CrownBoard Prestige™

Environmental Product Declaration
BillerudKorsnäs focuses on offering the packaging market sustainable materials (world-leading paper and board material) and new solutions that increase customers’ profitability while at the same time reducing the overall environmental impact.

BillerudKorsnäs is driven by sustainability as a natural and integral part of the whole business and value chain. The raw material comes from responsibly managed forests and manufacturing takes place in resource-efficient production units that are constantly improved to minimize their environmental impact. BillerudKorsnäs has 8 production sites in Sweden, Finland and the UK. Production capacity is close to 3,500 ktonnes.

The range of products includes liquid packaging board, cartonboard, liners, fluting, sack- and kraft paper, speciality paper and pulp.

Through our products and solutions, we aim to be part of the response to the world’s current major challenges.
BillerudKorsnäs’ operations for production in Sweden, Finland and the UK are fully certified in accordance with:
- ISO 9001:2008 Quality Management System
- ISO 14001:2015 Environmental Management System
- PEFC™ Chain of Custody, license code PEFC/05-33-114
- FSC® Chain of Custody, license code FSC-C004906

In addition, certifications for food safety management systems, in accordance with ISO 22000/FSSC 22000, are in place where products are aimed for food contact.

This is an Environmental Product Declaration for CrownBoard Prestige, registered in the International EPD System (www.environdec.com). The declaration has been developed based on the results of a Life Cycle Assessment (LCA) and the Product Category Rules for Processed paper and paperboard 2010:14 version 2.11 of 2020-01-29 (UN CPC 3214). Information and data given in this EPD can be used as upstream data by a customer who will perform a new EPD within the system boundaries given in a related PCR.

**DECLARATION OF CONTENTS**

Fully coated top side
Top: Bleached chemical pulp
Middle: Bleached CTMP
Bottom: Bleached chemical pulp
Light coated reverse side

**PRODUCT SAFETY**

To the best of our knowledge, no SVHC substances listed in the current “Candidate list of substances of very high concern” are present in products from BillerudKorsnäs Skog & Industri AB mill Frövi.

* The PT stands for point, while gsm means grams per square metre. PT is a measure of the thickness of material (paper/card/other packaging material). Thickness is also expressed in µm (micron), one thousandth of a millimetre.

**CROWNBOARD PRESTIGE**

A strong, fully coated cartonboard made of 100% primary fibres. Prestige offers a unique combination of formability/ strength and printability. The coated, high-white surface provides excellent printing results and the board is well suited for packaging where design, shape, and graphics work together to provide outstanding visual impact. Prestige meets strict hygiene requirements and is approved for direct contact with certain food. For certification of specific food types, contact BillerudKorsnäs. The board is suitable for the packaging of chocolate & confectionery, luxury drinks, health & beauty care products, pharmaceuticals, and graphic applications. Prestige is available in grammages from 170 to 400 gsm (8.1–23.8 pt / 205–605 µm).*
The systems are divided into three life cycle stages:  
**UPSTREAM:** Forestry, production of fertilisers, energy wares and chemicals, auxiliary products and other raw materials, transport packaging.  
**CORE:** Transportation of all materials (including wood) to the core processes, production of internal and external pulp, production of paper and paperboard, cutting and packing of the products and treatment of waste generated from the production processes.  
**DOWNSTREAM:** Distribution of the product to the customer and waste management of transport packaging.  

### SYSTEM BOUNDARIES

The international EPD system is a hierarchic approach based on the international standards:  
- ISO 9001, Quality management system  
- ISO 14001, Environmental management system  
- ISO 14025, Type III environmental declarations  
- ISO 14044, LCA – Requirements and guidelines

### EXCLUDED LIFECYCLE STAGES:

The following activities have not been included in the system boundaries:  
- Business travel of personnel  
- Travel to and from work by personnel  
- The manufacturing of production equipment, buildings and other capital goods. For upstream processes, such as electricity production, these activities are however included  
- Processing at the average converter, transportation to the customers and use of final product, as well as waste management of the final product

### ENVIRONMENTAL PERFORMANCE

The environmental impact of two selected grammages representing medium and high grammages within the product range are presented in the graph and tables below.  
The declared unit is one tonne (1,000 kg) of the product delivered at the gate of an average converter/customer in Europe.  
The carbon footprint (greenhouse gas emissions over the life cycle) is presented for the two grammages covered in the following graph as global warming potential 100 years (GWP100) in kg CO₂ equivalents per tonne product. As an additional result, the environmental impact is presented also per 1,000 m² (as shown in the tables below).  
The environmental impact of the different types of products may not be directly compared since the results are calculated per tonne of product and are not related to the same functional unit.
The following tables present the potential environmental impact per declared unit as defined by the product category rules for processed paper and paperboard (CPC 3214). Data for the calculation is taken from the actual production during 2018, without any corrections for production irregularities between grammages.

### USE OF RESOURCES

The following tables present the total resources used in the upstream, core and downstream stages for two selected grammages representing medium and high grammages within the product range. Data for the calculation is taken from the actual production during 2018, without any corrections for production irregularities between grammages.

#### POTENTIAL ENVIRONMENTAL IMPACT CROWNBOARD PRESTIGE

The table presents the potential environmental impact per declared unit as defined by the product category rules for processed paper and paperboard (CPC 3214). Data for the calculation is taken from the actual production during 2018, without any corrections for production irregularities between grammages.

### CROWNBOARD PRESTIGE

#### 315 GSM / 455 µM / 17.9 PT

<table>
<thead>
<tr>
<th></th>
<th>UPSTREAM</th>
<th>CORE</th>
<th>DOWNSTREAM</th>
<th>TOTAL</th>
<th>TOTAL kg/1,000 m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acidification potential (kg SO₂ eq.)</td>
<td>1.62</td>
<td>1.67</td>
<td>0.11</td>
<td>3.41</td>
<td>1.07</td>
</tr>
<tr>
<td>Eutrophication potential (kg PO₄³⁻ eq.)</td>
<td>0.48</td>
<td>0.85</td>
<td>0.20</td>
<td>1.54</td>
<td>0.49</td>
</tr>
<tr>
<td>Global warming potential (100 years) incl biogenic carbon (kg CO₂ eq.)</td>
<td>-1192.89</td>
<td>1485.71</td>
<td>51.20</td>
<td>344.02</td>
<td>108.37</td>
</tr>
<tr>
<td>Global warming potential (100 years) excl biogenic carbon (kg CO₂ eq.)</td>
<td>235.77</td>
<td>151.33</td>
<td>48.37</td>
<td>435.00</td>
<td>137.03</td>
</tr>
<tr>
<td>Photochemical oxidant formation (kg NMVOC eq.)</td>
<td>1.13</td>
<td>2.14</td>
<td>0.07</td>
<td>3.33</td>
<td>1.05</td>
</tr>
</tbody>
</table>

#### 400 GSM / 605 µM / 23.8 PT

<table>
<thead>
<tr>
<th></th>
<th>UPSTREAM</th>
<th>CORE</th>
<th>DOWNSTREAM</th>
<th>TOTAL</th>
<th>TOTAL kg/1,000 m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acidification potential (kg SO₂ eq.)</td>
<td>1.46</td>
<td>1.45</td>
<td>0.11</td>
<td>3.03</td>
<td>1.21</td>
</tr>
<tr>
<td>Eutrophication potential (kg PO₄³⁻ eq.)</td>
<td>0.44</td>
<td>0.83</td>
<td>0.20</td>
<td>1.47</td>
<td>0.59</td>
</tr>
<tr>
<td>Global warming potential (100 years) incl biogenic carbon (kg CO₂ eq.)</td>
<td>-1222.91</td>
<td>1356.37</td>
<td>51.20</td>
<td>184.66</td>
<td>73.86</td>
</tr>
<tr>
<td>Global warming potential (100 years) excl biogenic carbon (kg CO₂ eq.)</td>
<td>208.70</td>
<td>141.29</td>
<td>48.37</td>
<td>398.00</td>
<td>159.20</td>
</tr>
<tr>
<td>Photochemical oxidant formation (kg NMVOC eq.)</td>
<td>1.01</td>
<td>1.88</td>
<td>0.07</td>
<td>2.96</td>
<td>1.18</td>
</tr>
</tbody>
</table>
### Material resources, renewable

<table>
<thead>
<tr>
<th>Material</th>
<th>Upstream</th>
<th>Core</th>
<th>Downstream</th>
<th>Total</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biomass</td>
<td>1293.33</td>
<td>21.33</td>
<td>8.70</td>
<td>1293.33</td>
<td>kg/tonne</td>
</tr>
<tr>
<td>Other</td>
<td>193.97</td>
<td></td>
<td></td>
<td>224.00</td>
<td>kg/tonne</td>
</tr>
</tbody>
</table>

### Material resources, non-renewable

<table>
<thead>
<tr>
<th>Material</th>
<th>Upstream</th>
<th>Core</th>
<th>Downstream</th>
<th>Total</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gravel</td>
<td>42.72</td>
<td>54.69</td>
<td>2.58</td>
<td>99.99</td>
<td>kg/tonne</td>
</tr>
<tr>
<td>Inert rock</td>
<td>75.94</td>
<td>0.21</td>
<td>0.06</td>
<td>76.21</td>
<td>kg/tonne</td>
</tr>
<tr>
<td>Limestone (calcium carbonate)</td>
<td>130.18</td>
<td>0.56</td>
<td>0.01</td>
<td>130.75</td>
<td>kg/tonne</td>
</tr>
<tr>
<td>Sodium chloride (rock salt)</td>
<td>25.01</td>
<td>0.03</td>
<td>0.01</td>
<td>25.05</td>
<td>kg/tonne</td>
</tr>
<tr>
<td>Other</td>
<td>15.01</td>
<td>26.55</td>
<td>0.54</td>
<td>42.09</td>
<td>kg/tonne</td>
</tr>
</tbody>
</table>

### Energy resources, renewable

<table>
<thead>
<tr>
<th>Energy source</th>
<th>Upstream</th>
<th>Core</th>
<th>Downstream</th>
<th>Total</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy from biomass</td>
<td>458.67</td>
<td>13148.15</td>
<td>30.61</td>
<td>13637.43</td>
<td>MJ/tonne</td>
</tr>
<tr>
<td>Energy from hydroelectric power</td>
<td>158.46</td>
<td>4964.55</td>
<td>37.79</td>
<td>5160.80</td>
<td>MJ/tonne</td>
</tr>
<tr>
<td>Other</td>
<td>41.07</td>
<td>24.68</td>
<td>19.35</td>
<td>85.10</td>
<td>MJ/tonne</td>
</tr>
</tbody>
</table>

### Energy resources, non-renewable

<table>
<thead>
<tr>
<th>Energy source</th>
<th>Upstream</th>
<th>Core</th>
<th>Downstream</th>
<th>Total</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crude oil (resource)</td>
<td>1633.57</td>
<td>1563.82</td>
<td>310.22</td>
<td>3507.61</td>
<td>MJ/tonne</td>
</tr>
<tr>
<td>Hard coal (resource)</td>
<td>416.95</td>
<td>45.74</td>
<td>91.77</td>
<td>554.46</td>
<td>MJ/tonne</td>
</tr>
<tr>
<td>Natural gas (resource)</td>
<td>1262.26</td>
<td>71.75</td>
<td>57.36</td>
<td>1391.37</td>
<td>MJ/tonne</td>
</tr>
<tr>
<td>Uranium (resource)</td>
<td>545.16</td>
<td>294.75</td>
<td>100.14</td>
<td>1001.47</td>
<td>MJ/tonne</td>
</tr>
<tr>
<td>Other</td>
<td>165.82</td>
<td>7.36</td>
<td>113.51</td>
<td>286.69</td>
<td>MJ/tonne</td>
</tr>
</tbody>
</table>

### Secondary resources

<table>
<thead>
<tr>
<th>Resource</th>
<th>Units</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity use at manufacturing</td>
<td>1164.17</td>
<td>kWh/tonne</td>
</tr>
</tbody>
</table>

### Water use

<table>
<thead>
<tr>
<th>Water use</th>
<th>Units</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total water use</td>
<td>26.04</td>
<td>m³/tonne</td>
</tr>
<tr>
<td>Water use at manufacturing</td>
<td>41.80</td>
<td>m³/tonne</td>
</tr>
</tbody>
</table>

### WASTE

<table>
<thead>
<tr>
<th>Waste Type</th>
<th>Units</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazardous waste</td>
<td>0.15</td>
<td>kg/tonne</td>
</tr>
<tr>
<td>Other waste</td>
<td>259.20</td>
<td>kg/tonne</td>
</tr>
</tbody>
</table>
ADDITIONAL ENVIRONMENTAL INFORMATION: POTENTIAL ENVIRONMENTAL GAIN

Sustainable forestry
Swedish and European laws and regulations for forestry constitute the minimal level of requirements for BillerudKorsnäs. The company’s production units are certified according to FSC® Chain of Custody and PEFC™, which both demonstrate traceability. In Sweden, the forest growth rate is higher than the harvest rate, leading to a net removal of CO₂ from the atmosphere. The high growth rate is a result of long-term sustainable forest management practices.

Recyclability and recovery
CrownBoard Prestige is recoverable through material recycling and energy recovery in accordance with the material requirements in EN 13430:2004 and EN 13431:2004. In many countries, paper and board is one of the most recycled materials.

Waste handling
All board and paper products produced by BillerudKorsnäs meet the targets specified in the EU’s waste management hierarchy within the EU Waste Framework Directive 2008/98/EC as well as the essential requirements of the EU Packaging Waste Directive 94/62/EC.

Biodegradability
BillerudKorsnäs products are based on pulp consisting of cellulose, hemicellulose and some lignin which will be degraded by microorganisms in nature. The decomposition time required depends on several factors such as temperature, humidity, microbiological activity, and pH. For a product to be classified as biodegradable, at least 90% shall be biodegraded under aerobic conditions, according to the standard EN 13432:2000. As this varies between products and grammages, more information is provided by BillerudKorsnäs upon request.

Product waste minimisation
All products produced are based on primary fibres with high strength properties. Strong packaging protection keeps product damage and food waste to a minimum in demanding supply chains.

Substitution effect
Using BillerudKorsnäs’ paper and board products means that products based on higher use of fossil energy are replaced, or substituted. While not a part of official climate reporting, the climate effect from substitution is important as it means that the substituted fossil energy sources stay underground.

BILLERUDKORSNÄS’ CLIMATE TARGETS
BillerudKorsnäs is actively pursuing improvement to minimise the environmental impact from all parts of the operations. It is BillerudKorsnäs’ vision to entirely phase out fossil fuels from the production. To this end, the company replaces fossil fuels with bioenergy and continually invests in process optimisation to decrease the use of resources and increase energy efficiency.

BillerudKorsnäs’ climate targets are aligned with the Paris Agreement and approved by the Science Based Targets initiative. The approval scientifically ensures that the company contributes to the global work to minimise greenhouse gas emissions and to combat global warming. Updated information on the targets is found in BillerudKorsnäs’ Annual and Sustainability Report.

DEFINITIONS

Acidification
Decrease of the pH value in terrestrial and water systems.

CTMP and BCTMP
CTMP, chemi-thermomechanical pulp, is a reinforced pulp with a unique combination of flexibility, strength, and stiffness. B stands for bleached.

Eutrophication
Eutrophication is the disturbance of the nutritional balance in the soil and waters due to an added amount of nutrition. In aquatic systems, this leads to increased production of biomass, which may lead to oxygen deficiency and fewer living organisms.

Global warming potential
Global warming is caused by increases in the atmospheric concentration of carbon dioxide (CO₂) and other greenhouse gases, such as methane and nitrous oxide, that absorb and reflect heat. The global warming potential (GWP) is declared as CO₂ equivalents. The amount of biogenic carbon (CO₂eq.) presented is captured from the atmosphere by forest growth during the upstream phase and stored in the specific product as carbon until it is released again during later stages. Carbon is still stored in the product when it reaches the customer.

Hazardous waste
Wastes such as chemical waste, used oil, soot and radioactive waste from the production of nuclear power are classified as hazardous.

Photochemical oxidant formation
Hydrocarbons and volatile organic carbons (VOCs) contribute to ground level ozone formation, which has toxic effects on humans and vegetation.

PCR
Product Category Rules specify Environmental Product Declaration requirements for a specified sector or product category. See www.environdec.com
Uptake of carbon dioxide in growing forests

In photosynthesis, carbon dioxide from the atmosphere is removed and stored in the growing biomass. In Sweden, the forest growth rate is higher than the harvest rate in forest land, leading to a net removal of CO₂ from the atmosphere.

Waste

Waste generated along the whole life cycle production chains shall be treated following the technical specifications described in the General Programme Instructions of the PCR (CPC 3214).

Water use

Water use in upstream, core, and downstream stages is the total amount of water used for all processes related to the product during the whole life cycle production chain. Water use at manufacturing (core process) is the total amount of water used for cooling and the production process at the board and paper mill.

REFERENCES

The International EPD® System 2020, PCR 2010:14
Processed paper and paperboard: UN CPC Class 3214, version 2.11 of 2020.01.29, valid until 2020-02-23
IVL report: Life cycle assessment of BillerudKorsnäs virgin fibre-based packaging materials, December 2017

VERIFICATIONS

EPD Program: The International EPD® System
Note: EPDs from different programs may not be comparable
Registration no: S-P-00250
Date of publication: 2011-03-15
Date of revision: 2020-02-21
Validity: 2023-02-20
Valid within the following geographical area: Europe
Data reference year: Production of pulp and paper/board–2018
Production of CTMP–2018
Product Category Rules (PCR) review was conducted by: The Technical Committee of the International EPD® System, Chair: Massimo Marino
Contact via info@environdec.com.
PCR moderator: Lucia Rigamonti.
PCR: Product category rules for processed paper and paperboard (CPC 3214), Version 2.11, 2020-01-29
Independent verification of the data according to ISO14025 (external): Carl-Otto Neven (carlotto.neven@bredband.net); 2020-02-21
EPD owned by: BillerudKorsnäs Skog & Industri AB
Accredited or approved by: The International EPD® System
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We challenge conventional packaging for a sustainable future