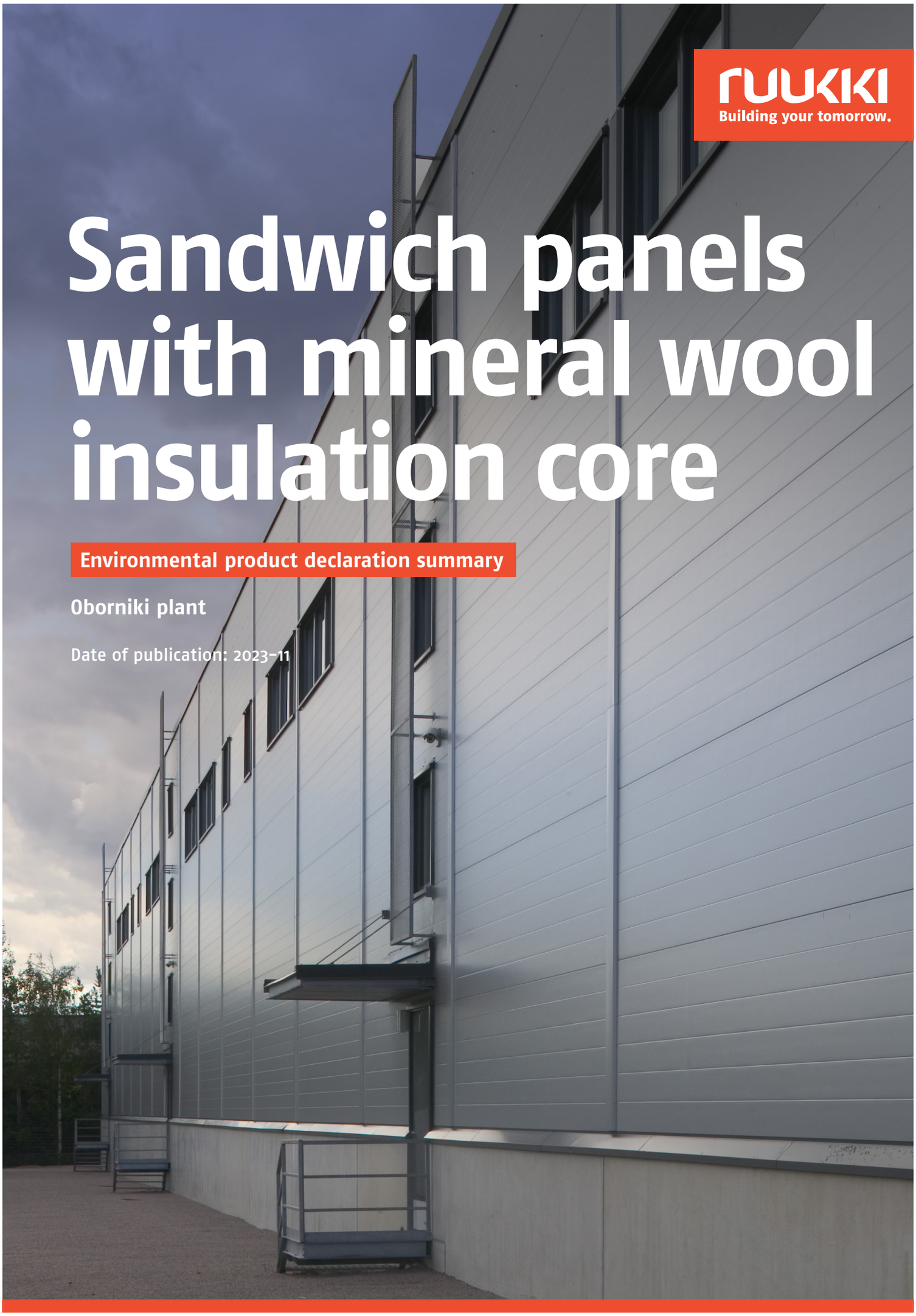

Ruukki
Building your tomorrow.

Sandwich panels with mineral wool insulation core

Environmental product declaration summary

Oborniki plant

Date of publication: 2023-11

ENVIRONMENTAL DATA FOR RUUKKI SANDWICH PANELS WITH MINERAL WOOL CORE MANUFACTURED IN OBORNIKI, POLAND

INTRODUCTION

Welcome to the summary document of Ruukki Sandwich Panels' Environmental Product Declarations (EPDs). In an era where environmental concerns are at the forefront of decision-making processes, understanding the impact of construction materials is of utmost importance. Ruukki Sandwich Panels, a leading provider of sustainable building solutions, is committed to transparency and providing accurate information about the environmental performance of their products.

EPDs offer valuable insights into the environmental impact of construction materials throughout their life cycle. They provide a comprehensive assessment of various factors, such as raw material extraction, manufacturing processes, energy consumption, emissions, and waste generation. By analyzing this data, stakeholders can make informed decisions to minimize their environmental footprint and prioritize sustainability without compromising on quality, durability, or aesthetics.

CARBON FOOTPRINT AND CIRCULARITY AS MAIN DRIVERS

This document focuses on two key environmental indicators: Global Warming Potential Values (GWP) and secondary material content. Additionally in GWP results, Module D, which represents future benefits beyond the system boundary, is further divided into two categories: recycling potential and energy recovery potential.

The GWP values provide a comprehensive assessment of the environmental impact of Ruukki Construction's sandwich panels. By evaluating factors such as raw material extraction, manufacturing processes, and transportation, the GWP indicator offers valuable insights into the panels' global environmental footprint. GWP values are presented for product stage A1–A3, construction stage A4–A5, use stage B2 and end of life stage C1–C4. Based on the new EN 15804+A2 standard, the GWP is split into several different subcategories. In this document, we present the most used GWP categories: GWP-total and GWP-fossil. GWP-total takes into account the biogenic carbon storage that is for example in the packaging pallets of Ruukki's product packaging. GWP-fossil does not take into account the biogenic carbon storage. The biogenic carbon storage is released when the pallets are incinerated.

Module D, divided into recycling potential and energy recovery potential, presents a forward-looking perspective on the environmental benefits of Ruukki Construction's sandwich panels after their life-cycle. The recycling potential category assesses the panels' potential for future recycling, promoting resource efficiency and waste reduction. The energy recovery potential category evaluates the panels' ability to be used as an energy source through energy recovery processes.

Furthermore, the secondary material content of these sandwich panels is a crucial aspect of their sustainability profile. This indicator quantifies the proportion of recycled materials used in the manufacturing process of the sandwich panel, highlighting the product's contribution to the circular economy and reduced reliance on virgin resources. The secondary material content is presented based on standard EN 15804+A2 that focuses on EPDs.

By examining these environmental indicators and categories, this summary document provides a comprehensive understanding of Ruukki Construction's sandwich panels' environmental performance. Through a commitment to sustainable manufacturing and innovative design, Ruukki Construction aims to minimize their environmental impact while providing high-quality construction solutions.

HOW TO ACCESS THE OFFICIAL EPDS

This summary is based on full EPDs, made according to standard EN 15804+A2, and are available through the EPD Hub website (use "Ruukki" in search field): **https://manage.epdhub.com/**

The EPDs can also be accessed by clicking the sandwich panel name in the tables below. The link will forward you to the right EPD on the EPD Hub website. In the tables, GWP values for few panel thicknesses have been interpolated (the ones without EPD and website link).

INCLUDED SANDWICH PANEL TYPES

This EPD summary applies to the following sandwich panel types:

- nSPB and SPB WEE(B), WE(B), WEF(B), W(B), WF(B), WS(B)
- nSPD and SP2D WE and W
- nSPC and SPC W
- Energy versions
- Patina variants.

Table 1: GWP-total values for 1 m² of a sandwich panel (based on EN 15804+A2). Includes Patina and Energy variants where such are available.

Panel type and thickness	Unit	A1	A2	A3	A1–A3	A4	A5	B2	C1	C2	C3	C4	D	D1*	D2*
Wall panels															
nSPB, nSPD W/WF/WS 80 mm	kg CO_2e/m²	28,4	1,82	0,11	**30,3**	1,07	4,68	1,6	0,11	0,09	0,19	0,06	−14,8	−15,3	0,5
nSPB, nSPD W/WF/WS 100 mm	kg CO_2e/m²	29,2	1,98	0,1	**31,3**	1,2	5,04	1,6	0,11	0,1	0,19	0,07	−14,8	−15,3	0,5
nSPB, nSPD W/WF/WS 110 mm	kg CO_2e/m²	29,7	2,06	0,11	**31,9**	1,27	5,22	1,6	0,11	0,1	0,19	0,07	−14,8	−15,3	0,6
nSPB, nSPD W/WF/WS 120 mm	kg CO_2e/m²	30,1	2,14	0,12	**32,4**	1,34	5,4	1,6	0,11	0,11	0,19	0,08	−14,8	−15,3	0,6
nSPB, nSPD W/WF/WS 140 mm	kg CO_2e/m²	31	2,3	0,14	**33,4**	1,48	5,66	1,6	0,11	0,12	0,19	0,09	−14,7	−15,4	0,7
nSPB, nSPD W/WF/WS 150 mm	kg CO_2e/m²	31,4	2,37	0,14	**33,9**	1,55	5,79	1,6	0,11	0,12	0,19	0,1	−14,7	−15,4	0,7
nSPB, nSPD W/WF/WS 160 mm	kg CO_2e/m²	31,9	2,45	0,15	**34,5**	1,62	5,97	1,6	0,11	0,13	0,19	0,11	−14,7	−15,4	0,7
nSPB, nSPD W/WF/WS 170 mm	kg CO_2e/m²	32,3	2,53	0,16	**35**	1,68	6,15	1,6	0,11	0,14	0,19	0,11	−14,6	−15,4	0,7
nSPB, nSPD W/WF/WS 180 mm	kg CO_2e/m²	32,7	2,61	0,16	**35,5**	1,75	6,28	1,6	0,11	0,14	0,19	0,12	−14,6	−15,4	0,8
nSPB, nSPD W/WF/WS 200 mm	kg CO_2e/m²	33,6	2,77	0,19	**36,6**	1,89	6,64	1,6	0,11	0,15	0,19	0,13	−14,6	−15,4	0,8
nSPB, nSPD W/WF/WS 210 mm	kg CO_2e/m²	34	2,85	0,19	**37,1**	1,96	6,81	1,6	0,11	0,16	0,19	0,14	−14,6	−15,4	0,8
nSPB, nSPD W/WF/WS 230 mm	kg CO_2e/m²	34,9	3	0,2	**38,1**	2,09	7,14	1,6	0,11	0,17	0,19	0,15	−14,5	−15,4	0,9
nSPB, nSPD WE 80 mm	kg CO_2e/m²	27,4	1,64	0,09	**29,1**	0,91	4,31	1,6	0,11	0,07	0,19	0,04	−14,9	−15,3	0,4
nSPB, nSPD WE 100 mm	kg CO_2e/m²	28,1	1,75	0,09	**29,8**	1	4,55	1,6	0,11	0,08	0,19	0,05	−14,8	−15,3	0,5
nSPB, nSPD WE 110 mm	kg CO_2e/m²	28,4	1,81	0,09	**30,2**	1,05	4,67	1,6	0,11	0,09	0,19	0,05	−14,8	−15,3	0,5
nSPB, nSPD WE 120 mm	kg CO_2e/m²	28,6	1,86	0,09	**30,5**	1,1	4,79	1,6	0,11	0,09	0,19	0,06	−14,8	−15,3	0,5
nSPB, nSPD WE 140 mm	kg CO_2e/m²	29,2	1,97	0,09	**31,3**	1,2	5,04	1,6	0,11	0,1	0,19	0,07	−14,7	−15,3	0,6
nSPB, nSPD WE/WEF 150 mm	kg CO_2e/m²	29,5	2,03	0,09	**31,7**	1,25	5,16	1,6	0,11	0,1	0,19	0,07	−14,7	−15,3	0,6
nSPB, nSPD WE/WEF 160 mm	kg CO_2e/m²	29,8	2,09	0,11	**32,1**	1,3	5,28	1,6	0,11	0,1	0,19	0,08	−14,8	−15,3	0,6
nSPB, nSPD WE/WEF 170 mm	kg CO_2e/m²	30,1	2,14	0,13	**32,4**	1,34	5,4	1,6	0,11	0,11	0,19	0,08	−14,8	−15,3	0,6
nSPB, nSPD WE/WEF 180 mm	kg CO_2e/m²	30,4	2,2	0,13	**32,8**	1,39	5,42	1,6	0,11	0,11	0,19	0,09	−14,7	−15,3	0,6
nSPB, nSPD WE/WEF 200 mm	kg CO_2e/m²	31,1	2,31	0,13	**33,5**	1,49	5,66	1,6	0,11	0,12	0,19	0,09	−14,7	−15,4	0,7
nSPB, nSPD WE/WEF 210 mm	kg CO_2e/m²	31,4	2,36	0,13	**33,9**	1,54	5,78	1,6	0,11	0,12	0,19	0,1	−14,7	−15,4	0,7
nSPB, nSPD WE/WEF 230 mm	kg CO_2e/m²	32	2,47	0,13	**34,6**	1,63	6,03	1,6	0,11	0,13	0,19	0,11	−14,6	−15,4	0,8
nSPB WEE 150 mm	kg CO_2e/m²	28,7	1,88	0,12	**30,7**	1,12	4,8	1,6	0,11	0,09	0,19	0,06	−14,8	−15,3	0,5
nSPB WEE 170 mm	kg CO_2e/m²	29,2	1,97	0,09	**31,3**	1,2	5,04	1,6	0,11	0,1	0,19	0,07	−14,8	−15,3	0,5
nSPB WEE 180 mm	kg CO_2e/m²	29,5	2,02	0,12	**31,6**	1,24	5,16	1,6	0,11	0,1	0,19	0,07	−14,8	−15,3	0,5
nSPB WEE 200 mm	kg CO_2e/m²	30	2,11	0,12	**32,2**	1,32	5,29	1,6	0,11	0,11	0,19	0,08	−14,8	−15,3	0,5
nSPB WEE 230 mm	kg CO_2e/m²	30,7	2,25	0,12	**33,1**	1,44	5,54	1,6	0,11	0,12	0,19	0,09	−14,7	−15,3	0,6
Roof panels															
nSPC W 140/100 mm	kg CO_2e/m²	32,1	2,12	0,1	**34,3**	1,25	5,21	1,79	0,11	0,1	0,21	0,07	−16,6	−17,2	0,6
nSPC W 160/120 mm	kg CO_2e/m²	32,9	2,27	0,12	**35,3**	1,38	5,51	1,79	0,11	0,11	0,21	0,08	−16,6	−17,2	0,64
nSPC W 190/150 mm	kg CO_2e/m²	34,1	2,49	0,16	**36,8**	1,58	5,96	1,79	0,11	0,13	0,21	0,1	−16,6	−17,3	0,7

*D1: Recycling, D2: Energy recovery, D = D1+D2

Table 2: GWP-fossil values for 1 m2 of a sandwich panel (based on EN 15804+A2). Includes Patina and Energy variants where such are available.

Panel type and thickness	Unit	A1	A2	A3	A1–A3	A4	A5	B2	C1	C2	C3	C4	D	D1*	D2*
Wall panels															
nSPB, nSPD W/WF/WS 80 mm	kg CO_2e/m²	28,4	1,82	1,68	**31,9**	1,07	2,69	1,5	0,11	0,09	0,2	0,06	−16,1	−15,3	−0,8
nSPB, nSPD W/WF/WS 100 mm	kg CO_2e/m²	29,3	1,98	1,90	**33,2**	1,20	2,75	1,5	0,11	0,10	0,2	0,07	−16,2	−15,3	−0,9
nSPB, nSPD W/WF/WS 110 mm	kg CO_2e/m²	29,8	2,06	2,01	**33,9**	1,27	2,79	1,5	0,11	0,10	0,2	0,07	−16,3	−15,3	−1,0
nSPB, nSPD W/WF/WS 120 mm	kg CO_2e/m²	30,2	2,14	2,12	**34,5**	1,34	2,82	1,5	0,11	0,11	0,2	0,08	−16,3	−15,3	−1,0
nSPB, nSPD W/WF/WS 140 mm	kg CO_2e/m²	31,1	2,29	2,33	**35,8**	1,47	2,88	1,5	0,11	0,12	0,2	0,09	−16,4	−15,4	−1,1
nSPB, nSPD W/WF/WS 150 mm	kg CO_2e/m²	31,5	2,37	2,44	**36,4**	1,54	2,91	1,5	0,11	0,12	0,2	0,10	−16,5	−15,4	−1,2
nSPB, nSPD W/WF/WS 160 mm	kg CO_2e/m²	32,0	2,45	2,55	**37,0**	1,61	2,94	1,5	0,11	0,13	0,2	0,11	−16,6	−15,4	−1,2
nSPB, nSPD W/WF/WS 170 mm	kg CO_2e/m²	32,4	2,53	2,65	**37,6**	1,68	2,97	1,5	0,11	0,14	0,2	0,11	−16,7	−15,4	−1,3
nSPB, nSPD W/WF/WS 180 mm	kg CO_2e/m²	32,9	2,61	2,77	**38,3**	1,75	3,01	1,5	0,11	0,14	0,2	0,12	−16,8	−15,4	−1,4
nSPB, nSPD W/WF/WS 200 mm	kg CO_2e/m²	33,8	2,76	2,98	**39,5**	1,89	3,07	1,5	0,11	0,15	0,2	0,13	−16,9	−15,4	−1,5
nSPB, nSPD W/WF/WS 210 mm	kg CO_2e/m²	34,2	2,84	3,09	**40,1**	1,96	3,10	1,5	0,11	0,16	0,2	0,14	−17,0	−15,4	−1,6
nSPB, nSPD W/WF/WS 230 mm	kg CO_2e/m²	35,1	3,0	3,31	**41,4**	2,09	3,17	1,5	0,11	0,17	0,2	0,15	−17,1	−15,4	−1,7
nSPB, nSPD WE 80 mm	kg CO_2e/m²	27,4	1,64	1,43	**30,5**	0,91	2,62	1,5	0,11	0,07	0,2	0,04	−15,9	−15,2	−0,7
nSPB, nSPD WE 100 mm	kg CO_2e/m²	28,1	1,75	1,59	**31,4**	1,0	2,66	1,5	0,11	0,08	0,2	0,05	−16,0	−15,3	−0,7
nSPB, nSPD WE 110 mm	kg CO_2e/m²	28,4	1,81	1,67	**31,8**	1,05	2,69	1,5	0,11	0,09	0,2	0,05	−16,1	−15,3	−0,8
nSPB, nSPD WE 120 mm	kg CO_2e/m²	28,6	1,86	1,74	**32,2**	1,10	2,71	1,5	0,11	0,09	0,2	0,06	−16,1	−15,3	−0,8
nSPB, nSPD WE 140 mm	kg CO_2e/m²	29,3	1,97	1,90	**33,1**	1,20	2,76	1,5	0,11	0,10	0,2	0,07	−16,2	−15,3	−0,9
nSPB, nSPD WE/WEF 150 mm	kg CO_2e/m²	29,6	2,03	1,98	**33,6**	1,25	2,78	1,5	0,11	0,10	0,2	0,07	−16,3	−15,3	−1,0
nSPB, nSPD WE/WEF 160 mm	kg CO_2e/m²	29,9	2,09	2,05	**34,1**	1,30	2,80	1,5	0,11	0,10	0,2	0,08	−16,3	−15,3	−1,0
nSPB, nSPD WE/WEF 170 mm	kg CO_2e/m²	30,2	2,14	2,12	**34,5**	1,34	2,82	1,5	0,11	0,11	0,2	0,08	−16,3	−15,3	−1,0
nSPB, nSPD WE/WEF 180 mm	kg CO_2e/m²	30,5	2,19	2,20	**34,9**	1,39	2,84	1,5	0,11	0,11	0,2	0,09	−16,4	−15,3	−1,1
nSPB, nSPD WE/WEF 200 mm	kg CO_2e/m²	31,2	2,31	2,35	**35,8**	1,49	2,89	1,5	0,11	0,12	0,2	0,09	−16,6	−15,4	−1,2
nSPB, nSPD WE/WEF 210 mm	kg CO_2e/m²	31,5	2,36	2,43	**36,3**	1,54	2,91	1,5	0,11	0,12	0,2	0,10	−16,6	−15,4	−1,2
nSPB, nSPD WE/WEF 230 mm	kg CO_2e/m²	32,1	2,47	2,59	**37,2**	1,63	2,95	1,5	0,11	0,13	0,2	0,11	−16,7	−15,4	−1,3
nSPB WEE 150 mm	kg CO_2e/m²	28,8	1,88	1,76	**32,4**	1,12	2,71	1,5	0,11	0,09	0,2	0,06	−16,1	−15,3	−0,8
nSPB WEE 170 mm	kg CO_2e/m²	29,3	1,97	1,89	**33,1**	1,20	2,75	1,5	0,11	0,10	0,2	0,07	−16,2	−15,3	−0,9
nSPB WEE 180 mm	kg CO_2e/m²	29,5	2,02	1,96	**33,5**	1,24	2,77	1,5	0,11	0,10	0,2	0,07	−16,2	−15,3	−0,9
nSPB WEE 200 mm	kg CO_2e/m²	30,1	2,11	2,08	**34,3**	1,32	2,81	1,5	0,11	0,11	0,2	0,08	−16,3	−15,3	−1,0
nSPB WEE 230 mm	kg CO_2e/m²	30,8	2,25	2,27	**35,4**	1,44	2,86	1,5	0,11	0,12	0,2	0,09	−16,5	−15,4	−1,1
Roof panels															
nSPC W 140/100 mm	kg CO_2e/m²	32,1	2,11	1,98	**36,2**	1,25	2,83	1,67	0,11	0,10	0,22	0,07	−18,2	−17,2	−1,0
nSPC W 160/120 mm	kg CO_2e/m²	33,0	2,26	2,18	**37,4**	1,38	2,89	1,67	0,11	0,11	0,22	0,08	−18,3	−17,2	−1,1
nSPC W 190/150 mm	kg CO_2e/m²	34,3	2,49	2,49	**39,2**	1,58	2,98	1,67	0,11	0,13	0,22	0,10	−18,5	−17,3	−1,2

*D1: Recycling, D2: Energy recovery, D = D1+D2

Table 3: Secondary material content of 1 m2 of sandwich panel (secondary material inputs, based on standard EN 15804+A2). Includes Patina and Energy variants where such are available.

Panel type and thickness	Panel weight [kg]	Secondary material (A1–A3) [kg]	Secondary material [%]
Wall panels			
nSPB, nSPD W/WF/WS 80 mm	18,7	0,29	1,57
nSPB, nSPD W/WF/WS 100 mm	21,1	0,294	1,39
nSPB, nSPD W/WF/WS 110 mm	22,3	0,296	1,32
nSPB, nSPD W/WF/WS 120 mm	23,5	0,298	1,25
nSPB, nSPD W/WF/WS 140 mm	25,9	0,299	1,14
nSPB, nSPD W/WF/WS 150 mm	27,1	0,3	1,09
nSPB, nSPD W/WF/WS 160 mm	28,3	0,301	1,05
nSPB, nSPD W/WF/WS 170 mm	29,5	0,301	1,01
nSPB, nSPD W/WF/WS 180 mm	30,7	0,302	0,97
nSPB, nSPD W/WF/WS 200 mm	33,1	0,303	0,9
nSPB, nSPD W/WF/WS 210 mm	34,3	0,304	0,87
nSPB, nSPD W/WF/WS 230 mm	36,7	0,305	0,82
nSPB, nSPD WE 80 mm	15,9	0,294	1,84
nSPB, nSPD WE 100 mm	17,6	0,295	1,66
nSPB, nSPD WE 110 mm	18,5	0,296	1,59
nSPB, nSPD WE 120 mm	19,3	0,296	1,52
nSPB, nSPD WE 140 mm	21	0,297	1,4
nSPB, nSPD WE/WEF 150 mm	21,9	0,297	1,34
nSPB, nSPD WE/WEF 160 mm	22,8	0,298	1,3
nSPB, nSPD WE/WEF 170 mm	23,6	0,298	1,25
nSPB, nSPD WE/WEF 180 mm	24,4	0,299	1,21
nSPB, nSPD WE/WEF 200 mm	26,1	0,299	1,13
nSPB, nSPD WE/WEF 210 mm	27	0,3	1,1
nSPB, nSPD WE/WEF 230 mm	28,7	0,301	1,03
nSPB WEE 150 mm	19,6	0,296	1,5
nSPB WEE 170 mm	21	0,297	1,4
nSPB WEE 180 mm	21,7	0,297	1,36
nSPB WEE 200 mm	23,1	0,298	1,28
nSPB WEE 230 mm	25,2	0,299	1,17
Roof panels			
nSPC W 140/100 mm	21,95	0,332	1,5
nSPC W 160/120 mm	24,3	0,333	1,4
nSPC W 190/150 mm	27,7	0,335	1,2

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