschutz verwenden.
- Es wird eine ordnungsgemäß angepasste Einweg-Staubschutzmaske Typ P2 oder höher empfohlen.

Allgemeine Hygienemaßnahmen

- Vor Pausen und unmittelbar nach der Handhabung von Produkten die Hände waschen.
- Kontaminierte Kleidung ausziehen und vor erneutem Tragen waschen.

Die folgenden Sätze und Piktogramme sind auf der Verpackung abgedruckt
„Bei Kontakt der Fasern mit der Haut kann vorübergehender Juckreiz auftreten."

Wenn möglich, Arbeitsbereiche lüften.

Unbedeckte Hautpartien schützen. In unbelüfteten Räumen Einwegmaske tragen.

Bei Überkopfarbeiten Schutzbrille tragen.

Abfälle nach den örtlichen Bestimmungen entsorgen.

Arbeitsbereiche mit Staubsauer reinigen.

Hände vor dem Waschen mit kaltem Wasser abspülen.

9. PHYSIKALISCHE UND CHEMISCHE EIGENSCHAFTEN

Aggregatzustand	Fest
Aussehen	Faserig
Geruch	Geringer Geruch
Farbe	Graugrün
Entzündbarkeit	Nicht brennbar
Schmelzpunkt	> 1.000 °C
Wasserlöslichkeit	In Wasser unlöslich

10. STABILITÄT UND REAKTIVITÄT

Wenn Steinwolle-Dämmstoffe zum ersten Mal auf eine Temperatur von über 200°C erhitzt werden, beginnt das Bindemittel zu zerfallen. Die typischerweise entstehenden thermischen Abbauprodukte sind geruchsintensiv, reizen die oberen Schleimhäute und bestehen aus verschiedenen Kohlenwasserstoffen, Ammoniak, Aldehyden, Monoisocyanaten und Stickstoffkomponenten wie Aminen.

Die Zersetzungsgeschwindigkeit ist abhängig von der Temperatur, der Zeit und der Dauer der thermischen Einwirkung, der Produktdichte und der Dicke. Bei der jeweiligen maximalen thermischen Einwirkung ist die Zersetzungsrate zu Beginn am höchsten. Danach pendeln sich die Emissionen bei fortgesetzter Einwirkung der Spitzentemperatur ein. Wenn die Reduzierung des Emissionsniveaus bei einer Spitzentemperatur erfolgt ist, sind bei einer späteren Einwirkung bei derselben Temperatur keine weiteren Emissionen zu erwarten.

Kunden, die beim erstmaligen Aufheizen des Produkts besondere Vorsichtsmaßnahmen treffen möchten, wird empfohlen, für ausreichende Belüftung zu sorgen und den Aufenthalt in der Nähe der beheizten Konstruktion zu vermeiden. Wenn sie es nach ihrer eigenen Risikobewertung für notwendig erachten, dann können sie zudem für die erste Zeit sogar persönliche Schutzausrüstungen (wie z. B. Frischluft-Atemgeräte) für das Personal in der Nähe der beheizten Konstruktion verwendet werden. Bei unserer LE-Produktreihe wird eine deutlich geringere Menge an Monoisocyanat und Aldehyden freigesetzt.

11. TOXIKOLOGISCHE ANGABEN

Produktinformationen	Stäube können mechanische Augen- und Hautreizung verursachen. Verschlucken kann zu vorübergehender Reizung der Kehle, des Magens und des Magen-Darm-Trakts führen. Einatmen kann Husten, Nasen- und Rachenreizung und Niesen verursachen. Eine hohe Exposition kann zu Atembeschwerden, Stauung und Engegefühl in der Brust führen.
IARC (Internationale Agentur für Krebsforschung)	Im Oktober 2001 stufte die Internationale Agentur für Krebsforschung (IARC) Mineralwolle (Dämmglaswolle, Steinwolle und Schlackenwolle) in Gruppe 3, als „hinsichtlich der Karzinogenität für den Menschen nicht einstufbar“, ein. Die Entscheidung von 2001 basierte auf Humanstudien und Tierforschung, die keinen Zusammenhang zwischen Exposition durch Einatmen von Staub aus Mineralwolle und dem Entstehen von Atemwegserkrankungen nachgewiesen haben.

12. UMWELTBEZOGENE ANGABEN

Es wird nicht erwartet, dass dieses Produkt umweltgefährdend ist.

13. HINWEISE ZUR ENTSORGUNG

Die Entsorgung sollte gemäß den geltenden regionalen, nationalen und lokalen Gesetzen und Vorschriften erfolgen.
Restabfälle der Steinwolleprodukte sind gemäß den Bestimmungen des Europäischen Abfallkatalogs als ungefährlicher Abfall klassifiziert (Europäischer Abfallschlüssel 17 06 04) und können auf eine Deponie für ungefährlichen Abfall entsorgt werden.

14. ANGABEN ZUM TRANSPORT

Dieses Material unterliegt beim Transport keiner Regulierung als Gefahrstoff.

15. RECHTSVORSCHRIFTEN

Internationale Verzeichnisse

Dieses Produkt ist als Erzeugnis eingestuft. Erzeugnisse sind von der Registrierung oder Eintragung in Chemikalienverzeichnisse wie TSCA (USA), DSL/NDSL (CAN), REACH (EU), ENCS (JP), IECSC (CN), KECL (KR), PICCS (PH), AICS (AUS) befreit.

Europäische Verordnung

- Dieses Produkt ist als Erzeugnis eingestuft. Siehe Abschnitt 2
- Dieses Produkt enthält keine REACH-Stoffe, für die Beschränkungen gemäß Anhang XVII gelten.
- Dieses Produkt enthält keine Stoffe, die für eine Aufnahme in das Zulassungsverfahren gemäß REACH in Frage kommen.
- Dieses Produkt enthält keine Stoffe gemäß REACH Anhang XIV.

16. SONSTIGE ANGABEN

Paroc Steinwolleprodukte bestehen aus nicht klassifizierten Fasern und sind durch EUCEB (Übereinstimmung mit europäischem Recht) und RAL (Übereinstimmung mit deutschem Recht) zertifiziert.

Paroc Steinwollefasern erfüllen die Note Q gemäß europäischer Verordnung (EG) Nr. 1272/2008 sowie (EG) Nr. 790/2009 zur Einstufung, Kennzeichnung und Verpackung (CLP).

Das EUCEB (European Certification Board of mineral wool products) www.euceb.org ist ein freiwillige Initiative der Mineralwolleindustrie. Es ist eine unabhängige Zertifizierungsbehörde, die garantiert, dass die Produkte aus Fasern hergestellt werden, die den Haftungsausschlusskriterien von einer krebserzeugenden Einstufung (Note Q) der EU-Richtlinie 97/69/EG und der Verordnung (EG) 1272/2008 entsprechen. EUCEB ist nach ISO 9001:2000 zertifiziert.

Das RAL Gütezeichen – „Erzeugnisse aus Mineralwolle“ (www.ral-mineralwolle.de) ist eine Bestätigung für die regelmäßig neutral überwachte hohe Qualität und Sicherheit von Produkten aus Mineralwolle. Es kennzeichnet die Mineralwolleprodukte, die nach festgelegten Qualitätsbestimmungen geprüft und überwacht werden. Speziell bei Mineralwolle bedeutet dies die Einhaltung der Freizeichnungskriterien zur geforderten und ausreichenden Biolöslichkeit, dementsprechend nachgewiesene gesundheitliche Unbedenklichkeit der Dämmstoffe.

PAROC Steinwolleprodukte sind durch das RAL-Gütezeichen sowie das EUCEB-Logo auf der Verpackung gekennzeichnet.

Erstellungsdatum	14.3.2018
Revisionsdatum	02.12.2022
Revision verzeichnet	MDB-Abschnitte aktualisiert

Haftungsausschluss

Bei der Erstellung dieser Informationen wurde mit angemessener Sorgfalt vorgegangen, aber der Hersteller übernimmt keine Garantie für die Marktgängigkeit oder andere ausdrückliche oder stillschweigende Garantien in Bezug auf diese Informationen. Der Hersteller gibt keine Zusicherungen ab und übernimmt keine Haftung für direkte, beiläufig entstandene oder Folgeschäden, die sich aus ihrer Verwendung ergeben.

Ende der Hinweise zur sicheren Verwendung

epd-norway
Global Program Operator

ENVIRONMENTAL PRODUCT DECLARATION

ISO 14025, ISO 21930 and EN 15804

Owner of the declaration:	Paroc Group Oy
Program operator:	The Norwegian EPD Foundation
Publisher:	The Norwegian EPD Foundation
Declaration number:	NEPD-4099-3121-EN
Registration number:	NEPD-4099-3121-EN
ECO Platform reference number:	-
Issue date:	29.12.2022
Valid to:	29.12.2027

PAROC Stone Wool Thermal Insulation (Hvac Slabs & Mats & OEM Slabs)

PAROC Technical Insulation

Paroc Group Oy
Owner of the declaration

Product

Product:
PAROC Stone Wool Thermal Insulation (Hvac Fire Mat)

Program operator:
The Norwegian EPD Foundation
P.O. Box 5250 Majorstuen, N – 0303 Oslo, Norway
Phone: +47 23 08 80 00
E-mail: post@epd-norge.no

Declaration number:
NEPD-4099-3121-EN

ECO Platform reference number:

This declaration is based on Product Category Rules:
CEN Standard EN 15804 / version A1 / serves as core PCR
NPCR 012:2018 version 2. Part B for Thermal insulation products

Statement of liability:
The owner of the declaration shall be liable for the underlying information and evidence.
EPD Norway shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

Declared unit:
1 m² of stone wool with a thermal resistance (R) of 1 Km²/W. 1 m² PAROC Hvac Fire Mat at R=1 is at a weight of 3,15 kg with thickness of 35 mm.

Declared unit with option:
-

Functional unit:
1 m² of stone wool with thermal resistance (R) of 1 m²K/W with a reference service life of minimum 60 years. Impact excludes any lamination. See Annex, accompanying this EPD, for LCA results of facings.

The EPD has been worked out by:
Emelia Samuelsson, Paroc AB

Verification:

The CEN Norm EN 15804 serves as the core PCR. Independent verification of the declaration and data, according to ISO14025:2010

☐ internal ☒ external

Martin Erlandsson, IVL
(Independent verifier approved by EPD Norway)

Owner of the declaration:
Paroc Group Oy
Contact person: Emelia Samuelsson
Phone +46 (0) 500 46 90 05
E-mail: emelia.samuelsson@owenscorning.com

Manufacturer:
Paroc Group Oy
FI-00181, Helsinki
Finland

Place of production:
Trzemeszno, Poland
Hällekis, Sweden

Management system:
ISO 14001 and ISO 9001

Organisation no:
23025016

Issue date:
29.12.2022

Valid to:
29.12.2027

Year of study:
2018

Comparability:
EPD of construction products may not be comparable if they do not comply with EN 15804 and seen in a building context.

Approved

Håkon Hauan
(Managing Director EPD Norway)

Product

Product description:
Stone wool is made from volcanic rock, typically basalt or dolomite, and an increasing proportion of recycled material.

PAROC stone wool insulation is naturally non-combustible and durable. It is made of natural stone (~2%) and air (~98%). As stone wools thermal performance is based on static air, insulation products keep their energy saving abilities and dimensions in different temperature and moisture conditions during the life cycle of a building.

The HVAC systems in buildings perform many roles. PAROC solutions for HVAC include non-combustible and energy efficient insulation solutions for all parts of the HVAC system.

Market:
Mainly Sweden, Finland, Norway, Denmark, Poland, Germany, Austria, Czech Republic, Slovakia, Belarus

Reference service life:
The reference service lifetime of PAROC products is equal to the reference service life of the building. For the purpose of this EPD the reference service life is considered to be minimum 60 years, which is usually the assumption about the lifetime of the building where this is installed.

Product content:

Materials	%
Mineral Wool	96-99%
Binder (phenol-formaldehyde-urea-copolymer)	0-6%
Dustbinding (mineral oil)	0,1-0,5%

Technical data:

Name	Value	Unit
Thermal conductivity EN 12939 and EN 12667	0,035	W/(mK)
Thickness Class EN 823 EN 14303	T3-T5	
Fire Class EN 13501-1	A1	
Length and width EN 822 and EN 14303	L + excess, - 0 W ± 10	mm
Water vapour diffusion resistance factor /EN12086/	1	

LCA: Calculation Rules

Functional unit:
1 m² stone wool with a thermal resistance (R) of 1 Km^2W^{-1}.

The calculation of the weight per square meter is done as follows:

m^2-weight = density [kg/m^3] x insulation thickness [m] (in order to meet a specific thermal resistance) = m^2-weight insulation = density [kg/m^3[x R [m^2K/W] x λ [W/m K] = [kg/m^2].

The specific product, referred to in the declared unit, is 1 m^2 of PAROC Hvac Fire Mat (90 kg/m3).

Data quality:

The stone wool production data is line specific from plants in Hällekis, Sweden and Trzemeszno, Poland. Foreground data refer to the year 2018 and is weighted according to produced volumes 2018.

For life cycle modeling the GaBi 9 Software System for Life Cycle Assessment, developed by Sphera Solutions, Inc. (formerly known as thinkstep AG), is used (/GaBi 9 2020/). All relevant background datasets are taken from the GaBi 9 software database. To ensure comparability of results in the LCA, the basic data of GaBi database were used for energy, transportation, auxiliary materials and facing materials.

The datasets are complete and conform to the system boundaries and the criteria for the exclusion of inputs and outputs.

Background data refer to the years 2018 until 2021 (/GaBi 9 2020/) with a country specific scope as far as available, e.g., for raw material extraction and production, transportation, and energy supply.

All relevant processes (foreground and background) have been considered when modelling stone wool production. The process data and the used background data are consistent. The data quality can be qualified as good.

Allocation:

The allocation is made in accordance with the provisions of EN 15804.

Incoming energy, water and waste production in-house is allocated equally among all products through mass allocation. Effects of primary production of recycled materials allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

System boundary:
Table below identifies the modules included in this study.

According to EN 15804 any declared benefits and loads from net flows leaching the product system not allocated as co-products and have passed the end-of-waste state shall be included in the module D. Module D includes reuse, recovery and/or recycling potentials.

The production stage (A1-A3) covers the following steps:

- Raw materials production (e.g., dolomite, diabase, pre-production of facing material e.g., glass fleece etc.)
- Production of the stone wool itself and the facings application
- Component's production (e.g., resin)
- Transports of raw materials and pre-products to manufacturing plants
- Production of packaging materials
- Waste management, water treatment, end-of-life of residues

With the exception of Modules A1 to A3 (describing the manufacturing of stone wool) all other modules are calculated on the basis of assumptions or scenarios.

The following scenarios were considered in this study:

- Modules A4: The average distance to building site is 273 km.
- Modules A5: Packaging waste processing, waste generated at the installation is assumed to be 0 %.
- Modules C2-C4: Similar to installation scenario with similar kind of waste. In C2 a transport to waste treatment distance 50 km is assumed.
- Module D: Credits from waste treatment (recycling and incineration with energy recovery) of product parts after use and from installation losses.

Cut-off criteria:

All major raw materials and all the essential energy is included. The production process for raw materials and energy flows that are included with very small amounts (<1%) are not included. This cut-off rule does not apply for hazardous materials and substances.

The declared unit is 1 m^2 stone wool without any lamination. The impact from the additional facings shall be added to the result, see the Annex accompanying this EPD for the LCA results.

LCA: System Boundaries

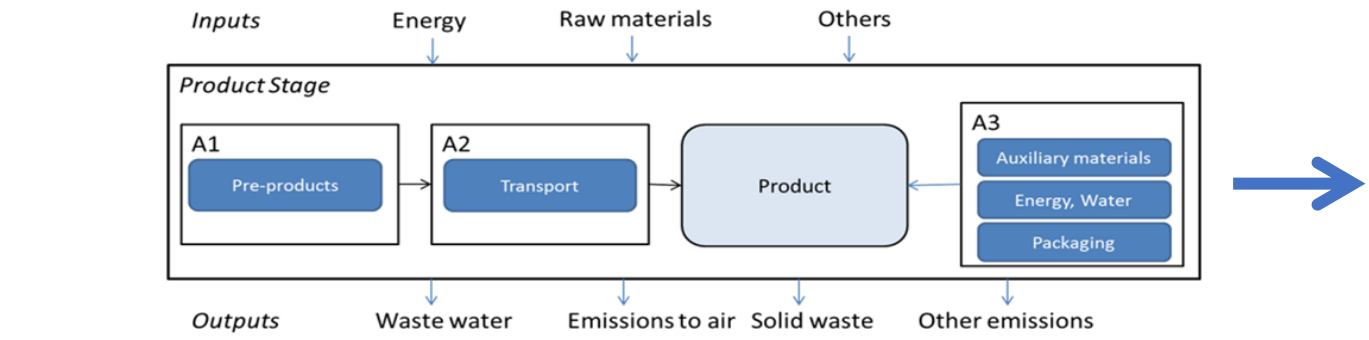

Figure 1. Schematic representation of the LCA system boundaries for the production module (A1-A3)

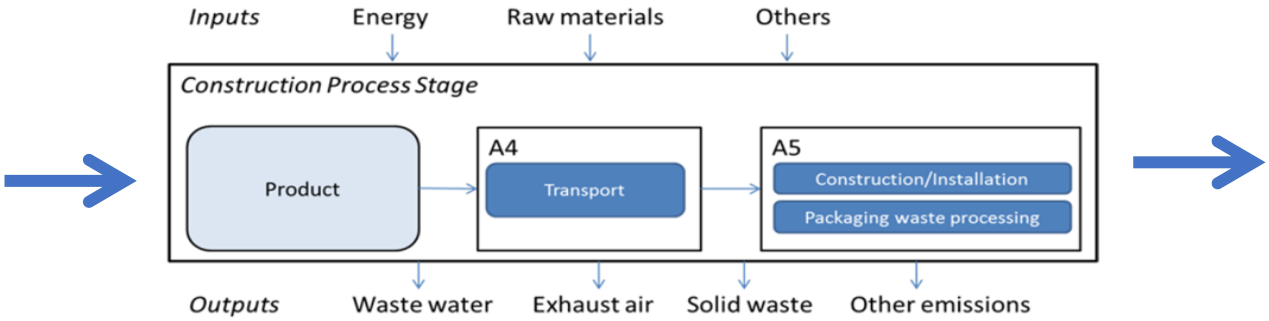

Figure 2. Schematic representation of the LCA system boundaries for the construction process stage (A4-A5)

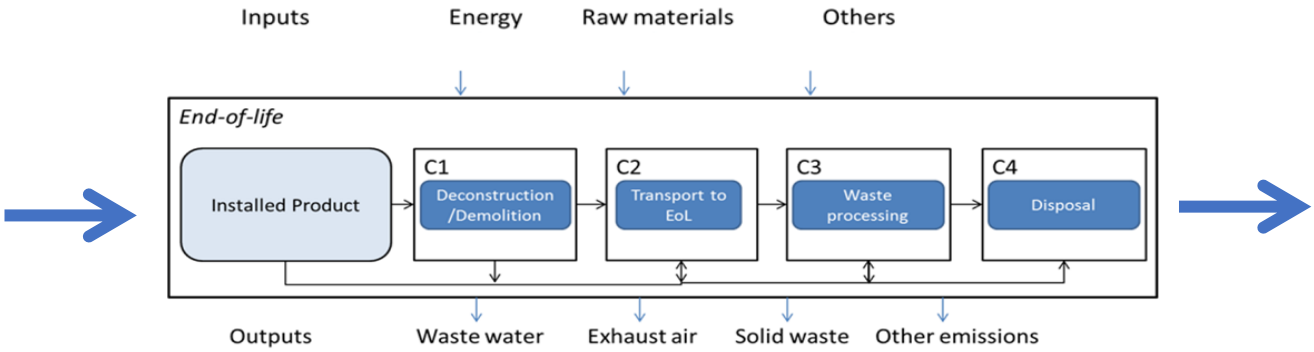

Figure 3. Schematic representation of the LCA system boundaries for the End-of-life stage (C1-C4)

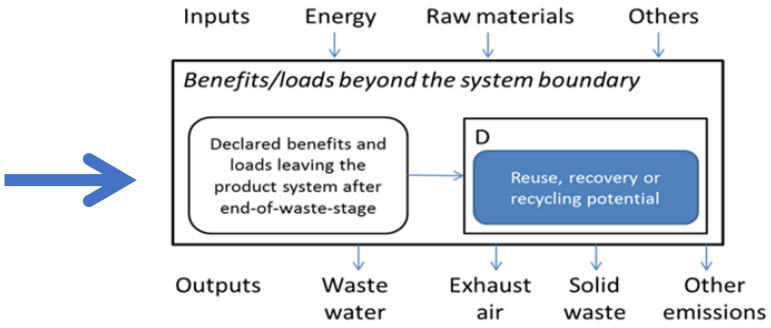

Figure 4. Schematic representation of the LCA system boundaries for the benefits and loads beyond the product system boundary in module D

LCA: Scenarios and Additional Technical Information

The following information describe the scenarios in the different modules of the EPD.

Transports to the customer are calculated on the basis of a scenario with an average truck trailer with a 27 t payload. For the final stone wool product, a loading ratio of 30 % of weight capacity has been set. The average transport distance to the customer is assumed to be 273 km as a basis for this study. The assumption is based on a 270 km distance for the Polish plant and a 277 km distance for the Swedish plant. Since the Polish plant contribute with a share of 53% and the Swedish plant with a share of 47% the weighted average distance is set to 273 km.

Transport to the Building Site (A4)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Energy use per km	Total energy use
Truck	100% (30% weight capacity)	Truck fleet	273	0,9 liter	245,7 liters

Installation in the Building (A5)

Parameter	Parameter expressed by functional unit
Auxiliary materials for the installation	Not applicable
Consumption of other resources	Not applicable
Quantitative description of the type of energy and consumption rate during the installation process	Not applicable
Wastes at the construction site generated from the installation of the product	Installation waste is assumed to be 0% since all material can be used within the building
Material outputs as a result from waste management processes at the installation site. For example, compilation for recycling, for energy recovery and final disposal	Waste management process for packaging materials
Emissions to air, soil and water	Not applicable

End of Life (C1, C2, C3, C4)

Parameter	Parameter expressed by functional unit
Compilation processes district	Not applicable
Recycling systems	Not applicable
Final disposal	3,15 kg Landfilling

Benefits/loads Beyond the System Boundary (D)

Materials that create a benefit in Module D are packaging materials. Benefits from the packaging waste treatment are considered in module D. Energy products of incineration (e.g. steam, electricity, metals) are credited using the European production averages (e.g. European grid mix for power). Credits are reported in module D.

LCA: Results

Life Cycle Impact Assessment results represent the environmental impacts for the life cycle of stone wool from cradle to grave.

The goal is to address all necessary parameters according to EN 15804 for creating EPDs. In a first step the results are calculated based on 1 kg stone wool representing the PAROC average. After that the data is scaled according to the provided density and lambda and fixed to the mass required for one square meter product with the respective R value = 1.

The PAROC Technical Insulation products are clustered according to their application into different product groups. Scaling factors are included in the EPD indicating the factor which to multiply with the indicators in order to get the environmental burden on product level described. The scaling factors solely refer to the stone wool used in these products, and thus do not include the different facings. Due to this fact, the variation is less than 10% by reason of the density, lambda and binder. The additional impact from the facings shall be added to the final result, see the Annex accompanying this EPD for the LCA results. The scaling calculation shall be done as follows:

Reference product environmental impact per m2 (4,23) x scaling factor of specific product + environmental impact of specific facing

Product groups
Hvac Lamella Mats
Hvac Mats
Hvac Slabs
OEM Slabs

Product Group	Product	Thickness	Scaling Factor
Hvac Lamella Mats	PAROC Hvac Lamella Mat	10-200	0,44

Product Group	Product	Thickness	Scaling Factor
Hvac Mats	PAROC FireVent Mat	10-200	0,84
	PAROC Vent Mat	10-200	0,84
	PAROC Hvac Fire Mat	10-200	1,00
	PAROC Hvac Fire Mat LT	10-200	0,92
	PAROC Hvac FireTherm Mat BlackCoat	10-200	0,70
	PAROC Hvac Mat	10-200	0,46
	PAROC Hvac VentMat	10-200	0,47
	PAROC Hvac Multimat	10-200	0,51

Product Group	Product	Thickness	Scaling Factor
Hvac Slabs	PAROC Slab 30	10-200	0,39
	PAROC Slab 45	10-200	0,55
	PAROC Slab 100	10-200	1,23
	PAROC Slab 140	10-200	1,82
	PAROC Fire Slab 90	10-200	1,05
	PAROC Fire Slab 100 R10	10-200	1,23
	PAROC Fire Slab 140	10-200	1,82
	PAROC Fire Steel Protect	10-200	2,02
	PAROC Hvac Slab	10-200	0,70
	PAROC Hvac Slab AluCoat	10-200	0,72
	PAROC Hvac Fire Slab EI30	10-200	0,98
	PAROC Hvac Fire Slab EI30 LT	10-200	0,98
	PAROC Hvac Fire Slab EI60	10-200	2,40
	PAROC Hvac Fire Slab EI60 LT	10-200	2,40
	PAROC Hvac Fire Slab EI90	10-200	2,40
	PAROC Hvac Fire Slab EI90 LT	10-200	2,40
	PAROC Hvac Fire Slab EI120	10-200	2,40
	PAROC Hvac Fire Slab EI120 LT	10-200	2,40
	PAROC Pyrotech Slab 140	10-200	1,82
	PAROC Pyrotech Slab 150	10-200	1,95
	PAROC Pyrotech Slab 160	10-200	2,08
	PAROC Pyrotech Slab 180	10-200	2,34

Product Group	Product	Thickness	Scaling Factor
OEM Slabs	PAROC Slab 40	10-200	0,52
	PAROC Slab 50	10-200	0,62
	PAROC Slab 70	10-200	0,86
	PAROC Slab 90	10-200	1,11
	PAROC Slab 100 R20	10-200	1,23
	PAROC Slab 100 R23	10-200	1,23
	PAROC Slab 100 R35	10-200	1,23
	PAROC Slab 110	10-200	1,35
	PAROC Slab 120	10-200	1,56
	PAROC Slab 120 R23	10-200	1,56
	PAROC Slab 120 R25	10-200	1,56
	PAROC Slab 140	10-200	1,82
	PAROC Slab 150	10-200	1,95
	PAROC Slab 150 R23	10-200	1,95
	PAROC Slab 160	10-200	2,08
	PAROC Slab 200	10-200	2,59
	PAROC Slab 220	10-200	2,85
	PAROC Fireplace Slab 80	10-200	0,98
	PAROC Fireplace Slab 90	10-200	1,11
	PAROC Fire Slab 80	10-200	0,98
	PAROC Fire Slab 110	10-200	1,35
	PAROC Silencer 60	10-200	0,74
	PAROC Block 70	10-200	0,86
	PAROC Block 80	10-200	0,98
	PAROC Block 80 R34	10-200	0,98
	PAROC Block 90	10-200	1,11
	PAROC Block 120	10-200	1,56
	PAROC Block 140	10-200	1,82
	PAROC InSolar 50	10-200	0,70
	PAROC InVent 40	10-200	0,52
	PAROC InVent 60	10-200	0,74
	PAROC InVent 80	10-200	0,98
	PAROC InVent 100	10-200	1,16
	PAROC InVent 120	10-200	1,56

LCA: Results

System Boundaries (X = declared module; MND = module not declared)																
Production			Installation		Use Stage							End-of-Life				Next Product System
Raw Material Supply (extraction, processing, recycled material)	Transport to Manufacturer	Manufacturing	Transport to Building Site	Installation into Building	Use / Application	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	De-Construction / Demolition	Transport to EoL	Waste Processing for Reuse, Recovery or Recycling	Disposal	Reuse, Recovery, Recycling Potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	X	MND	X	X

Environmental Impact: 1m² PAROC Hvac Fire Mat (per 3,15 kg)

Parameter	Unit	A1-A3	A4	A5	C2	C4	D
GWP-TOT*	[kg CO_2-eq.]	4,23*	0,0881	0,2719	0,0106	0,0429	-0,0804
ODP	[kg CFC11-eq.]	1,84E-008	1,43E-017	3,45E-017	1,73E-018	2,36E-016	-1,08E-015
AP	[kg SO_2-eq.]	0,0102	0,000235	1,98E-005	2,59E-005	0,000275	-9,87E-005
EP	[kg PO_4^{3-}eq.]	0,00172	5,86E-005	4,31E-006	6,4E-006	3,1E-005	-1,24E-005
POCP	[kg ethene-eq.]	0,000596	-8,76E-005	1,56E-006	-9,28E-006	2,07E-005	-9,16E-006
ADPM	[kg Sb-eq.]	6,64E-007	7,24E-009	1,81E-009	8,73E-010	1,65E-008	-1,45E-008
ADPE	[MJ]	34,5	1,19	0,00358	0,143	0,609	-1,14

GWP-TOT Global warming potential including emission and uptake of biogenic CO_2; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non-fossil resources; ADPE Abiotic depletion potential for fossil resources.

*A1-3: including 0,0989 kg CO_2-eq. uptake of biogenic carbon dioxide included in product (0 kg CO_2-eq.) and packaging (0,0989 kgCO_2-eq.).

Resource Use: 1 m² PAROC Hvac Fire Mat (per 3,15 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
RPEE	[MJ]	4,34	-	0,00766	-	-	-
RPEM	[MJ]	1,09	-	-1,09	-	-	-
TPE	[MJ]	5,43	0,0669	-1,08234	0,00807	0,0821	-0,289
NRPE	[MJ]	30,5	-	-	-	6,077	-
NRPM	[MJ]	5,45	-	-	-	-5,45	-
TRPE	[MJ]	35,9	1,19	0,0409	0,144	0,627	-1,39
SM	[kg]	0,18	0	0	0	0	0
RSF	[MJ]	0	0	0	0	0	0
NRSF	[MJ]	0	0	0	0	0	0
W	[m³]	0,0121	7,75E-005	0,00049	9,34E-006	0,000158	-0,000334

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water.

LCA: Results

End of Life – Waste: 1m² PAROC Hvac Fire Mat (per 3,15 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
HW	[kg]	5,95E-008	5,54E-008	2,94E-011	6,68E-009	9,56E-009	-5,54E-010
NHW	[kg]	0,571	0,000182	0,00128	2,2E-005	3,15	-0,000626
RW	[kg]	0,000306	1,47E-006	2,01E-006	1,78E-007	7,14E-006	-9,86E-005

HW Hazardous waste disposed; NHW Nonhazardous waste disposed; RW Radioactive waste disposed.

End of Life – Output Flow: 1m² PAROC Hvac Fire Mat (per 3,15 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
CR	[kg]	0	0	0	0	0	0
MR	[kg]	0	0	0	0	0	0
MER	[kg]	0	0	0,0989	0	0	0
EEE	[MJ]	0	0	0	0	0	0
ETE	[MJ]	0	0	0	0	0	0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy.

Key environmental indicators	Unit	Cradle to gate A1-A3	Transport ****
GWP-TOT Energy Use (=TPE+TRPE) Dangerous substances	kg $C0_2$-eqv MJ *	4,23 41,33 -	0,0881 1,2569 -

*The product contains no substances from the REACH Candidate list of the Norwegian priority list.

****Average transport from production site to customer.

Additional Norwegian Requirements

Greenhouse gas emissions from the use of hydroelectricity in the manufacturing phase

The selection of the background data for the hydroelectricity generation in Sweden and power grid mix in Poland is in line with EN 15804 and contribute to GWP as given below.

Greenhouse gas emissions		
Country	**Amount**	**Unit**
Poland Sweden	0,931 0,0143	kg CO_2-eqv/kWh kg CO_2-eqv/kWh

Dangerous substances

☒ The product contains no substances given by the REACH Candidate list or the Norwegian priority list. The product is classified as hazardous waste (Avfallsforskiften, Annex III), see table.

☐ The product contains substances given by the REACH Candidate list or the Norwegian priority list that are less than 0,1 % by weight.

☐ The product contains dangerous substances, more then 0,1% by weight, given by the REACH Candidate List or the Norwegian Priority list, see table.

☐ The product contains no substances given by the REACH Candidate list or the Norwegian priority list. The product is classified as hazardous waste (Avfallsforskiften, Annex III), see table.

Dangerous substances

None of the following substances have been added to the product: Substances on the REACH Candidate list of substances of very high concern or substances on the Norwegian Priority list as of 2022-06-10 or substances that lead to the product being classified as hazardous waste. The chemical content of the product complies with regulatory levels as given in the Norwegian Product Regulations.

Transport

Average transport distance from production site to customer is: 273 km

Carbon footprint

Carbon footprint has not been worked out for the product.

Bibliography

ISO 14025:2010	*Environmental labels and declarations – Type III environmental declarations – Principles and procedures.*
ISO 14040:2006	*Environmental management – Life cycle assessment – Principles and framework.*
ISO 14044:2006	*Environmental management – Life cycle assessment – Requirements and guidelines.*
EN 15804:2012+A1:2013	*Sustainability of construction works – Environmental product declaration – Core rules for the product category of construction products.*
ISO 21930:2007	*Sustainability in building construction – Environmental declaration of building products.*
Goymann M, Kanekar H, Bernard Y	*Background report for EPD of Paroc Stone Wool Insulation. September 2020, revised October 2022.*
PCR	*NPCR 012:2018 version 2. Part B for Thermal insulation products*

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Global Program Operator

Annex to the ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025, ISO 21930 and EN 15804

Owner of the declaration:	Paroc Group Oy
Program operator:	The Norwegian EPD Foundation
Publisher:	The Norwegian EPD Foundation
Declaration number:	Annex to NEPD-4098/4099/4100/4101/4102-3121-EN
Registration number:	Annex to NEPD-4098/4099/4100/4101/4102-3121-EN
ECO Platform reference number:	-
Issue date:	29.12.2022
Valid to:	29.12.2027

For the following facing options for PAROC Stone Wool Thermal Technical Insulation Products

AL1, AL6, AL8, AluCoat Fix, AluCoat/AirCoat, BlackCoat, Clad, Comfort/N4, G1, G2, G3, G4, G5/G6/G9, G7, Galvanized Steel Wire Mesh, LF1, N1/N9, N3/N5/N7, N6, N8, Tape, W1, W2

Paroc Group Oy
Owner of the declaration

LCA: Results

This Annex is a supplementary document to the verified EPDs for PAROC Stone Wool Thermal Technical Insulation.

Life Cycle Impact Assessment results represent the environmental impacts for the life cycle of facings from cradle to grave. The goal is to address all necessary parameters according to EN 15804 for creating EPDs and follows the same calculation rules as for the PAROC Stone Wool Thermal Insulation.

The results below shall be added to the final results for those PAROC technical insulation products that has a facing(s). Some facings are covered by the same results due to similar weight and composition, however the results always represent impact per each facing. The calculation shall be done as follows.

(Reference product's environmental impact per m2 x scaling factor of specific product) + environmental impact of specific facing(s)

System Boundaries (X = declared module; MND = module not declared)																
Production			Installation		Use Stage							End-of-Life				Next Product System
Raw Material Supply (extraction, processing, recycled material)	Transport to Manufacturer	Manufacturing	Transport to Building Site	Installation into Building	Use / Application	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	De-Construction / Demolition	Transport to EoL	Waste Processing for Reuse, Recovery or Recycling	Disposal	Reuse, Recovery, Recycling Potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	X	MND	X	X

Environmental Impact: 1m² AL1 (per 0,133 kg)

Parameter	Unit	A1-A3	A4	A5	C2	C4	D
GWP-TOT*	[kg CO_2-eq.]	1,01	0,0036623	0	0,000446	0,00181	0
ODP	[kg CFC11-eq.]	6,35E-15	5,9505E-19	0	7,27E-20	9,94E-18	0
AP	[kg SO_2-eq.]	0,00418	9,8075E-06	0	1,09E-06	1,16E-05	0
EP	[kg PO_4^{3-}eq.]	0,000262	2,4429E-06	0	2,69E-07	1,31E-06	0
POCP	[kg ethene-eq.]	0,000274	-3,6523E-06	0	-3,91E-07	8,71E-07	0
ADPM	[kg Sb-eq.]	4,78E-07	3,0076E-10	0	3,68E-11	6,97E-10	0
ADPE	[MJ]	12,2	0,049311	0	0,00603	0,0256	0

GWP-TOT Global warming potential including emission and uptake of biogenic CO_2; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non-fossil resources; ADPE Abiotic depletion potential for fossil resources.

*A1-3: including 0 kg CO_2-eq. uptake of biogenic carbon dioxide included in product (0 kg CO_2-eq.) and packaging (0 kgCO_2-eq.).

LCA: Results

Resource Use: 1m² AL1 (per 0,133 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
RPEE	[MJ]	5,52	-	-	-	-	-
RPEM	[MJ]	0	-	-	-	-	-
TPE	[MJ]	5,42	0,0027829	0	0,00034	0,00346	0
NRPE	[MJ]	14,2	-	-	-	-	-
NRPM	[MJ]	0	-	-	-	-	-
TRPE	[MJ]	14,2	0,049511	0	0,00605	0,0264	0
SM	[kg]	0	0	0	0	0	0
RSF	[MJ]	0	0	0	0	0	0
NRSF	[MJ]	0	0	0	0	0	0
W	[m³]	0,0133	3,2176E-06	0	3,93E-07	6,66E-06	0

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water.

End of Life – Waste: 1m² AL1 (per 0,133 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
HW	[kg]	7,79E-09	2,3035E-09	0	2,81E-10	4,02E-10	0
NHW	[kg]	0,257	0,000007574	0	9,25E-07	0,133	0
RW	[kg]	0,000784	6,1252E-08	0	7,48E-09	3,00E-07	0

HW Hazardous waste disposed; NHW Nonhazardous waste disposed; RW Radioactive waste disposed.

End of Life – Output Flow: 1m² AL1 (per 0,133 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
CR	[kg]	0	0	0	0	0	0
MR	[kg]	0	0	0	0	0	0
MER	[kg]	0	0	0	0	0	0
EEE	[MJ]	0	0	0	0	0	0
ETE	[MJ]	0	0	0	0	0	0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy.

LCA: Results

Environmental Impact: 1m² AL6 (per 0,133 kg)

Parameter	Unit	A1-A3	A4	A5	C2	C4	D
GWP-TOT*	[kg CO_2-eq.]	0,676	0,003672	0	0,000448	0,00181	0
ODP	[kg CFC11-eq.]	4,53E-15	5,97E-19	0	7,29E-20	9,97E-18	0
AP	[kg SO_2-eq.]	0,00234	9,84E-06	0	1,09E-06	1,16E-05	0
EP	[kg PO_4^{3-}eq.]	0,000167	2,45E-06	0	2,70E-07	1,31E-06	0
POCP	[kg ethene-eq.]	0,00018	-3,7E-06	0	-3,92E-07	8,74E-07	0
ADPM	[kg Sb-eq.]	1,55E-06	3,02E-10	0	3,69E-11	6,99E-10	0
ADPE	[MJ]	10,2	0,049511	0	0,00605	0,0257	0

GWP-TOT Global warming potential including emission and uptake of biogenic CO_2; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non-fossil resources; ADPE Abiotic depletion potential for fossil resources.

*A1-3: including 0 kg CO_2-eq. uptake of biogenic carbon dioxide included in product (0 kg CO_2-eq.) and packaging (0 kgCO_2-eq.).

Resource Use: 1m² AL6 (per 0,133 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
RPEE	[MJ]	2,89	-	-	-	-	-
RPEM	[MJ]	0	-	-	-	-	-
TPE	[MJ]	2,89	0,002788	0	0,000341	0,00347	0
NRPE	[MJ]	11,4	-	-	-	-	-
NRPM	[MJ]	0	-	-	-	-	-
TRPE	[MJ]	11,4	0,049611	0	0,00606	0,0265	0
SM	[kg]	0	0	0	0	0	0
RSF	[MJ]	0	0	0	0	0	0
NRSF	[MJ]	0	0	0	0	0	0
W	[m^3]	0,00715	3,23E-06	0	3,94E-07	6,68E-06	0

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water.

LCA: Results

End of Life – Waste: 1m² AL6 (per 0,133 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
HW	[kg]	5,78E-09	2,31E-09	0	2,82E-10	4,04E-10	0
NHW	[kg]	0,125	7,59E-06	0	9,28E-07	0,133	0
RW	[kg]	0,00047	6,15E-08	0	7,51E-09	3,01E-07	0

HW Hazardous waste disposed; NHW Nonhazardous waste disposed; RW Radioactive waste disposed.

End of Life – Output Flow: 1m² AL6 (per 0,133 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
CR	[kg]	0	0	0	0	0	0
MR	[kg]	0	0	0	0	0	0
MER	[kg]	0	0	0	0	0	0
EEE	[MJ]	0	0	0	0	0	0
ETE	[MJ]	0	0	0	0	0	0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy.

Environmental Impact: 1m² AL8 (per 0,103 kg)

Parameter	Unit	A1-A3	A4	A5	C2	C4	D
GWP-TOT*	[kg CO_2-eq.]	0,61	0,002843	0	0,000347	0,0014	0
ODP	[kg CFC11-eq.]	3,93E-15	4,62E-19	0	5,65E-20	7,72E-18	0
AP	[kg SO_2-eq.]	0,00234	7,62E-06	0	8,48E-07	9,00E-06	0
EP	[kg PO_4^{3-}eq.]	0,000155	1,9E-06	0	2,09E-07	1,01E-06	0
POCP	[kg ethene-eq.]	0,000163	-2,8E-06	0	-3,03E-07	6,77E-07	0
ADPM	[kg Sb-eq.]	1,46E-06	2,34E-10	0	2,86E-11	5,41E-10	0
ADPE	[MJ]	8,3	0,038323	0	0,00468	0,0199	0

GWP-TOT Global warming potential including emission and uptake of biogenic CO_2; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non-fossil resources; ADPE Abiotic depletion potential for fossil resources.

*A1-3: including 0,001 kg CO_2-eq. uptake of biogenic carbon dioxide included in product (0,001 kg CO_2-eq.) and packaging (0 kgCO_2-eq.).

LCA: Results

Resource Use: 1m² AL8 (per 0,103 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
RPEE	[MJ]	2,87	-	-	-	-	-
RPEM	[MJ]	0	-	-	-	-	-
TPE	[MJ]	2,87	0,002158	0	0,000264	0,00269	0
NRPE	[MJ]	9,42	-	-	-	-	-
NRPM	[MJ]	0	-	-	-	-	-
TRPE	[MJ]	9,42	0,03847	0	0,0047	0,0205	0
SM	[kg]	0	0	0	0	0	0
RSF	[MJ]	0	0	0	0	0	0
NRSF	[MJ]	0	0	0	0	0	0
W	[m³]	0,00706	2,5E-06	0	3,05E-07	5,17E-06	0

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water.

End of Life – Waste: 1m² AL8 (per 0,103 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
HW	[kg]	5,01E-09	1,79E-09	0	2,19E-10	3,13E-10	0
NHW	[kg]	0,132	5,88E-06	0	7,19E-07	0,103	0
RW	[kg]	0,000444	4,76E-08	0	5,81E-09	2,33E-07	0

HW Hazardous waste disposed; NHW Nonhazardous waste disposed; RW Radioactive waste disposed.

End of Life – Output Flow: 1m² AL8 (per 0,103 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
CR	[kg]	0	0	0	0	0	0
MR	[kg]	0	0	0	0	0	0
MER	[kg]	0	0	0	0	0	0
EEE	[MJ]	0	0	0	0	0	0
ETE	[MJ]	0	0	0	0	0	0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy.

LCA: Results

Environmental Impact: 1m² AluCoat Fix (per 0,133 kg)

Parameter	Unit	A1-A3	A4	A5	C2	C4	D
GWP-TOT*	[kg CO_2-eq.]	1,11	0,003672	0	0,000448	0,00181	0
ODP	[kg CFC11-eq.]	9,86E-15	5,97E-19	0	7,29E-20	9,97E-18	0
AP	[kg SO_2-eq.]	0,00307	9,84E-06	0	1,09E-06	1,16E-05	0
EP	[kg PO_4^{3-}eq.]	0,000291	2,45E-06	0	2,70E-07	1,31E-06	0
POCP	[kg ethene-eq.]	0,000271	-3,7E-06	0	-3,92E-07	8,74E-07	0
ADPM	[kg Sb-eq.]	5,20E-06	3,02E-10	0	3,69E-11	6,99E-10	0
ADPE	[MJ]	16	0,049511	0	0,00605	0,0257	0

GWP-TOT Global warming potential including emission and uptake of biogenic CO_2; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non-fossil resources; ADPE Abiotic depletion potential for fossil resources.

*A1-3: including 0 kg CO_2-eq. uptake of biogenic carbon dioxide included in product (0 kg CO_2-eq.) and packaging (0 kgCO_2-eq.).

Resource Use: 1m² AluCoat Fix (per 0,133 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
RPEE	[MJ]	4,64	-	-	-	-	-
RPEM	[MJ]	0	-	-	-	-	-
TPE	[MJ]	4,64	0,002788	0	0,000341	0,00347	0
NRPE	[MJ]	17,6	-	-	-	-	-
NRPM	[MJ]	0	-	-	-	-	-
TRPE	[MJ]	17,6	0,049611	0	0,00606	0,0265	0
SM	[kg]	0	0	0	0	0	0
RSF	[MJ]	0	0	0	0	0	0
NRSF	[MJ]	0	0	0	0	0	0
W	[m^3]	0,00935	3,23E-06	0	3,94E-07	6,68E-06	0

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water.

LCA: Results

End of Life – Waste: 1m² AluCoat Fix (per 0,133 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
HW	[kg]	2,95E-08	2,31E-09	0	2,82E-10	4,04E-10	0
NHW	[kg]	0,2	7,59E-06	0	9,28E-07	0,133	0
RW	[kg]	0,00064	6,15E-08	0	7,51E-09	3,01E-07	0

HW Hazardous waste disposed; NHW Nonhazardous waste disposed; RW Radioactive waste disposed.

End of Life – Output Flow: 1m² AluCoat Fix (per 0,133 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
CR	[kg]	0	0	0	0	0	0
MR	[kg]	0	0	0	0	0	0
MER	[kg]	0	0	0	0	0	0
EEE	[MJ]	0	0	0	0	0	0
ETE	[MJ]	0	0	0	0	0	0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy.

Environmental Impact: 1m² AluCoat/AirCoat (per 0,083 kg)

Parameter	Unit	A1-A3	A4	A5	C2	C4	D
GWP-TOT*	[kg CO_2-eq.]	0,576	0,002288	0	0,000279	0,00113	0
ODP	[kg CFC11-eq.]	3,68E-15	3,72E-19	0	4,55E-20	6,22E-18	0
AP	[kg SO_2-eq.]	0,00222	6,14E-06	0	6,83E-07	7,25E-06	0
EP	[kg PO_4^{3-}eq.]	0,000142	1,53E-06	0	1,69E-07	8,17E-07	0
POCP	[kg ethene-eq.]	0,000158	-2,3E-06	0	-2,45E-07	5,45E-07	0
ADPM	[kg Sb-eq.]	1,32E-06	1,88E-10	0	2,30E-11	4,36E-10	0
ADPE	[MJ]	7,7	0,030876	0	0,00377	0,0161	0

GWP-TOT Global warming potential including emission and uptake of biogenic CO_2; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non-fossil resources; ADPE Abiotic depletion potential for fossil resources.

*A1-3: including 0 kg CO_2-eq. uptake of biogenic carbon dioxide included in product (0 kg CO_2-eq.) and packaging (0 kgCO_2-eq.).

LCA: Results

Resource Use: 1m² AluCoat/AirCoat (per 0,083 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
RPEE	[MJ]	2,74	-	-	-	-	-
RPEM	[MJ]	0	-	-	-	-	-
TPE	[MJ]	2,74	0,001739	0	0,000213	0,00216	0
NRPE	[MJ]	8,83	-	-	-	-	-
NRPM	[MJ]	0	-	-	-	-	-
TRPE	[MJ]	8,83	0,030976	0	0,00378	0,0165	0
SM	[kg]	0	0	0	0	0	0
RSF	[MJ]	0	0	0	0	0	0
NRSF	[MJ]	0	0	0	0	0	0
W	[m³]	0,00666	2,01E-06	0	2,46E-07	4,17E-06	0

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water.

End of Life – Waste: 1m² AluCoat/AirCoat (per 0,083 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
HW	[kg]	4,22E-09	1,44E-09	0	1,76E-10	2,52E-10	0
NHW	[kg]	0,124	4,74E-06	0	5,79E-07	0,0831	0
RW	[kg]	0,000444	3,84E-08	0	4,68E-09	1,88E-07	0

HW Hazardous waste disposed; NHW Nonhazardous waste disposed; RW Radioactive waste disposed.

End of Life – Output Flow: 1m² AluCoat/AirCoat (per 0,083 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
CR	[kg]	0	0	0	0	0	0
MR	[kg]	0	0	0	0	0	0
MER	[kg]	0	0	0	0	0	0
EEE	[MJ]	0	0	0	0	0	0
ETE	[MJ]	0	0	0	0	0	0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy.

LCA: Results

Environmental Impact: 1m² BlackCoat (per 0,09 kg)

Parameter	Unit	A1-A3	A4	A5	C2	C4	D
GWP-TOT*	[kg CO_2-eq.]	0,616	0,002483	0	0,000303	0,00123	0
ODP	[kg CFC11-eq.]	4,08E-15	4,04E-19	0	4,93E-20	6,75E-18	0
AP	[kg SO_2-eq.]	0,00226	6,66E-06	0	7,41E-07	7,87E-06	0
EP	[kg PO_4^{3-}eq.]	0,000151	1,66E-06	0	1,83E-07	8,86E-07	0
POCP	[kg ethene-eq.]	0,000165	-2,5E-06	0	-2,65E-07	5,91E-07	0
ADPM	[kg Sb-eq.]	1,45E-06	2,04E-10	0	2,50E-11	4,73E-10	0
ADPE	[MJ]	8,49	0,033476	0	0,00409	0,0174	0

GWP-TOT Global warming potential including emission and uptake of biogenic CO_2; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non-fossil resources; ADPE Abiotic depletion potential for fossil resources.

*A1-3: including 0 kg CO_2-eq. uptake of biogenic carbon dioxide included in product (0 kg CO_2-eq.) and packaging (0 kgCO_2-eq.).

Resource Use: 1m² BlackCoat (per 0,09 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
RPEE	[MJ]	2,81	-	-	-	-	-
RPEM	[MJ]	0	-	-	-	-	-
TPE	[MJ]	2,81	0,001884	0	0,00023	0,00235	0
NRPE	[MJ]	9,64	-	-	-	-	-
NRPM	[MJ]	0	-	-	-	-	-
TRPE	[MJ]	9,64	0,033576	0	0,0041	0,0179	0
SM	[kg]	0	0	0	0	0	0
RSF	[MJ]	0	0	0	0	0	0
NRSF	[MJ]	0	0	0	0	0	0
W	[m^3]	0,00678	2,18E-06	0	2,67E-07	4,52E-06	0

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water.

LCA: Results

End of Life – Waste: 1m² BlackCoat (per 0,09 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
HW	[kg]	-2,37E-09	1,56E-09	0	1,91E-10	2,73E-10	0
NHW	[kg]	0,125	5,14E-06	0	6,28E-07	0,0901	0
RW	[kg]	0,000456	4,16E-08	0	5,08E-09	2,04E-07	0

HW Hazardous waste disposed; NHW Nonhazardous waste disposed; RW Radioactive waste disposed.

End of Life – Output Flow: 1m² BlackCoat (per 0,09 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
CR	[kg]	0	0	0	0	0	0
MR	[kg]	0	0	0	0	0	0
MER	[kg]	0	0	0	0	0	0
EEE	[MJ]	0	0	0	0	0	0
ETE	[MJ]	0	0	0	0	0	0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy.

Environmental Impact: 1m² Clad (per 0,35 kg)

Parameter	Unit	A1-A3	A4	A5	C2	C4	D
GWP-TOT*	[kg CO_2-eq.]	1,26	0,0096628	0	0,00118	0,00477	0
ODP	[kg CFC11-eq.]	9,02E-15	1,5688E-18	0	1,92E-19	2,62E-17	0
AP	[kg SO_2-eq.]	0,00606	0,000025882	0	2,88E-06	3,06E-05	0
EP	[kg PO_4^{3-}eq.]	0,000382	6,4499E-06	0	7,11E-07	3,45E-06	0
POCP	[kg ethene-eq.]	0,000423	-9,6375E-06	0	-1,03E-06	2,30E-06	0
ADPM	[kg Sb-eq.]	1,70E-05	7,944E-10	0	9,70E-11	1,84E-09	0
ADPE	[MJ]	19,4	0,13041	0	0,0159	0,0677	0

GWP-TOT Global warming potential including emission and uptake of biogenic CO_2; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non-fossil resources; ADPE Abiotic depletion potential for fossil resources.

*A1-3: including 0 kg CO_2-eq. uptake of biogenic carbon dioxide included in product (0 kg CO_2-eq.) and packaging (0 kgCO_2-eq.).

LCA: Results

Resource Use: 1m² Clad (per 0,35 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
RPEE	[MJ]	5,3	-	-	-	-	-
RPEM	[MJ]	0	-	-	-	-	-
TPE	[MJ]	5,3	0,0073346	0	0,000896	0,00912	0
NRPE	[MJ]	22,1	-	-	-	-	-
NRPM	[MJ]	0	-	-	-	-	-
TRPE	[MJ]	22,1	0,13041	0	0,016	0,0697	0
SM	[kg]	0	0	0	0	0	0
RSF	[MJ]	0	0	0	0	0	0
NRSF	[MJ]	0	0	0	0	0	0
W	[m³]	0,0128	8,4934E-06	0	1,04E-06	1,76E-05	0

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water.

End of Life – Waste: 1m² Clad (per 0,35 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
HW	[kg]	1,19E-08	6,0805E-09	0	7,43E-10	1,06E-09	0
NHW	[kg]	0,239	0,000019982	0	2,44E-06	0,35	0
RW	[kg]	0,00105	1,6188E-07	0	1,98E-08	7,93E-07	0

HW Hazardous waste disposed; NHW Nonhazardous waste disposed; RW Radioactive waste disposed.

End of Life – Output Flow: 1m² Clad (per 0,35 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
CR	[kg]	0	0	0	0	0	0
MR	[kg]	0	0	0	0	0	0
MER	[kg]	0	0	0	0	0	0
EEE	[MJ]	0	0	0	0	0	0
ETE	[MJ]	0	0	0	0	0	0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy.

LCA: Results

Environmental Impact: 1m² Comfort/N4 (per 0,015 kg)

Parameter	Unit	A1-A3	A4	A5	C2	C4	D
GWP-TOT*	[kg CO_2-eq.]	0,0939	0,00041417	0	5,05E-05	0,000204	0
ODP	[kg CFC11-eq.]	1,28E-15	6,7299E-20	0	8,22E-21	1,12E-18	0
AP	[kg SO_2-eq.]	0,000103	1,1094E-06	0	1,23E-07	1,31E-06	0
EP	[kg PO_4^{3-}eq.]	1,70E-05	2,7629E-07	0	3,05E-08	1,48E-07	0
POCP	[kg ethene-eq.]	1,88E-05	-4,1317E-07	0	-4,42E-08	9,86E-08	0
ADPM	[kg Sb-eq.]	2,17E-08	3,4023E-11	0	4,16E-12	7,88E-11	0
ADPE	[MJ]	1,79	0,0055805	0	0,000682	0,0029	0

GWP-TOT Global warming potential including emission and uptake of biogenic CO_2; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non-fossil resources; ADPE Abiotic depletion potential for fossil resources.

*A1-3: including 0,0001 kg CO_2-eq. uptake of biogenic carbon dioxide included in product (0,0001 kg CO_2-eq.) and packaging (0 kgCO_2-eq.).

Resource Use: 1m² Comfort/N4 (per 0,015 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
RPEE	[MJ]	0,253	-	-	-	-	-
RPEM	[MJ]	0	-	-	-	-	-
TPE	[MJ]	0,253	0,00031476	0	3,84E-05	0,000391	0
NRPE	[MJ]	1,92	-	-	-	-	-
NRPM	[MJ]	0	-	-	-	-	-
TRPE	[MJ]	1,92	0,0055958	0	0,000684	0,00299	0
SM	[kg]	0	0	0	0	0	0
RSF	[MJ]	0	0	0	0	0	0
NRSF	[MJ]	0	0	0	0	0	0
W	[m^3]	0,000385	3,6423E-07	0	4,45E-08	7,53E-07	0

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water.

LCA: Results

End of Life – Waste: 1m² Comfort/N4 (per 0,015 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
HW	[kg]	8,47E-10	2,6029E-10	0	3,18E-11	4,55E-11	0
NHW	[kg]	0,00151	8,5634E-07	0	1,05E-07	0,015	0
RW	[kg]	5,25E-05	6,9299E-09	0	8,47E-10	3,40E-08	0

HW Hazardous waste disposed; NHW Nonhazardous waste disposed; RW Radioactive waste disposed.

End of Life – Output Flow: 1m² Comfort/N4 (per 0,015 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
CR	[kg]	0	0	0	0	0	0
MR	[kg]	0	0	0	0	0	0
MER	[kg]	0	0	0	0	0	0
EEE	[MJ]	0	0	0	0	0	0
ETE	[MJ]	0	0	0	0	0	0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy.

Environmental Impact: 1m² G1 (per 0,24 kg)

Parameter	Unit	A1-A3	A4	A5	C2	C4	D
GWP-TOT*	[kg CO_2-eq.]	0,485	0,0066299	0	8,08E-04	0,00327	0
ODP	[kg CFC11-eq.]	4,55E-15	1,0741E-18	0	1,32E-19	1,80E-17	0
AP	[kg SO_2-eq.]	0,00273	0,000017735	0	1,98E-06	2,10E-05	0
EP	[kg PO_4^{3-}eq.]	1,79E-04	4,4217E-06	0	4,88E-07	2,36E-06	0
POCP	[kg ethene-eq.]	1,88E-04	-6,6099E-06	0	-7,07E-07	1,58E-06	0
ADPM	[kg Sb-eq.]	1,72E-05	5,4458E-10	0	6,65E-11	1,26E-09	0
ADPE	[MJ]	8,86	0,089281	0	0,0109	0,0464	0

GWP-TOT Global warming potential including emission and uptake of biogenic CO_2; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non-fossil resources; ADPE Abiotic depletion potential for fossil resources.

*A1-3: including 0,003 kg CO_2-eq. uptake of biogenic carbon dioxide included in product (0,003 kg CO_2-eq.) and packaging (0 kgCO_2-eq.).

LCA: Results

Resource Use: 1m² G1 (per 0,24 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
RPEE	[MJ]	1,1	-	-	-	-	-
RPEM	[MJ]	0	-	-	-	-	-
TPE	[MJ]	1,1	0,0050311	0	6,15E-04	0,00626	0
NRPE	[MJ]	9,86	-	-	-	-	-
NRPM	[MJ]	0	-	-	-	-	-
TRPE	[MJ]	9,86	0,089581	0	0,0109	0,0478	0
SM	[kg]	0	0	0	0	0	0
RSF	[MJ]	0	0	0	0	0	0
NRSF	[MJ]	0	0	0	0	0	0
W	[m³]	0,00254	5,8205E-06	0	7,12E-07	1,20E-05	0

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water.

End of Life – Waste: 1m² G1 (per 0,24 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
HW	[kg]	5,61E-09	4,167E-09	0	5,09E-10	7,28E-10	0
NHW	[kg]	0,0406	0,000013688	0	1,67E-06	0,24	0
RW	[kg]	3,96E-04	1,1094E-07	0	1,35E-08	5,44E-07	0

HW Hazardous waste disposed; NHW Nonhazardous waste disposed; RW Radioactive waste disposed.

End of Life – Output Flow: 1m² G1 (per 0,24 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
CR	[kg]	0	0	0	0	0	0
MR	[kg]	0	0	0	0	0	0
MER	[kg]	0	0	0	0	0	0
EEE	[MJ]	0	0	0	0	0	0
ETE	[MJ]	0	0	0	0	0	0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy.

LCA: Results

Environmental Impact: 1m² G2 (per 0,23 kg)

Parameter	Unit	A1-A3	A4	A5	C2	C4	D
GWP-TOT*	[kg CO_2-eq.]	0,466	0,0063499	0	7,74E-04	0,00313	0
ODP	[kg CFC11-eq.]	4,35E-15	1,0341E-18	0	1,26E-19	1,72E-17	0
AP	[kg SO_2-eq.]	0,00261	0,000016988	0	1,89E-06	2,01E-05	0
EP	[kg PO_4^{3-}eq.]	1,72E-04	4,2417E-06	0	4,67E-07	2,26E-06	0
POCP	[kg ethene-eq.]	1,80E-04	-6,3352E-06	0	-6,78E-07	1,51E-06	0
ADPM	[kg Sb-eq.]	1,64E-05	5,2211E-10	0	6,38E-11	1,21E-09	0
ADPE	[MJ]	8,56	0,085534	0	0,0105	0,0445	0

GWP-TOT Global warming potential including emission and uptake of biogenic CO_2; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non-fossil resources; ADPE Abiotic depletion potential for fossil resources.

*A1-3: including 0,003 kg CO_2-eq. uptake of biogenic carbon dioxide included in product (0,003 kg CO_2-eq.) and packaging (0 kgCO_2-eq.).

Resource Use: 1m² G2 (per 0,23 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
RPEE	[MJ]	1,05	-	-	-	-	-
RPEM	[MJ]	0	-	-	-	-	-
TPE	[MJ]	1,05	0,0048211	0	5,89E-04	0,006	0
NRPE	[MJ]	9,51	-	-	-	-	-
NRPM	[MJ]	0	-	-	-	-	-
TRPE	[MJ]	9,51	0,085834	0	0,0105	0,0458	0
SM	[kg]	0	0	0	0	0	0
RSF	[MJ]	0	0	0	0	0	0
NRSF	[MJ]	0	0	0	0	0	0
W	[m^3]	0,00244	5,5805E-06	0	6,82E-07	1,15E-05	0

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water.

LCA: Results

End of Life – Waste: 1m² G2 (per 0,23 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
HW	[kg]	5,38E-09	3,997E-09	0	4,88E-10	6,98E-10	0
NHW	[kg]	0,0387	0,000013141	0	1,61E-06	0,23	0
RW	[kg]	3,78E-04	1,0641E-07	0	1,30E-08	5,21E-07	0

HW Hazardous waste disposed; NHW Nonhazardous waste disposed; RW Radioactive waste disposed.

End of Life – Output Flow: 1m² G2 (per 0,23 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
CR	[kg]	0	0	0	0	0	0
MR	[kg]	0	0	0	0	0	0
MER	[kg]	0	0	0	0	0	0
EEE	[MJ]	0	0	0	0	0	0
ETE	[MJ]	0	0	0	0	0	0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy.

Environmental Impact: 1m² G3 (per 0,46 kg)

Parameter	Unit	A1-A3	A4	A5	C2	C4	D
GWP-TOT*	[kg CO_2-eq.]	0,897	0,012688	0	1,55E-03	0,00627	0
ODP	[kg CFC11-eq.]	8,93E-15	2,0635E-18	0	2,52E-19	3,45E-17	0
AP	[kg SO_2-eq.]	0,00546	0,000034023	0	3,79E-06	4,02E-05	0
EP	[kg PO_4^{3-}eq.]	3,50E-04	8,4734E-06	0	9,35E-07	4,53E-06	0
POCP	[kg ethene-eq.]	-3,66E-04	-0,000012641	0	-1,36E-06	3,02E-06	0
ADPM	[kg Sb-eq.]	3,52E-05	1,0441E-09	0	1,28E-10	2,42E-09	0
ADPE	[MJ]	15,5	0,17088	0	0,0209	0,089	0

GWP-TOT Global warming potential including emission and uptake of biogenic CO_2; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non-fossil resources; ADPE Abiotic depletion potential for fossil resources.

*A1-3: including 0,013 kg CO_2-eq. uptake of biogenic carbon dioxide included in product (0,013 kg CO_2-eq.) and packaging (0 kgCO_2-eq.).

LCA: Results

Resource Use: 1m² G3 (per 0,46 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
RPEE	[MJ]	2,19	-	-	-	-	-
RPEM	[MJ]	0	-	-	-	-	-
TPE	[MJ]	2,19	0,0096375	0	1,18E-03	0,012	0
NRPE	[MJ]	17,5	-	-	-	-	-
NRPM	[MJ]	0	-	-	-	-	-
TRPE	[MJ]	17,5	0,17188	0	0,021	0,0916	0
SM	[kg]	0	0	0	0	0	0
RSF	[MJ]	0	0	0	0	0	0
NRSF	[MJ]	0	0	0	0	0	0
W	[m³]	0,00468	0,000011141	0	1,36E-06	2,31E-05	0

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water.

End of Life – Waste: 1m² G3 (per 0,46 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
HW	[kg]	1,08E-08	7,9887E-09	0	9,76E-10	1,40E-09	0
NHW	[kg]	0,0823	0,000026282	0	3,21E-06	0,46	0
RW	[kg]	7,98E-04	2,1235E-07	0	2,60E-08	1,04E-06	0

HW Hazardous waste disposed; NHW Nonhazardous waste disposed; RW Radioactive waste disposed.

End of Life – Output Flow: 1m² G3 (per 0,46 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
CR	[kg]	0	0	0	0	0	0
MR	[kg]	0	0	0	0	0	0
MER	[kg]	0	0	0	0	0	0
EEE	[MJ]	0	0	0	0	0	0
ETE	[MJ]	0	0	0	0	0	0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy.

LCA: Results

Environmental Impact: 1m² G4 (per 0,266 kg)

Parameter	Unit	A1-A3	A4	A5	C2	C4	D
GWP-TOT*	[kg CO_2-eq.]	0,741	0,0073393	0	8,95E-04	0,00363	0
ODP	[kg CFC11-eq.]	6,07E-15	1,1941E-18	0	1,46E-19	1,99E-17	0
AP	[kg SO_2-eq.]	0,00396	0,000019635	0	2,19E-06	2,32E-05	0
EP	[kg PO_4^{3-}eq.]	2,50E-04	4,9011E-06	0	5,41E-07	2,62E-06	0
POCP	[kg ethene-eq.]	2,71E-04	-7,3293E-06	0	-7,84E-07	1,75E-06	0
ADPM	[kg Sb-eq.]	1,68E-05	6,0352E-10	0	7,38E-11	1,40E-09	0
ADPE	[MJ]	11,8	0,098834	0	0,0121	0,0514	0

GWP-TOT Global warming potential including emission and uptake of biogenic CO_2; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non-fossil resources; ADPE Abiotic depletion potential for fossil resources.

*A1-3: including 0,001 kg CO_2-eq. uptake of biogenic carbon dioxide included in product (0,001 kg CO_2-eq.) and packaging (0 kgCO_2-eq.).

Resource Use: 1m² G4 (per 0,266 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
RPEE	[MJ]	2,73	-	-	-	-	-
RPEM	[MJ]	0	-	-	-	-	-
TPE	[MJ]	2,73	0,0055758	0	6,81E-04	0,00693	0
NRPE	[MJ]	13,4	-	-	-	-	-
NRPM	[MJ]	0	-	-	-	-	-
TRPE	[MJ]	13,4	0,099463	0	0,0121	0,053	0
SM	[kg]	0	0	0	0	0	0
RSF	[MJ]	0	0	0	0	0	0
NRSF	[MJ]	0	0	0	0	0	0
W	[m³]	0,00637	6,4552E-06	0	7,89E-07	1,34E-05	0

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water.

LCA: Results

End of Life – Waste: 1m² G4 (per 0,266 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
HW	[kg]	7,75E-09	4,6164E-09	0	5,64E-10	8,07E-10	0
NHW	[kg]	0,119	0,000015188	0	1,86E-06	0,266	0
RW	[kg]	6,46E-04	1,2288E-07	0	1,50E-08	6,03E-07	0

HW Hazardous waste disposed; NHW Nonhazardous waste disposed; RW Radioactive waste disposed.

End of Life – Output Flow: 1m² G4 (per 0,266 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
CR	[kg]	0	0	0	0	0	0
MR	[kg]	0	0	0	0	0	0
MER	[kg]	0	0	0	0	0	0
EEE	[MJ]	0	0	0	0	0	0
ETE	[MJ]	0	0	0	0	0	0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy.

Environmental Impact: 1m² G5/G6/G9 (per 0,19 kg)

Parameter	Unit	A1-A3	A4	A5	C2	C4	D
GWP-TOT*	[kg CO_2-eq.]	0,391	0,0052458	0	6,39E-04	0,00259	0
ODP	[kg CFC11-eq.]	3,56E-15	8,5234E-19	0	1,04E-19	1,42E-17	0
AP	[kg SO_2-eq.]	0,00211	0,000014041	0	1,56E-06	1,66E-05	0
EP	[kg PO_4^{3-}eq.]	1,41E-04	3,5023E-06	0	3,86E-07	1,87E-06	0
POCP	[kg ethene-eq.]	1,48E-04	-5,2311E-06	0	-5,60E-07	1,25E-06	0
ADPM	[kg Sb-eq.]	1,31E-05	4,3117E-10	0	5,27E-11	9,98E-10	0
ADPE	[MJ]	7,34	0,070646	0	0,00864	0,0367	0

GWP-TOT Global warming potential including emission and uptake of biogenic CO_2; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non-fossil resources; ADPE Abiotic depletion potential for fossil resources.

*A1-3: including 0,002 kg CO_2-eq. uptake of biogenic carbon dioxide included in product (0,002 kg CO_2-eq.) and packaging (0 kgCO_2-eq.).

LCA: Results

Resource Use: 1m² G5/G6/G9 (per 0,19 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
RPEE	[MJ]	0,855	-	-	-	-	-
RPEM	[MJ]	0	-	-	-	-	-
TPE	[MJ]	0,855	0,0039817	0	4,87E-04	0,00495	0
NRPE	[MJ]	8,11	-	-	-	-	-
NRPM	[MJ]	0	-	-	-	-	-
TRPE	[MJ]	8,11	0,070946	0	0,00866	0,0378	0
SM	[kg]	0	0	0	0	0	0
RSF	[MJ]	0	0	0	0	0	0
NRSF	[MJ]	0	0	0	0	0	0
W	[m³]	0,00205	4,6117E-06	0	5,63E-07	9,54E-06	0

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water.

End of Life – Waste: 1m² G5/G6/G9 (per 0,19 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
HW	[kg]	4,43E-09	3,2976E-09	0	4,03E-10	5,77E-10	0
NHW	[kg]	0,0311	0,000010841	0	1,33E-06	0,19	0
RW	[kg]	3,05E-04	8,7781E-08	0	1,07E-08	4,31E-07	0

HW Hazardous waste disposed; NHW Nonhazardous waste disposed; RW Radioactive waste disposed.

End of Life – Output Flow: 1m² G5/G6/G9 (per 0,19 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
CR	[kg]	0	0	0	0	0	0
MR	[kg]	0	0	0	0	0	0
MER	[kg]	0	0	0	0	0	0
EEE	[MJ]	0	0	0	0	0	0
ETE	[MJ]	0	0	0	0	0	0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy.

LCA: Results

Environmental Impact: 1m² G7 (per 0,27 kg)

Parameter	Unit	A1-A3	A4	A5	C2	C4	D
GWP-TOT*	[kg CO_2-eq.]	0,92	0,0074493	0	9,09E-04	0,00368	0
ODP	[kg CFC11-eq.]	7,48E-15	1,2141E-18	0	1,48E-19	2,02E-17	0
AP	[kg SO_2-eq.]	0,00459	0,000019935	0	2,22E-06	2,36E-05	0
EP	[kg PO_4^{3-}eq.]	2,90E-04	4,9764E-06	0	5,49E-07	2,66E-06	0
POCP	[kg ethene-eq.]	3,12E-04	-7,4393E-06	0	-7,95E-07	1,77E-06	0
ADPM	[kg Sb-eq.]	1,65E-05	6,1252E-10	0	7,49E-11	1,42E-09	0
ADPE	[MJ]	13,1	0,100516	0	0,0123	0,0522	0

GWP-TOT Global warming potential including emission and uptake of biogenic CO_2; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non-fossil resources; ADPE Abiotic depletion potential for fossil resources.

*A1-3: including 0,001 kg CO_2-eq. uptake of biogenic carbon dioxide included in product (0,001 kg CO_2-eq.) and packaging (0 kgCO_2-eq.).

Resource Use: 1m² G7 (per 0,27 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
RPEE	[MJ]	3,76	-	-	-	-	-
RPEM	[MJ]	0	-	-	-	-	-
TPE	[MJ]	3,76	0,0056605	0	6,91E-04	0,00704	0
NRPE	[MJ]	15,1	-	-	-	-	-
NRPM	[MJ]	0	-	-	-	-	-
TRPE	[MJ]	15,1	0,100728	0	0,0123	0,0538	0
SM	[kg]	0	0	0	0	0	0
RSF	[MJ]	0	0	0	0	0	0
NRSF	[MJ]	0	0	0	0	0	0
W	[m³]	0,00871	6,5499E-06	0	8,01E-07	1,36E-05	0

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water.

LCA: Results

End of Life – Waste: 1m² G7 (per 0,27 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
HW	[kg]	8,61E-09	4,6864E-09	0	5,73E-10	8,19E-10	0
NHW	[kg]	0,164	0,000015388	0	1,88E-06	0,27	0
RW	[kg]	7,99E-04	1,2441E-07	0	1,52E-08	6,12E-07	0

HW Hazardous waste disposed; NHW Nonhazardous waste disposed; RW Radioactive waste disposed.

End of Life – Output Flow: 1m² G7 (per 0,27 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
CR	[kg]	0	0	0	0	0	0
MR	[kg]	0	0	0	0	0	0
MER	[kg]	0	0	0	0	0	0
EEE	[MJ]	0	0	0	0	0	0
ETE	[MJ]	0	0	0	0	0	0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy.

Environmental Impact: 1m² Galvanized Steel Wire Mesh (per 0,25 kg)

Parameter	Unit	A1-A3	A4	A5	C2	C4	D
GWP-TOT*	[kg CO_2-eq.]	0,609	0,0068999	0	8,41E-04	0,00341	0
ODP	[kg CFC11-eq.]	1,29E-15	1,1241E-18	0	1,37E-19	1,87E-17	0
AP	[kg SO_2-eq.]	0,00133	0,000018488	0	2,06E-06	2,18E-05	0
EP	[kg PO_4^{3-}eq.]	1,28E-04	4,6064E-06	0	5,08E-07	2,46E-06	0
POCP	[kg ethene-eq.]	1,68E-04	-6,8846E-06	0	-7,37E-07	1,64E-06	0
ADPM	[kg Sb-eq.]	4,42E-05	5,6758E-10	0	6,93E-11	1,31E-09	0
ADPE	[MJ]	5,62	0,093028	0	0,0114	0,0483	0

GWP-TOT Global warming potential including emission and uptake of biogenic CO_2; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non-fossil resources; ADPE Abiotic depletion potential for fossil resources.

*A1-3: including 0 kg CO_2-eq. uptake of biogenic carbon dioxide included in product (0 kg CO_2-eq.) and packaging (0 kgCO_2-eq.).

LCA: Results

Resource Use: 1m² Galvanized Steel Wire Mesh (per 0,25 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
RPEE	[MJ]	0,446	-	-	-	-	-
RPEM	[MJ]	0	-	-	-	-	-
TPE	[MJ]	0,446	0,0052411	0	6,40E-04	0,00652	0
NRPE	[MJ]	5,85	-	-	-	-	-
NRPM	[MJ]	0	-	-	-	-	-
TRPE	[MJ]	5,85	0,093328	0	0,0114	0,0498	0
SM	[kg]	0	0	0	0	0	0
RSF	[MJ]	0	0	0	0	0	0
NRSF	[MJ]	0	0	0	0	0	0
W	[m³]	0,00066	6,0652E-06	0	7,41E-07	1,25E-05	0

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water.

End of Life – Waste: 1m² Galvanized Steel Wire Mesh (per 0,25 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
HW	[kg]	4,17E-09	4,3417E-09	0	5,30E-10	7,59E-10	0
NHW	[kg]	0,00756	0,000014288	0	1,74E-06	0,25	0
RW	[kg]	8,89E-05	1,1541E-07	0	1,41E-08	5,66E-07	0

HW Hazardous waste disposed; NHW Nonhazardous waste disposed; RW Radioactive waste disposed.

End of Life – Output Flow: 1m² Galvanized Steel Wire Mesh (per 0,25 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
CR	[kg]	0	0	0	0	0	0
MR	[kg]	0	0	0	0	0	0
MER	[kg]	0	0	0	0	0	0
EEE	[MJ]	0	0	0	0	0	0
ETE	[MJ]	0	0	0	0	0	0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy.

LCA: Results

Environmental Impact: 1m² LF1 (per 0,097 kg)

Parameter	Unit	A1-A3	A4	A5	C2	C4	D
GWP-TOT*	[kg CO_2-eq.]	0,598	0,0026782	0	3,26E-04	0,00132	0
ODP	[kg CFC11-eq.]	5,23E-15	4,3517E-19	0	5,32E-20	7,27E-18	0
AP	[kg SO_2-eq.]	0,00176	7,1746E-06	0	7,98E-07	8,48E-06	0
EP	[kg PO_4^{3-}eq.]	1,36E-04	1,7888E-06	0	1,97E-07	9,55E-07	0
POCP	[kg ethene-eq.]	1,51E-04	-2,6729E-06	0	-2,86E-07	6,37E-07	0
ADPM	[kg Sb-eq.]	1,04E-06	2,1982E-10	0	2,69E-11	5,10E-10	0
ADPE	[MJ]	9,62	0,036123	0	0,00441	0,0188	0

GWP-TOT Global warming potential including emission and uptake of biogenic CO_2; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non-fossil resources; ADPE Abiotic depletion potential for fossil resources.

*A1-3: including 0 kg CO_2-eq. uptake of biogenic carbon dioxide included in product (0 kg CO_2-eq.) and packaging (0 kgCO_2-eq.).

Resource Use: 1m² LF1 (per 0,097 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
RPEE	[MJ]	2,36	-	-	-	-	-
RPEM	[MJ]	0	-	-	-	-	-
TPE	[MJ]	2,36	0,0020335	0	2,48E-04	0,00253	0
NRPE	[MJ]	10,6	-	-	-	-	-
NRPM	[MJ]	0	-	-	-	-	-
TRPE	[MJ]	10,6	0,036223	0	0,00442	0,0193	0
SM	[kg]	0	0	0	0	0	0
RSF	[MJ]	0	0	0	0	0	0
NRSF	[MJ]	0	0	0	0	0	0
W	[m³]	0,00528	2,3582E-06	0	2,88E-07	4,87E-06	0

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water.

LCA: Results

End of Life – Waste: 1m² LF1 (per 0,097 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
HW	[kg]	3,03E-09	1,6835E-09	0	2,06E-10	2,94E-10	0
NHW	[kg]	0,0861	5,5405E-06	0	6,77E-07	0,0971	0
RW	[kg]	4,03E-04	4,4817E-08	0	5,47E-09	2,20E-07	0

HW Hazardous waste disposed; NHW Nonhazardous waste disposed; RW Radioactive waste disposed.

End of Life – Output Flow: 1m² LF1 (per 0,097 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
CR	[kg]	0	0	0	0	0	0
MR	[kg]	0	0	0	0	0	0
MER	[kg]	0	0	0	0	0	0
EEE	[MJ]	0	0	0	0	0	0
ETE	[MJ]	0	0	0	0	0	0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy.

Environmental Impact: 1m² N1/N9 (per 0,05 kg)

Parameter	Unit	A1-A3	A4	A5	C2	C4	D
GWP-TOT*	[kg CO_2-eq.]	0,0936	0,0013788	0	1,68E-04	0,000681	0
ODP	[kg CFC11-eq.]	9,94E-16	2,2435E-19	0	2,74E-20	3,75E-18	0
AP	[kg SO_2-eq.]	0,000619	0,000003697	0	4,11E-07	4,37E-06	0
EP	[kg PO_4^{3-}eq.]	3,88E-05	9,2128E-07	0	1,02E-07	4,92E-07	0
POCP	[kg ethene-eq.]	4,04E-05	-1,3788E-06	0	-1,47E-07	3,29E-07	0
ADPM	[kg Sb-eq.]	4,09E-06	1,1341E-10	0	1,39E-11	2,63E-10	0
ADPE	[MJ]	1,52	0,018635	0	0,00227	0,00967	0

GWP-TOT Global warming potential including emission and uptake of biogenic CO_2; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non-fossil resources; ADPE Abiotic depletion potential for fossil resources.

*A1-3: including 0,0004 kg CO_2-eq. uptake of biogenic carbon dioxide included in product (0,0004 kg CO_2-eq.) and packaging (0 kgCO_2-eq.).

LCA: Results

Resource Use: 1m² N1/N9 (per 0,05 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
RPEE	[MJ]	0,247	-	-	-	-	-
RPEM	[MJ]	0	-	-	-	-	-
TPE	[MJ]	0,247	0,0010494	0	1,28E-04	0,0013	0
NRPE	[MJ]	1,75	-	-	-	-	-
NRPM	[MJ]	0	-	-	-	-	-
TRPE	[MJ]	1,75	0,018635	0	0,00228	0,00996	0
SM	[kg]	0	0	0	0	0	0
RSF	[MJ]	0	0	0	0	0	0
NRSF	[MJ]	0	0	0	0	0	0
W	[m³]	0,000488	1,2141E-06	0	1,48E-07	2,51E-06	0

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water.

End of Life – Waste: 1m² N1/N9 (per 0,05 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
HW	[kg]	1,18E-09	8,6834E-10	0	1,06E-10	1,52E-10	0
NHW	[kg]	0,00949	2,8529E-06	0	3,49E-07	0,05	0
RW	[kg]	9,14E-05	2,3082E-08	0	2,82E-09	1,13E-07	0

HW Hazardous waste disposed; NHW Nonhazardous waste disposed; RW Radioactive waste disposed.

End of Life – Output Flow: 1m² N1/N9 (per 0,05 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
CR	[kg]	0	0	0	0	0	0
MR	[kg]	0	0	0	0	0	0
MER	[kg]	0	0	0	0	0	0
EEE	[MJ]	0	0	0	0	0	0
ETE	[MJ]	0	0	0	0	0	0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy.

LCA: Results

Environmental Impact: 1m² N3/N5/N7 (per 0,06 kg)

Parameter	Unit	A1-A3	A4	A5	C2	C4	D
GWP-TOT*	[kg CO_2-eq.]	0,112	0,0016588	0	2,02E-04	0,000818	0
ODP	[kg CFC11-eq.]	1,19E-15	2,6929E-19	0	3,29E-20	4,50E-18	0
AP	[kg SO_2-eq.]	0,000743	4,4417E-06	0	4,94E-07	5,24E-06	0
EP	[kg PO_4^{3-}eq.]	4,66E-05	1,1041E-06	0	1,22E-07	5,91E-07	0
POCP	[kg ethene-eq.]	4,84E-05	-1,6535E-06	0	-1,77E-07	3,94E-07	0
ADPM	[kg Sb-eq.]	4,90E-06	1,3641E-10	0	1,66E-11	3,15E-10	0
ADPE	[MJ]	1,82	0,022335	0	0,00273	0,0116	0

GWP-TOT Global warming potential including emission and uptake of biogenic CO_2; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non-fossil resources; ADPE Abiotic depletion potential for fossil resources.

*A1-3: including 0 kg CO_2-eq. uptake of biogenic carbon dioxide included in product (0 kg CO_2-eq.) and packaging (0 kgCO_2-eq.).

Resource Use: 1m² N3/N5/N7 (per 0,06 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
RPEE	[MJ]	0,296	-	-	-	-	-
RPEM	[MJ]	0	-	-	-	-	-
TPE	[MJ]	0,296	0,0012541	0	1,54E-04	0,00156	0
NRPE	[MJ]	2,1	-	-	-	-	-
NRPM	[MJ]	0	-	-	-	-	-
TRPE	[MJ]	2,1	0,022382	0	0,00274	0,0119	0
SM	[kg]	0	0	0	0	0	0
RSF	[MJ]	0	0	0	0	0	0
NRSF	[MJ]	0	0	0	0	0	0
W	[m³]	0,000586	1,4588E-06	0	1,78E-07	3,01E-06	0

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water.

LCA: Results

End of Life – Waste: 1m² N3/N5/N7 (per 0,06 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
HW	[kg]	1,42E-09	1,0441E-09	0	1,27E-10	1,82E-10	0
NHW	[kg]	0,0114	3,4276E-06	0	4,19E-07	0,0601	0
RW	[kg]	1,10E-04	2,7729E-08	0	3,39E-09	1,36E-07	0

HW Hazardous waste disposed; NHW Nonhazardous waste disposed; RW Radioactive waste disposed.

End of Life – Output Flow: 1m² N3/N5/N7 (per 0,06 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
CR	[kg]	0	0	0	0	0	0
MR	[kg]	0	0	0	0	0	0
MER	[kg]	0	0	0	0	0	0
EEE	[MJ]	0	0	0	0	0	0
ETE	[MJ]	0	0	0	0	0	0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy.

Environmental Impact: 1m² N6 (per 0,1 kg)

Parameter	Unit	A1-A3	A4	A5	C2	C4	D
GWP-TOT*	[kg CO_2-eq.]	0,187	2,76E-03	0	3,37E-04	0,00136	0
ODP	[kg CFC11-eq.]	1,99E-15	4,49E-19	0	5,48E-20	7,50E-18	0
AP	[kg SO_2-eq.]	0,00124	7,40E-06	0	8,23E-07	8,74E-06	0
EP	[kg PO_4^{3-}eq.]	7,76E-05	1,84E-06	0	2,03E-07	9,84E-07	0
POCP	[kg ethene-eq.]	8,07E-05	-2,75E-06	0	-2,95E-07	6,57E-07	0
ADPM	[kg Sb-eq.]	8,17E-06	2,27E-10	0	2,77E-11	5,25E-10	0
ADPE	[MJ]	3,03	3,72E-02	0	0,00455	0,0193	0

GWP-TOT Global warming potential including emission and uptake of biogenic CO_2; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non-fossil resources; ADPE Abiotic depletion potential for fossil resources.

*A1-3: including 0,001 kg CO_2-eq. uptake of biogenic carbon dioxide included in product (0,001 kg CO_2-eq.) and packaging (0 kgCO_2-eq.).

LCA: Results

Resource Use: 1m² N6 (per 0,1 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
RPEE	[MJ]	0,494	-	-	-	-	-
RPEM	[MJ]	0	-	-	-	-	-
TPE	[MJ]	0,494	2,09E-03	0	2,56E-04	0,00261	0
NRPE	[MJ]	3,49	-	-	-	-	-
NRPM	[MJ]	0	-	-	-	-	-
TRPE	[MJ]	3,49	3,73E-02	0	0,00456	0,0199	0
SM	[kg]	0	0	0	0	0	0
RSF	[MJ]	0	0	0	0	0	0
NRSF	[MJ]	0	0	0	0	0	0
W	[m³]	0,000976	2,43E-06	0	2,96E-07	5,02E-06	0

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water.

End of Life – Waste: 1m² N6 (per 0,1 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
HW	[kg]	2,37E-09	1,74E-09	0	2,12E-10	3,03E-10	0
NHW	[kg]	0,019	5,71E-06	0	6,98E-07	0,1	0
RW	[kg]	1,83E-04	4,62E-08	0	5,64E-09	2,27E-07	0

HW Hazardous waste disposed; NHW Nonhazardous waste disposed; RW Radioactive waste disposed.

End of Life – Output Flow: 1m² N6 (per 0,1 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
CR	[kg]	0	0	0	0	0	0
MR	[kg]	0	0	0	0	0	0
MER	[kg]	0	0	0	0	0	0
EEE	[MJ]	0	0	0	0	0	0
ETE	[MJ]	0	0	0	0	0	0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy.

LCA: Results

Environmental Impact: 1m² N8 (per 0,125 kg)

Parameter	Unit	A1-A3	A4	A5	C2	C4	D
GWP-TOT*	[kg CO_2-eq.]	0,337	0,0034523	0	4,21E-04	0,0017	0
ODP	[kg CFC11-eq.]	2,41E-15	5,6058E-19	0	6,85E-20	9,37E-18	0
AP	[kg SO_2-eq.]	0,00154	9,2481E-06	0	1,03E-06	1,09E-05	0
EP	[kg PO_4^{3-}eq.]	9,99E-05	2,3035E-06	0	2,54E-07	1,23E-06	0
POCP	[kg ethene-eq.]	1,03E-04	-3,4423E-06	0	-3,68E-07	8,21E-07	0
ADPM	[kg Sb-eq.]	9,80E-06	2,8376E-10	0	3,47E-11	6,57E-10	0
ADPE	[MJ]	5,81	0,046464	0	0,00568	0,0242	0

GWP-TOT Global warming potential including emission and uptake of biogenic CO_2; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non-fossil resources; ADPE Abiotic depletion potential for fossil resources.

*A1-3: including 0,001 kg CO_2-eq. uptake of biogenic carbon dioxide included in product (0,001 kg CO_2-eq.) and packaging (0 kgCO_2-eq.).

Resource Use: 1m² N8 (per 0,125 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
RPEE	[MJ]	0,601	-	-	-	-	-
RPEM	[MJ]	0	-	-	-	-	-
TPE	[MJ]	0,601	0,0026229	0	3,20E-04	0,00326	0
NRPE	[MJ]	6,36	-	-	-	-	-
NRPM	[MJ]	0	-	-	-	-	-
TRPE	[MJ]	6,36	0,046664	0	0,0057	0,0249	0
SM	[kg]	0	0	0	0	0	0
RSF	[MJ]	0	0	0	0	0	0
NRSF	[MJ]	0	0	0	0	0	0
W	[m³]	0,00127	3,0329E-06	0	3,71E-07	6,27E-06	0

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water.

LCA: Results

End of Life – Waste: 1m² N8 (per 0,125 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
HW	[kg]	3,57E-09	2,1682E-09	0	2,65E-10	3,79E-10	0
NHW	[kg]	0,0244	7,1393E-06	0	8,72E-07	0,125	0
RW	[kg]	2,21E-04	5,7705E-08	0	7,05E-09	2,83E-07	0

HW Hazardous waste disposed; NHW Nonhazardous waste disposed; RW Radioactive waste disposed.

End of Life – Output Flow: 1m² N8 (per 0,125 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
CR	[kg]	0	0	0	0	0	0
MR	[kg]	0	0	0	0	0	0
MER	[kg]	0	0	0	0	0	0
EEE	[MJ]	0	0	0	0	0	0
ETE	[MJ]	0	0	0	0	0	0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy.

Environmental Impact: 1m² Tape (per 0,087 kg)

Parameter	Unit	A1-A3	A4	A5	C2	C4	D
GWP-TOT*	[kg CO_2-eq.]	1,11	0,0023982	0	2,93E-04	0,00119	0
ODP	[kg CFC11-eq.]	1,47E-14	3,907E-19	0	4,77E-20	6,52E-18	0
AP	[kg SO_2-eq.]	0,00187	6,4352E-06	0	7,16E-07	7,60E-06	0
EP	[kg PO_4^{3-}eq.]	2,98E-04	1,6035E-06	0	1,77E-07	8,56E-07	0
POCP	[kg ethene-eq.]	2,46E-04	-2,3982E-06	0	-2,56E-07	5,72E-07	0
ADPM	[kg Sb-eq.]	1,04E-05	1,9735E-10	0	2,41E-11	4,57E-10	0
ADPE	[MJ]	17	0,032376	0	0,00395	0,0168	0

GWP-TOT Global warming potential including emission and uptake of biogenic CO_2; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non-fossil resources; ADPE Abiotic depletion potential for fossil resources.

*A1-3: including 0 kg CO_2-eq. uptake of biogenic carbon dioxide included in product (0 kg CO_2-eq.) and packaging (0 kgCO_2-eq.).

LCA: Results

Resource Use: 1m² Tape (per 0,087 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
RPEE	[MJ]	4,82	-	-	-	-	-
RPEM	[MJ]	0	-	-	-	-	-
TPE	[MJ]	4,82	0,0018235	0	2,23E-04	0,00227	0
NRPE	[MJ]	18,2	-	-	-	-	-
NRPM	[MJ]	0	-	-	-	-	-
TRPE	[MJ]	18,2	0,032476	0	0,00397	0,0173	0
SM	[kg]	0	0	0	0	0	0
RSF	[MJ]	0	0	0	0	0	0
NRSF	[MJ]	0	0	0	0	0	0
W	[m³]	0,00626	2,1135E-06	0	2,58E-07	4,37E-06	0

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water.

End of Life – Waste: 1m² Tape (per 0,087 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
HW	[kg]	6,64E-08	1,5088E-09	0	1,85E-10	2,64E-10	0
NHW	[kg]	0,202	4,9711E-06	0	6,07E-07	0,0871	0
RW	[kg]	4,84E-04	4,017E-08	0	4,91E-09	1,97E-07	0

HW Hazardous waste disposed; NHW Nonhazardous waste disposed; RW Radioactive waste disposed.

End of Life – Output Flow: 1m² Tape (per 0,087 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
CR	[kg]	0	0	0	0	0	0
MR	[kg]	0	0	0	0	0	0
MER	[kg]	0	0	0	0	0	0
EEE	[MJ]	0	0	0	0	0	0
ETE	[MJ]	0	0	0	0	0	0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy.

LCA: Results

Environmental Impact: 1m² W1 (per 0,254 kg)

Parameter	Unit	A1-A3	A4	A5	C2	C4	D
GWP-TOT*	[kg CO_2-eq.]	0,597	0,0070146	0	8,55E-04	0,00346	0
ODP	[kg CFC11-eq.]	9,60E-16	1,1441E-18	0	1,39E-19	1,90E-17	0
AP	[kg SO_2-eq.]	0,00134	0,000018788	0	2,09E-06	2,22E-05	0
EP	[kg PO_4^{3-}eq.]	1,33E-04	4,6764E-06	0	5,16E-07	2,50E-06	0
POCP	[kg ethene-eq.]	1,80E-04	-6,9946E-06	0	-7,48E-07	1,67E-06	0
ADPM	[kg Sb-eq.]	7,25E-09	5,7658E-10	0	7,04E-11	1,33E-09	0
ADPE	[MJ]	5,33	0,094528	0	0,0115	0,0491	0

GWP-TOT Global warming potential including emission and uptake of biogenic CO_2; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non-fossil resources; ADPE Abiotic depletion potential for fossil resources.

*A1-3: including 0,002 kg CO_2-eq. uptake of biogenic carbon dioxide included in product (0,002 kg CO_2-eq.) and packaging (0 kgCO_2-eq.).

Resource Use: 1m² W1 (per 0,254 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
RPEE	[MJ]	0,27	-	-	-	-	-
RPEM	[MJ]	0	-	-	-	-	-
TPE	[MJ]	0,27	0,0053258	0	6,50E-04	0,00662	0
NRPE	[MJ]	5,45	-	-	-	-	-
NRPM	[MJ]	0	-	-	-	-	-
TRPE	[MJ]	5,45	0,094828	0	0,0116	0,0506	0
SM	[kg]	0	0	0	0	0	0
RSF	[MJ]	0	0	0	0	0	0
NRSF	[MJ]	0	0	0	0	0	0
W	[m³]	0,000425	6,1652E-06	0	7,53E-07	1,27E-05	0

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water.

LCA: Results

End of Life – Waste: 1m² W1 (per 0,254 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
HW	[kg]	3,52E-09	4,4117E-09	0	5,39E-10	7,71E-10	0
NHW	[kg]	0,00757	0,000014488	0	1,77E-06	0,254	0
RW	[kg]	5,01E-05	1,1741E-07	0	1,43E-08	5,76E-07	0

HW Hazardous waste disposed; NHW Nonhazardous waste disposed; RW Radioactive waste disposed.

End of Life – Output Flow: 1m² W1 (per 0,254 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
CR	[kg]	0	0	0	0	0	0
MR	[kg]	0	0	0	0	0	0
MER	[kg]	0	0	0	0	0	0
EEE	[MJ]	0	0	0	0	0	0
ETE	[MJ]	0	0	0	0	0	0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy.

Environmental Impact: 1m² W2 (per 0,25 kg)

Parameter	Unit	A1-A3	A4	A5	C2	C4	D
GWP-TOT*	[kg CO_2-eq.]	0,809	0,0068999	0	8,41E-04	0,00341	0
ODP	[kg CFC11-eq.]	5,42E-15	1,1241E-18	0	1,37E-19	1,87E-17	0
AP	[kg SO_2-eq.]	0,00472	0,000018488	0	2,06E-06	2,18E-05	0
EP	[kg PO_4^{3-}eq.]	2,25E-04	4,6064E-06	0	5,08E-07	2,46E-06	0
POCP	[kg ethene-eq.]	2,45E-04	-6,8846E-06	0	-7,37E-07	1,64E-06	0
ADPM	[kg Sb-eq.]	2,74E-05	5,6758E-10	0	6,93E-11	1,31E-09	0
ADPE	[MJ]	9,92	0,093028	0	0,0114	0,0483	0

GWP-TOT Global warming potential including emission and uptake of biogenic CO_2; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non-fossil resources; ADPE Abiotic depletion potential for fossil resources.

*A1-3: including 0,003 kg CO_2-eq. uptake of biogenic carbon dioxide included in product (0,003 kg CO_2-eq.) and packaging (0 kgCO_2-eq.).

LCA: Results

Resource Use: 1m² W2 (per 0,25 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
RPEE	[MJ]	2,11	-	-	-	-	-
RPEM	[MJ]	0	-	-	-	-	-
TPE	[MJ]	2,11	0,0052411	0	6,40E-04	0,00652	0
NRPE	[MJ]	11	-	-	-	-	-
NRPM	[MJ]	0	-	-	-	-	-
TRPE	[MJ]	11	0,093328	0	0,0114	0,0498	0
SM	[kg]	0	0	0	0	0	0
RSF	[MJ]	0	0	0	0	0	0
NRSF	[MJ]	0	0	0	0	0	0
W	[m³]	0,00734	6,07E-06	0	7,41E-07	1,25E-05	0

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water.

End of Life – Waste: 1m² W2 (per 0,25 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
HW	[kg]	3,12E-08	4,3417E-09	0	5,30E-10	7,59E-10	0
NHW	[kg]	0,0907	0,000014288	0	1,74E-06	0,25	0
RW	[kg]	4,09E-04	1,1541E-07	0	1,41E-08	5,66E-07	0

HW Hazardous waste disposed; NHW Nonhazardous waste disposed; RW Radioactive waste disposed.

End of Life – Output Flow: 1m² W2 (per 0,25 kg)

Parameter	Unit	A 1-3	A4	A5	C2	C4	D
CR	[kg]	0	0	0	0	0	0
MR	[kg]	0	0	0	0	0	0
MER	[kg]	0	0	0	0	0	0
EEE	[MJ]	0	0	0	0	0	0
ETE	[MJ]	0	0	0	0	0	0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy.