



Life Cycle Impact Reduction Action Plan

For LEED version 4.1 credit:
Environmental Product Declarations, Option 2
(BD+C and ID+C rating systems)

Company:

Knauf di Knauf S.r.l S.a.s

Products Included:
















***F-Zero 12,5-15 mm
plasterboards***

Build on us.

Life Cycle Impact Reduction Action Plan Report

Impact information and Reduction Summary

Manufacturer:	Knauf di Knauf S.r.l S.a.s			
Manufacturer Contact Information:	paola.andrisano@knauf.com			
Product Name:	F-Zero plasterboard, manufactured by Knauf di Knauf S.r.l. S.a.s.			
Product Type:	Commercial Building Product			
Product Description:	Building product designed for use in the residential sector			
Location where the product was manufactured:	Castellina Marittima (PI), Italy			
Title of the Life Cycle Assessment/ Environmental Product Declaration that the Assessment is Based Upon:	Life Cycle Assessment delle lastre in cartongesso: GKB, GKI, GKF, A-ZERO, F-ZERO, DIAMANT, KASA, FLEXILASTRA Prodotti da: Knauf di Knauf S.r.l. S.a.s. Stabilimento di Castellina Marittima (Pisa), Italia			
Life Cycle Assessment/ Environmental Product Declaration Type:	<input type="checkbox"/> Publicly available, critically reviewed LCA (conforming to ISO 14044) <input type="checkbox"/> Internally verified LCA with a product specific EPD (conforming to ISO 14025, EN 15804, or ISO 21930) <input checked="" type="checkbox"/> Product specific Type III EPD (external verification of LCA and EPD)			
Link to publicly available LCA or EPD	https://sostenibilita.knauf.it/EPD.aspx			
LCA Framework/PCR	PCR 2012:01 Construction products and construction services, Version 2.3			
Date of LCA or EPD:	EPD 2020/05/06			
Scope:	<i>Product stage</i>	<i>Construction process stage</i>	<i>Use stage - No impacts</i>	
	<input checked="" type="checkbox"/> A1 <input checked="" type="checkbox"/> A2 <input checked="" type="checkbox"/> A3	<input checked="" type="checkbox"/> A4 <input checked="" type="checkbox"/> A5	<input type="checkbox"/> B1 <input type="checkbox"/> B2 <input type="checkbox"/> B3 <input type="checkbox"/> B4	<input type="checkbox"/> B5 <input type="checkbox"/> B6 <input type="checkbox"/> B7
	<input checked="" type="checkbox"/> C1 <input checked="" type="checkbox"/> C2 <input type="checkbox"/> C3 - Not applicable <input checked="" type="checkbox"/> C4			
	<input type="checkbox"/> Module D: Future, reuse, recycling or energy recovery potentials – Not applicable			
Describe how the scope of the product LCA or EPD aligns with actions identified in this Action Plan	The Knauf Group has set important targets in terms of reducing the environmental impacts of all its production activities. The themes on which these goals are identified are: circular economy, reduction of CO ₂ emissions, reduction of chemicals in products and reduction of water and energy consumption.			
LCA Software and Version:	SIMAPRO 9			
LCA Dataset:	Ecoinvent 3.5 Database			
Action Plan Creation Date:	November 10, 2023			

Action Plan Expiration Date: (must be 4 years or less)	April 22, 2025																																																																																																																																																																																																																																										
Is this Action Plan applicable to all products listed in the corresponding LCA or EPD, or only a subset?	Yes, 100%. The Action Plan is applicable to all plasterboard thicknesses indicated in the corresponding EPD manufactured by Knauf di Knauf S.r.l. S.a.s. since the Castellina Marittima (PI) facility is our only manufacturing location for this product.																																																																																																																																																																																																																																										
Table or Summary of Largest Life Cycle Impacts identified in the Analysis (must include GWP):	<table border="1"> <thead> <tr> <th rowspan="2"></th> <th rowspan="2"></th> <th colspan="2">2020</th> <th colspan="2">2022</th> <th colspan="2">2020/2022</th> </tr> <tr> <th>F-ZERO 12,5 mm</th> <th>F-ZERO 15 mm</th> <th>F-ZERO 12,5 mm</th> <th>F-ZERO 15 mm</th> <th colspan="2">%</th> </tr> </thead> <tbody> <tr> <td rowspan="6">  GLOBAL WARMING KG CO₂ EQ/DU </td> <td>Product A1-A3</td> <td>2,55</td> <td>3,45</td> <td>2,39</td> <td>3,12</td> <td></td> <td></td> </tr> <tr> <td>Transport A4</td> <td>0,71</td> <td>0,98</td> <td>0,658</td> <td>0,725</td> <td></td> <td></td> </tr> <tr> <td>Installation A5</td> <td>0,06</td> <td>0,06</td> <td>0,0596</td> <td>0,561</td> <td></td> <td></td> </tr> <tr> <td>Use (B)</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td></td> <td></td> </tr> <tr> <td>End of cycle (C)</td> <td>0,13</td> <td>0,16</td> <td>0,129</td> <td>0,164</td> <td></td> <td></td> </tr> <tr> <td>Tot</td> <td></td> <td>3,45</td> <td>4,65</td> <td>3,24</td> <td>4,07</td> <td>94%</td> <td>87%</td> </tr> <tr> <td rowspan="6">  NOW RENEWABLE RESOURCES CONSUMPTION MJ/DU </td> <td>Product A1-A3</td> <td>38,13</td> <td>51,8</td> <td>36,3</td> <td>47,6</td> <td></td> <td></td> </tr> <tr> <td>Transport A4</td> <td>10,79</td> <td>14,72</td> <td>9,83</td> <td>10,8</td> <td></td> <td></td> </tr> <tr> <td>Installation A5</td> <td>0,78</td> <td>0,71</td> <td>0,742</td> <td>0,672</td> <td></td> <td></td> </tr> <tr> <td>Use (B)</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td></td> <td></td> </tr> <tr> <td>End of cycle (C)</td> <td>2,70</td> <td>3,44</td> <td>2,64</td> <td>3,35</td> <td></td> <td></td> </tr> <tr> <td>Tot</td> <td></td> <td>52,40</td> <td>70,67</td> <td>49,51</td> <td>62,42</td> <td>94%</td> <td>88%</td> </tr> <tr> <td rowspan="6">  ENERGY CONSUMPTION MJ/DU </td> <td>Product A1-A3</td> <td>42</td> <td>57,05</td> <td>40,1</td> <td>52,1</td> <td></td> <td></td> </tr> <tr> <td>Transport A4</td> <td>11,18</td> <td>15,29</td> <td>10,2</td> <td>11,2</td> <td></td> <td></td> </tr> <tr> <td>Installation A5</td> <td>0,86</td> <td>0,79</td> <td>0,827</td> <td>0,753</td> <td></td> <td></td> </tr> <tr> <td>Use (B)</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td></td> <td></td> </tr> <tr> <td>End of cycle (C)</td> <td>2,81</td> <td>3,57</td> <td>2,69</td> <td>3,42</td> <td></td> <td></td> </tr> <tr> <td>Tot</td> <td></td> <td>56,85</td> <td>76,70</td> <td>53,82</td> <td>67,47</td> <td>95%</td> <td>88%</td> </tr> <tr> <td rowspan="6">  WATER CONSUMPTION M3/DU </td> <td>Product A1-A3</td> <td>0,0153</td> <td>0,0191</td> <td>0,0149</td> <td>0,018</td> <td></td> <td></td> </tr> <tr> <td>Transport A4</td> <td>0,0023</td> <td>0,0031</td> <td>0,000949</td> <td>0,00105</td> <td></td> <td></td> </tr> <tr> <td>Installation A5</td> <td>0,0005</td> <td>0,0004</td> <td>0,000423</td> <td>0,00037</td> <td></td> <td></td> </tr> <tr> <td>Use (B)</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td></td> <td></td> </tr> <tr> <td>End of cycle (C)</td> <td>0,002</td> <td>0,0026</td> <td>0,00176</td> <td>0,00223</td> <td></td> <td></td> </tr> <tr> <td>Tot</td> <td></td> <td>0,0201</td> <td>0,0252</td> <td>0,0180</td> <td>0,0217</td> <td>90%</td> <td>86%</td> </tr> <tr> <td rowspan="6">  WASTE PRODUCTION KG/DU </td> <td>Product A1-A3</td> <td>0,15</td> <td>0,2</td> <td>0,155</td> <td>0,162</td> <td></td> <td></td> </tr> <tr> <td>Transport A4</td> <td>0,53</td> <td>0,72</td> <td>0,483</td> <td>0,528</td> <td></td> <td></td> </tr> <tr> <td>Installation A5</td> <td>0,26</td> <td>0,05</td> <td>0,259</td> <td>0,0537</td> <td></td> <td></td> </tr> <tr> <td>Use (B)</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td></td> <td></td> </tr> <tr> <td>End of cycle (C)</td> <td>10,75</td> <td>13,66</td> <td>10,7</td> <td>13,7</td> <td></td> <td></td> </tr> <tr> <td>Tot</td> <td></td> <td>11,69</td> <td>14,63</td> <td>11,60</td> <td>14,44</td> <td>99%</td> <td>99%</td> </tr> </tbody> </table> <p data-bbox="370 1686 1489 1736"> <i>Figure 1 - Comparison of potential environmental impacts between 2020 and 2022, values referring to 1 m² of F-Zero 12,5-15 mm plasterboard</i> </p> <p data-bbox="370 1809 1489 1937"> Figure 1 illustrates the changes in the five environmental impacts categories with reference to the years 2020 and 2022. Both two types of plasterboard register positive trends, with improved environmental performance in each category. The 15 mm F-ZERO plasterboard records greater improvements, with an average of -12% points. While the 12.5 mm F-ZERO plasterboard records an average of -6% points. There is also a slight improvement in Waste Production for both thicknesses. </p>			2020		2022		2020/2022		F-ZERO 12,5 mm	F-ZERO 15 mm	F-ZERO 12,5 mm	F-ZERO 15 mm	%		 GLOBAL WARMING KG CO ₂ EQ/DU	Product A1-A3	2,55	3,45	2,39	3,12			Transport A4	0,71	0,98	0,658	0,725			Installation A5	0,06	0,06	0,0596	0,561			Use (B)	0	0	0	0			End of cycle (C)	0,13	0,16	0,129	0,164			Tot		3,45	4,65	3,24	4,07	94%	87%	 NOW RENEWABLE RESOURCES CONSUMPTION MJ/DU	Product A1-A3	38,13	51,8	36,3	47,6			Transport A4	10,79	14,72	9,83	10,8			Installation A5	0,78	0,71	0,742	0,672			Use (B)	0	0	0	0			End of cycle (C)	2,70	3,44	2,64	3,35			Tot		52,40	70,67	49,51	62,42	94%	88%	 ENERGY CONSUMPTION MJ/DU	Product A1-A3	42	57,05	40,1	52,1			Transport A4	11,18	15,29	10,2	11,2			Installation A5	0,86	0,79	0,827	0,753			Use (B)	0	0	0	0			End of cycle (C)	2,81	3,57	2,69	3,42			Tot		56,85	76,70	53,82	67,47	95%	88%	 WATER CONSUMPTION M3/DU	Product A1-A3	0,0153	0,0191	0,0149	0,018			Transport A4	0,0023	0,0031	0,000949	0,00105			Installation A5	0,0005	0,0004	0,000423	0,00037			Use (B)	0	0	0	0			End of cycle (C)	0,002	0,0026	0,00176	0,00223			Tot		0,0201	0,0252	0,0180	0,0217	90%	86%	 WASTE PRODUCTION KG/DU	Product A1-A3	0,15	0,2	0,155	0,162			Transport A4	0,53	0,72	0,483	0,528			Installation A5	0,26	0,05	0,259	0,0537			Use (B)	0	0	0	0			End of cycle (C)	10,75	13,66	10,7	13,7			Tot		11,69	14,63	11,60	14,44	99%	99%
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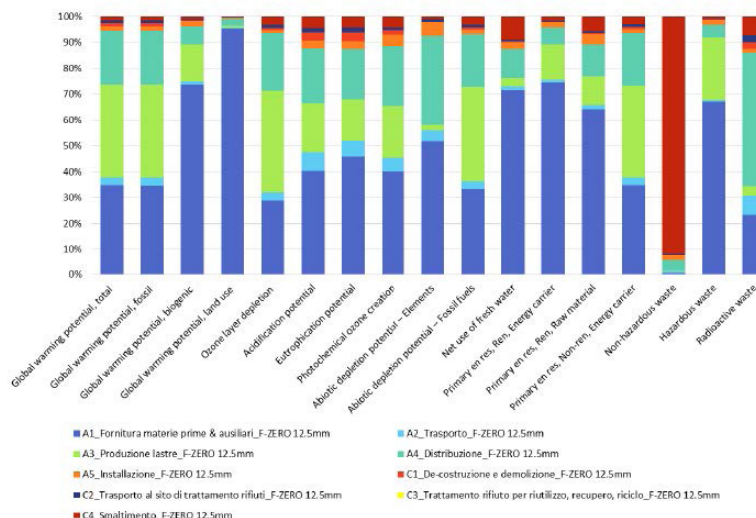


Figure 2 - Impacts by life cycle stages referred to 1 m² of F-Zero 12,5 mm plasterboard.

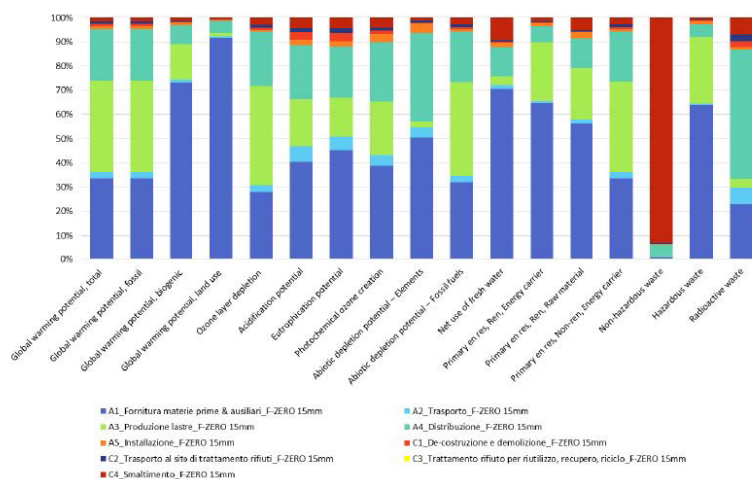


Figure 3 - Impacts by life cycle stages referred to 1 m² of F-Zero 15 mm plasterboard.

The following interpretation of the results is given in detail for Knauf F-ZERO 12,5 mm plasterboard sheet. However, the statements in general are also valid for the F-ZERO plasterboard with a thickness of 15 mm. As can be seen from Figure 1 for the Knauf F-ZERO 12.5mm plasterboard, the processes that contribute the most to impacts are modules A1-A3), with contributions ranging from 65% to 96% for all impact categories.

This is followed by the distribution phase (transport in module A4) of the finished product with an average percentage of 18%. Regarding transport in modules A2 and C2, the contribution to impacts is no more than 7%. Regarding total energy consumption, the stages of raw material supply/supply and plasterboard production (modules A1 - A3) contribute the most, with a maximum percentage of 89%. The same trend in results occurs with regard to the category of water resource consumption, in which modules A1 - A3 are the largest contributors to impacts, participating with a percentage of 76%.

Since the entire product is sent to landfill, the phase that contributes the most to the impacts is the waste landfilling phase (module C4), with an average contribution on the impact categories of 7%. Specifically, regarding the nonhazardous waste category, the contribution of Form C4 goes up to a maximum of 92%.

<p>Narrative Description of the Impact Areas Targeted for Reduction (must include specific steps, dates, and timeline for completion, and include why/why not GWP is targeted for reduction and include a numeric impact reduction target. Actions must correspond to impact modules analyzed in the LCA or EPD):</p>	<p>The Sustainability project in Knauf involved the setting up of eight working groups with the aim of defining a shared strategy covering different topics: the circular economy, the reduction of chemicals and the amount of water used in factories, the goal of zero waste sent to landfill and the reduction of CO₂ emissions covering all three scopes. In order to achieve the targets, set in the area of emissions, Knauf has mapped all its factories worldwide with the aim of gaining a detailed knowledge of CO₂ emissions, both per individual production site and in overall terms. The monitoring is necessary to identify critical areas and implement measures to reduce emissions.</p> <table border="1" data-bbox="539 452 1299 815"> <thead> <tr> <th>GOALS</th> <th>KPI</th> </tr> </thead> <tbody> <tr> <td>CO₂ Emission (Scope 1&2)</td> <td>50% reduction by 2032</td> </tr> <tr> <td>CO₂ Emission (Scope 3)</td> <td>30% reduction by 2032</td> </tr> <tr> <td>CO₂ Emission (Scope 1, 2 & 3)</td> <td>Net zero by 2045</td> </tr> <tr> <td>Circular Economy</td> <td>Promoting the circular economy in all plants</td> </tr> <tr> <td>Chemicals of concern</td> <td>Zero products containing chemicals by 2032</td> </tr> <tr> <td>Waste</td> <td>Zero waste sent to landfill by 2032</td> </tr> <tr> <td>Water</td> <td>2% annual reduction in water resource consumption</td> </tr> </tbody> </table>	GOALS	KPI	CO ₂ Emission (Scope 1&2)	50% reduction by 2032	CO ₂ Emission (Scope 3)	30% reduction by 2032	CO ₂ Emission (Scope 1, 2 & 3)	Net zero by 2045	Circular Economy	Promoting the circular economy in all plants	Chemicals of concern	Zero products containing chemicals by 2032	Waste	Zero waste sent to landfill by 2032	Water	2% annual reduction in water resource consumption
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<p>This Action Plan was prepared by: (must be prepared by someone with experience conducting product-specific LCAs)</p>	<p>Marharyta Litvinava - Sustainability Specialist</p>																
<p>This Action Plan was confirmed by an executive of the manufacturer:</p>	<p>Paola Andrisano - Sustainability Manager</p>																

KNAUF

KNAUF di Knauf S.r.l. s.a.s.

Sede legale e Stab.to: Castellina Marittima (PI) - 56040 Via Livornese 20
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Knauf Milano - Rozzano (MI) - 20089 Via Alberelle, 72
Tel. 02 52823711 - Fax 02 52823730

C.F. e CCIAA di Pisa 00050890524 - P.I. 02470860269 - R.E.A. 115078 -
Cod. Dest. SDI CS8NOAM - Cap. Soc. Int. Vers. Euro 20.000.000
UNICREDIT SPA - Roma - IBAN IT10K0200805364000102098066
BIC/Swift UNCRITMM

Internet: www.knauf.it E-mail: knauf@knauf.it

La documentazione e/o il parere tecnico forniti non costituiscono in nessun caso una proposta contrattuale, ne' un'attestazione di conformità di prodotti rispetto ad eventuali richieste ricevute, ma solo una indicazione circa uno o più determinati prodotti/sistemi che il destinatario dovrà verificare e valutare alla luce della propria esigenza progettuale specifica.

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