BauBuche  Beech laminated veneer lumber

Posts
TABLE OF CONTENTS

2 The economical and ecological alternative to reinforced concrete
4 Comparison of BauBuche and reinforced concrete posts
8 BauBuche posts – all advantages at a glance
   BauBuche GL75 post product range
9 Top and bottom fasteners for hinged pillars
   Packaging and protection against moisture
   Fire safety
   Timber construction is climate friendly
10 Re-usability
Hardwood laminated veneer lumber – known as BauBuche – enables proprietors, architects and other decision-makers to construct buildings that preserve resources. BauBuche is a sustainable and climate-friendly construction material that allows for extra flexibility, safety and cost savings.

Innovative resources such as BauBuche thus open up new possibilities in building construction. Only twenty years ago, the production of hardwood laminated veneer lumber was not yet economically viable. Today, modern production technologies enable manufacturers to produce such veneer lumber with excellent properties that offer many advantages over conventional building materials. With BauBuche, developers can erect sustainable buildings in a much more cost-efficient manner than has hitherto been possible.
First timber-built high-rise building in Switzerland, Risch The timber skeleton frame consists of posts and beams made from BauBuche. Architects Burkard Meyer Architekten BSA Timber construction Erne AG Holzbau
Structural engineers MWV Bauingenieure AG
BauBuche is particularly suitable for floor-supporting posts. Thanks to the material’s high load bearing capacity, such posts can be produced with smaller cross-sections than is possible with reinforced concrete. In addition, the dead weight of timber posts is only 33% that of reinforced concrete posts. This helps reduce construction and transport costs, facilitates material handling and protects the environment through the use of a renewable resource harvested from a sustainably managed forests.

**Comparison of BauBuche and reinforced concrete posts**

Depending on the supporting grid, the number of storeys and the envisaged building use, posts must be able to carry substantial loads. In office and residential buildings, the characteristic compressive strength of BauBuche in grain direction is between 59.4 and 70 N/mm² and thus higher than that of C50/60 concrete.

---

**Fig. 2: Artist’s impression of Suurstoffi 22 Risch Rotkreuz, Switzerland (source: Burkard Meyer Architekten BSA)**

---

**Fig. 3: Comparison of load bearing capacity of BauBuche and various concrete grades**

---

1 This statement applies to compressive loads applied to the centre of the post with an effective length of 3.05 m and no specific fire safety requirements. The assumed degree of reinforcement of the reinforced concrete posts is 4%.

2 C50/60 denotes the compressive strength class of the concrete, whereby “C” stands for “concrete”, “50” indicates the cylinder strength and “60” is the cube strength. The two strength values are in N/mm² and characterise the product.
The new office block of SR Bank in Stavanger (Norway) is built primarily in timber. BauBuche was used for the posts at ground floor level and for many other building elements. Architects Helen & Hard Architects in cooperation with SAAHA architects. Timber construction by Moelven.
The table below shows the cross-sections and weights of reinforced concrete posts compared with equivalent BauBuche posts. The figures are based on posts with a length of 3.05 m designed as hinged pillars. The designations “R0”, “R60” and “R90” indicate the duration of fire resistance (0, 60 and 90 minutes) prior to the post losing the necessary load bearing capacity.

<table>
<thead>
<tr>
<th>Impact E_d in kN</th>
<th>Cross-section in cm</th>
<th>Cross-section in cm</th>
<th>Weight in t</th>
<th>Weight in t</th>
<th>Weight in t</th>
<th>Weight in t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>R0</td>
<td>R90</td>
<td></td>
<td>R0</td>
<td>R60</td>
<td>R90</td>
</tr>
<tr>
<td>795</td>
<td>20/20</td>
<td>20/20</td>
<td>0.30</td>
<td>20/20</td>
<td>0.10</td>
<td>25/25</td>
</tr>
<tr>
<td></td>
<td>2140</td>
<td>30/30</td>
<td>0.69</td>
<td>25/25</td>
<td>0.16</td>
<td>30/30</td>
</tr>
<tr>
<td>4720</td>
<td>40/40</td>
<td>40/40</td>
<td>1.22</td>
<td>30/30</td>
<td>0.27</td>
<td>35/35</td>
</tr>
<tr>
<td>6750</td>
<td>50/50</td>
<td>50/50</td>
<td>1.91</td>
<td>40/45</td>
<td>0.47</td>
<td>40/45</td>
</tr>
<tr>
<td>9400</td>
<td>60/60</td>
<td>60/60</td>
<td>2.75</td>
<td>45/50</td>
<td>0.58</td>
<td>45/50</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Impact E_d in kN</th>
<th>Cross-section in cm</th>
<th>Cross-section in cm</th>
<th>Weight in t</th>
<th>Weight in t</th>
<th>Weight in t</th>
<th>Weight in t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>R0</td>
<td>R90</td>
<td></td>
<td>R0</td>
<td>R60</td>
<td>R90</td>
</tr>
<tr>
<td>875</td>
<td>20/20</td>
<td>20/20</td>
<td>0.30</td>
<td>20/20</td>
<td>0.10</td>
<td>25/25</td>
</tr>
<tr>
<td></td>
<td>2340</td>
<td>30/30</td>
<td>0.69</td>
<td>25/25</td>
<td>0.19</td>
<td>30/30</td>
</tr>
<tr>
<td>4520</td>
<td>40/40</td>
<td>40/40</td>
<td>1.22</td>
<td>35/35</td>
<td>0.32</td>
<td>35/35</td>
</tr>
<tr>
<td>7350</td>
<td>50/50</td>
<td>50/50</td>
<td>1.91</td>
<td>40/45</td>
<td>0.47</td>
<td>40/45</td>
</tr>
<tr>
<td>11110</td>
<td>60/60</td>
<td>60/60</td>
<td>2.75</td>
<td>50/55</td>
<td>0.72</td>
<td>50/55</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Impact E_d in kN</th>
<th>Cross-section in cm</th>
<th>Cross-section in cm</th>
<th>Weight in t</th>
<th>Weight in t</th>
<th>Weight in t</th>
<th>Weight in t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>R0</td>
<td>R90</td>
<td></td>
<td>R0</td>
<td>R60</td>
<td>R90</td>
</tr>
<tr>
<td>1180</td>
<td>20/20</td>
<td>20/20</td>
<td>0.30</td>
<td>20/25</td>
<td>0.13</td>
<td>25/30</td>
</tr>
<tr>
<td></td>
<td>3130</td>
<td>30/30</td>
<td>0.69</td>
<td>30/30</td>
<td>0.23</td>
<td>30/35</td>
</tr>
<tr>
<td>6020</td>
<td>40/40</td>
<td>40/40</td>
<td>1.22</td>
<td>40/40</td>
<td>0.41</td>
<td>40/40</td>
</tr>
<tr>
<td>9820</td>
<td>50/50</td>
<td>50/50</td>
<td>1.91</td>
<td>50/50</td>
<td>0.65</td>
<td>50/50</td>
</tr>
<tr>
<td>14530</td>
<td>60/60</td>
<td>60/60</td>
<td>2.75</td>
<td>60/60</td>
<td>0.93</td>
<td>60/60</td>
</tr>
</tbody>
</table>

The values illustrate that, from a post cross-section of 20/20 cm, the load bearing capacity of BauBuche posts matches or even exceeds that of reinforced concrete posts of the same dimensions. This is due to the high compressive strength of BauBuche.

From cross-sections of 40/40 cm, BauBuche posts can even replace equally sized C50/60 reinforced concrete posts with a fire resistance rating of 90 minutes.
Locally sourced timber was the material of choice for the construction of the local forestry office. Architects cornelsen + seelinger architekten BDA
Timber construction Grossmann Bau GmbH & Co. KG Supporting structure planning merz kley partner ZT GmbH
BauBuche posts – all advantages at a glance
_ Cost-efficient thanks to shorter and simpler planning and construction processes, with additional cost savings through the use of posts in interior design quality.
_ Easy handling due to low dead weight (66% less than reinforced concrete), resulting in lower transport costs
_ Greater flexibility thanks to short delivery times (3 – 4 weeks)
_ Excellent product quality due to effective transport and weather protection
_ Sustainable and re-usable material with small carbon footprint
_ Timber provides an excellent room climate and atmosphere

BauBuche GL75 post product range
All standard post dimensions for multi-storey buildings with cross-sections from 20 x 20 cm to 60 x 60 cm and lengths from 2.80 m to 10 m are available in stock.

Rectangular posts, and square posts with cross-sections other than the above standard dimensions are available on request.
Top and bottom fasteners for hinged pillars
BauBuche posts can be easily secured to reinforced concrete or timber floors. The respective
connecting points at the top and bottom of a post are designed according to established solid
construction standards. For details regarding the individual connections, please refer to the
planning documents.

Packaging and protection against moisture
BauBuche posts are shipped to the construction site wrapped in special packaging
that protects them against the elements and mechanical impact during installation.
At the factory, every post is treated with a moisture protection agent.  

Fire safety
Many timber construction elements have high fire safety ratings. This is due to the fact that
the fire produces a charcoal layer on the outside of the timber element. This layer then acts as
a fire barrier, protecting the core of the post against heat, and thus further combustion. After
90 minutes of fire, the load bearing capacity of 3.05 m BauBuche posts with a cross-section
of ≥ 40/40 cm is equivalent to that of concrete, even in the unlikely event of exposure to fire
on all sides. BauBuche posts are also a viable substitute for reinforced concrete posts with
cross-sections of as little as 30/30 cm or 35/35 cm. In such cases, the BauBuche posts must
be slightly larger than the concrete posts for fire safety reasons. As BauBuche posts can be
clad with firecheck boards, it is however possible to opt for smaller cross-sections so as to
avoid overdimensioning of the posts.

Timber construction is climate friendly
Timber is a renewable resource, produced by nature alone without any human intervention
or extra energy input. Sustainable forestry management and harvesting, which in Germany
is required by law since more than 300 years, benefit both humans and nature. While we
experience shortages in other construction materials, wood is growing all the time. All lumber
processed by Pollmeier comes from sustainably managed forests and travels no more than
200 km from forest to sawmill.

3 Do not cut the elements at a later stage, as this
can damage the protective coating, resulting
in possible moisture damage to the timber.
Timber is not only a renewable resource, but also a carbon sink. When using timber as a construction material, we actually increase the climate protection effect of the forest from where it originates, as CO₂ remains locked up inside the timber until it decomposes. With every cubic metre of timber in a building, we lock up 1 ton of CO₂ for a long time. In addition, we reduce the energy input in the building, as the timber replaces construction materials such as concrete and steel that have a large carbon footprint. Timber buildings are thus extra climate friendly.

Energy required to build four-storey building shell

Re-usability
BauBuche can be re-used time and again, or safely disposed of through thermal recycling.
River Beech Tower research project, Chicago Scientists explore the possibilities and limits of high-rise timber construction. **Collaboration project of Perkins + Will Architects, University of Cambridge and Thornton Tomasetti Engineers**