

# Sandwich panels with PIR insulation core

Environmental product declaration summary

Oborniki plant

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# ENVIRONMENTAL DATA FOR RUUKKI SANDWICH PANELS WITH PIR 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.

## INCLUDED SANDWICH PANEL TYPES

This EPD summary applies to the following sandwich panel types:

- SP2B, SP2D, SP2E wall panels with E-PIRE, E-PIR, X-PIR, F-PIR core
- SP2C roof panels with E-PIR core
- Energy versions
- Patina variants.

**Table 1: GWP-total values for 1 m<sup>2</sup> of a sandwich panel (based on EN 15804+A2).**

Panel type and thickness	Unit	A1	A2	A3	A1-A3	A4	A5	B2	C1	C2	C3	C4	D	D1*	D2*
<b>Wall panels</b>															
<a href="#">PIR panel 40 mm</a>	kg CO <sub>2</sub> e	24,90	1,29	0,06	<b>26,30</b>	0,65	3,48	1,20	0,12	0,04	2,02	0,06	-16,20	-14,9	-1,3
<a href="#">PIR panel 60 mm</a>	kg CO <sub>2</sub> e	26,40	1,35	0,05	<b>27,80</b>	0,70	3,65	1,20	0,12	0,05	2,95	0,08	-17,20	-15,2	-2,0
<a href="#">PIR panel 80 mm</a>	kg CO <sub>2</sub> e	27,90	1,42	0,09	<b>29,40</b>	0,75	3,80	1,20	0,12	0,05	3,90	0,11	-18,20	-15,5	-2,7
<a href="#">PIR panel 100 mm</a>	kg CO <sub>2</sub> e	29,40	1,48	0,09	<b>31,00</b>	0,80	3,97	1,20	0,12	0,05	4,80	0,14	-19,30	-15,8	-3,5
<a href="#">PIR panel 110 mm</a>	kg CO <sub>2</sub> e	30,20	1,51	0,09	<b>31,80</b>	0,82	4,00	1,20	0,12	0,06	5,34	0,15	-19,70	-15,9	-3,8
<a href="#">PIR panel 120 mm</a>	kg CO <sub>2</sub> e	31,00	1,55	0,09	<b>32,60</b>	0,85	4,13	1,20	0,12	0,06	5,64	0,17	-20,30	-16,1	-4,2
<a href="#">PIR panel 140 mm</a>	kg CO <sub>2</sub> e	32,50	1,61	0,12	<b>34,20</b>	0,90	4,20	1,20	0,12	0,06	6,78	0,19	-21,40	-16,4	-5,0
<a href="#">PIR panel 160 mm</a>	kg CO <sub>2</sub> e	34,00	1,68	0,13	<b>35,80</b>	0,95	4,36	1,20	0,12	0,06	7,62	0,22	-22,20	-16,5	-5,7
<a href="#">PIR panel 180 mm</a>	kg CO <sub>2</sub> e	35,50	1,74	0,06	<b>37,30</b>	1,00	4,52	1,20	0,12	0,07	8,49	0,24	-23,30	-16,9	-6,4
<a href="#">PIR panel 200 mm</a>	kg CO <sub>2</sub> e	37,00	1,80	0,16	<b>38,90</b>	1,05	4,68	1,20	0,12	0,07	9,37	0,26	-24,30	-17,2	-7,1
<b>Roof panels</b>															
<a href="#">PIR roof 80/40 mm</a>	kg CO <sub>2</sub> e	26,20	1,35	0,07	<b>27,60</b>	0,69	3,62	1,39	0,12	0,05	2,46	0,07	-17,10	-15,5	-1,6
<a href="#">PIR roof 100/60 mm</a>	kg CO <sub>2</sub> e	27,80	1,42	0,07	<b>29,30</b>	0,74	3,79	1,39	0,12	0,05	3,34	0,07	-18,20	-15,8	-2,4
<a href="#">PIR roof 120/80 mm</a>	kg CO <sub>2</sub> e	29,20	1,48	0,06	<b>30,70</b>	0,78	3,95	1,39	0,12	0,05	4,20	0,12	-19,10	-16,0	-3,1
<a href="#">PIR roof 140/100 mm</a>	kg CO <sub>2</sub> e	30,70	1,54	0,10	<b>32,30</b>	0,83	4,01	1,39	0,12	0,06	5,34	0,15	-20,20	-16,4	-3,8
<a href="#">PIR roof 160/120 mm</a>	kg CO <sub>2</sub> e	32,20	1,61	0,10	<b>33,90</b>	0,88	4,18	1,39	0,12	0,06	6,22	0,18	-21,30	-16,7	-4,6
<a href="#">PIR roof 190/150 mm</a>	kg CO <sub>2</sub> e	34,50	1,70	0,14	<b>36,40</b>	0,96	4,37	1,39	0,12	0,07	7,63	0,22	-22,10	-16,5	-5,6
<a href="#">PIR roof 210/170 mm</a>	kg CO <sub>2</sub> e	36,40	1,79	0,16	<b>38,40</b>	1,02	4,55	1,39	0,12	0,07	8,80	0,25	-24,10	-17,5	-6,6

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

**Table 2: GWP-fossil values for 1 m<sup>2</sup> of a sandwich panel (based on EN 15804+A2).**

Panel type and thickness	Unit	A1	A2	A3	A1-A3	A4	A5	B2	C1	C2	C3	C4	D	D1*	D2*
<b>Wall panels</b>															
<a href="#">PIR panel 40 mm</a>	kg CO <sub>2</sub> e	25,00	1,29	0,86	<b>27,20</b>	0,65	2,49	1,10	0,11	0,04	2,03	0,06	-16,90	-15,0	-1,9
<a href="#">PIR panel 60 mm</a>	kg CO <sub>2</sub> e	26,60	1,35	0,93	<b>28,90</b>	0,70	2,56	1,10	0,11	0,05	2,95	0,08	-17,90	-15,2	-2,7
<a href="#">PIR panel 80 mm</a>	kg CO <sub>2</sub> e	28,20	1,41	0,99	<b>30,60</b>	0,75	2,61	1,10	0,11	0,05	3,90	0,11	-19,00	-15,5	-3,5
<a href="#">PIR panel 100 mm</a>	kg CO <sub>2</sub> e	29,80	1,48	1,07	<b>32,30</b>	0,81	2,68	1,10	0,11	0,05	4,79	0,14	-20,10	-15,8	-4,3
<a href="#">PIR panel 110 mm</a>	kg CO <sub>2</sub> e	30,50	1,51	1,10	<b>33,20</b>	0,83	2,71	1,10	0,11	0,06	5,33	0,15	-20,60	-15,9	-4,7
<a href="#">PIR panel 120 mm</a>	kg CO <sub>2</sub> e	31,30	1,54	1,14	<b>34,00</b>	0,85	2,75	1,10	0,11	0,06	5,63	0,17	-21,20	-16,1	-5,1
<a href="#">PIR panel 140 mm</a>	kg CO <sub>2</sub> e	32,90	1,61	1,20	<b>35,70</b>	0,90	2,81	1,10	0,11	0,06	6,77	0,19	-22,40	-16,5	-5,9
<a href="#">PIR panel 160 mm</a>	kg CO <sub>2</sub> e	34,50	1,67	1,28	<b>37,40</b>	0,95	2,88	1,10	0,11	0,06	7,61	0,21	-23,30	-16,6	-6,7
<a href="#">PIR panel 180 mm</a>	kg CO <sub>2</sub> e	36,00	1,74	1,31	<b>39,10</b>	1,00	2,94	1,10	0,11	0,07	8,48	0,24	-24,40	-17,0	-7,4
<a href="#">PIR panel 200 mm</a>	kg CO <sub>2</sub> e	37,60	1,80	1,41	<b>40,80</b>	1,05	3,00	1,10	0,11	0,07	9,35	0,26	-25,50	-17,3	-8,2
<b>Roof panels</b>															
<a href="#">PIR roof 80/40 mm</a>	kg CO <sub>2</sub> e	26,40	1,35	0,91	<b>28,60</b>	0,69	2,53	1,27	0,11	0,05	2,47	0,07	-17,80	-15,5	-2,3
<a href="#">PIR roof 100/60 mm</a>	kg CO <sub>2</sub> e	28,00	1,41	0,98	<b>30,40</b>	0,75	2,60	1,27	0,11	0,05	3,34	0,10	-19,00	-15,8	-3,2
<a href="#">PIR roof 120/80 mm</a>	kg CO <sub>2</sub> e	29,50	1,47	1,05	<b>32,00</b>	0,79	2,66	1,27	0,11	0,05	4,20	0,12	-19,90	-16,1	-3,8
<a href="#">PIR roof 140/100 mm</a>	kg CO <sub>2</sub> e	31,00	1,54	1,11	<b>33,70</b>	0,84	2,73	1,27	0,11	0,06	5,33	0,15	-21,00	-16,4	-4,6
<a href="#">PIR roof 160/120 mm</a>	kg CO <sub>2</sub> e	32,60	1,60	1,19	<b>35,40</b>	0,89	2,79	1,27	0,11	0,06	6,21	0,18	-22,20	-16,8	-5,4
<a href="#">PIR roof 190/150 mm</a>	kg CO <sub>2</sub> e	35,00	1,70	1,29	<b>38,00</b>	0,97	2,89	1,27	0,11	0,07	7,62	0,22	-23,20	-16,6	-6,6
<a href="#">PIR roof 210/170 mm</a>	kg CO <sub>2</sub> e	37,00	1,78	1,38	<b>40,20</b>	1,03	2,97	1,27	0,11	0,07	8,78	0,25	-25,20	-17,6	-7,6

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

**Table 3: Secondary material content of 1 m<sup>2</sup> of sandwich panel (secondary material inputs, based on standard EN 15804+A2).**

Panel type and thickness	Panel weight [kg]	Secondary material (A1-A3) [kg]	Secondary material [%]
<b>Wall panels</b>			
<a href="#">PIR panel 40 mm</a>	9,55	0,76	7,96
<a href="#">PIR panel 60 mm</a>	10,28	0,76	7,4
<a href="#">PIR panel 80 mm</a>	11,01	0,761	6,91
<a href="#">PIR panel 100 mm</a>	11,74	0,761	6,48
<a href="#">PIR panel 110 mm</a>	12,11	0,761	6,29
<a href="#">PIR panel 120 mm</a>	12,47	0,761	6,11
<a href="#">PIR panel 140 mm</a>	13,2	0,762	5,77
<a href="#">PIR panel 160 mm</a>	13,93	0,762	5,47
<a href="#">PIR panel 180 mm</a>	14,66	0,762	5,2
<a href="#">PIR panel 200 mm</a>	15,39	0,763	4,95
<b>Roof panels</b>			
<a href="#">PIR roof 80/40 mm</a>	10,11	0,78	7,72
<a href="#">PIR roof 100/60 mm</a>	10,87	0,781	7,18
<a href="#">PIR roof 120/80 mm</a>	11,54	0,781	6,77
<a href="#">PIR roof 140/100 mm</a>	12,28	0,781	6,36
<a href="#">PIR roof 160/120 mm</a>	13,02	0,782	6,0
<a href="#">PIR roof 190/150 mm</a>	14,13	0,782	5,54
<a href="#">PIR roof 210/170 mm</a>	15,05	0,783	5,2

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The Ruukki logo consists of the word "RUUKKI" in a bold, orange, sans-serif font. The letters are slightly stylized, with the 'R' and 'U's having a unique, blocky appearance.

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