Hoesch Arched Roof

ThyssenKrupp Bausysteme
Hoesch Bogendach
Striking Architecture

A roof system which meets all requirements in relation to high functional quality and good style. For a new form of architecture - full of swing.

- **Aesthetics**
  The Hoesch Arched Roof gives architects, planners and building owners the possibility of creating modern, high-tech buildings with new, trend-setting aesthetics - there are no pleats to spoil the visual appeal of the arch, the eye follows, without disturbance, the elegant lines of the curved profile.

With a range of curved profiles, different radii and a large choice of colours, this roof system gives plenty of scope for new ideas and opens up new paths for versatility of design.

- **Functional**
  Thanks to its excellent structural characteristics, the Hoesch Arched Roof can also be used as a free-span structure. In the double-shell design, up to 20 m can be freely spanned, and the Arched Roof acts as a supporting framework and roofing at the same time. A very low construction weight and a gain in additional useful area are economic benefits.

- **Well protected**
  Coil galvanized strip and a coloured plastic coating give safe protection against corrosion and ensure a long service life. Select your preferred colour from a large range.
Versatility

Hoesch Arched Roof is suited for a wide range of applications:
- production plants
- warehouses
- fair and exhibition halls
- leisure centres
- sports centres
- grandstand roofings
- administration buildings
- schools
- roofs for platforms and parking areas
Close co-operation between the various members of the Hoesch Group involved in material and production technology form the basis of products which meet the most exacting demands with respect to properties and design. Our customers benefit from interdisciplinary know-how and internal synergies.

ThyssenKrupp Hoesch Bau- systeme - the competent partner for building owners, planners and architects. Common planning right from the start allow us to produce tailor-made solutions for our customers. Based on a perfect co-ordination of service and production, we offer quality and reliability from advice to supply to erection. First Class Service.
**Technique**

- **Individual solutions**
  Planning and engineering can be carried out to suit all the requirements of our customers. For an optimum result, the various trades are co-ordinated as soon as in the early planning stage.

- **Variable**
  The Hoesch Arched Roof can be used as a single or double-shell roofing system. The single-shell version can serve as a supporting framework or as a non-insulated roof skin. In the double-shell version, both sheets have a load-bearing function. The thermal insulation between the two sheets will serve as sound insulation, if required.

- **Extendable**
  With a large variety of flashings and various lighting systems, the Hoesch Arched Roof may be designed to meet specific requirements precisely. This roof system may be combined with other components and structural parts from the extensive ThyssenKrupp Bausysteme programme.

- **Stable**
  The arched elements are not folded but produced using a roll-bending technique which is patented world-wide. This special production method makes the arched roof extremely stable and allows the large spans. Depending on the requirements on the structure and the design, profiles HP 41 B and HP 107 B are available. ThyssenKrupp Bausysteme will be pleased to prepare calculations so as to optimise material thickness, basic weight and profiling.
The ThyssenKrupp Bau-systeme service is available right from the beginning. After receipt of your enquiry, our calculation software allows for a swift preliminary design and structural analysis, taking account of the loads which must be accommodated by the supporting structure.
Technical information

**Principle:**
Metallic roofing on a curved structure provided by others or a freely spanned arch without any additional supporting structure between the end supports (load-bearing capacity of the arch).

**Material:**
Arched trapezoidal zinc-coated steel sections which are not folded but produced using a roll-bending technique.

**Protection against corrosion:**
Coil-coating with a choice from a range of various colour shades.

**Fixing technique:**
Approved stainless steel fasteners or special connectors in the area of the supports.

**Application:**
As roofing or as a freely spanned arch, designed as non-insulated single shell or as insulated double shell with span widths up to 20 m.

**Hoesch arched profiles**

**Arch dimensions**

- $S =$ Chord length
- $R =$ Arch radius
- $H =$ Rise (height)
- $B =$ Arch length

**Double-skin design**

- Outer sheet
- Thermal insulation
- Inner sheet
- Hat profile
- Support
- Clamping plate
**Hoesch Arched Roof**

**Hoesch Arched Roof HP 41 B**

Use as outer or inner arched skin

<table>
<thead>
<tr>
<th>Designation of building part</th>
<th>Material thickness t (mm)</th>
<th>Arch radius (m)</th>
<th>Dead weight (kg/m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP 41 B</td>
<td>0.75</td>
<td>≥ 8.00</td>
<td>7.81</td>
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<tr>
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<tr>
<td></td>
<td>1.25</td>
<td>≥ 4.00</td>
<td>13.02</td>
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<tr>
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<td>1.50</td>
<td>≥ 4.00</td>
<td>15.63</td>
</tr>
</tbody>
</table>

max. arch length: 16 m

* Arch length up to 18 m on request

**Hoesch Arched Roof HP 107 B**

Use as outer or inner arched skin with larger dimensions

<table>
<thead>
<tr>
<th>Designation of building part</th>
<th>Material thickness t (mm)</th>
<th>Arch radius (m)</th>
<th>Dead weight (kg/m²)</th>
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</thead>
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<tr>
<td>HP 107 B</td>
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<td>≥ 30.00</td>
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<td></td>
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<td></td>
<td>1.50</td>
<td>≥ 10.00</td>
<td>20.00</td>
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</table>

max. arch length: 24 m

max. arch radius: 35 m

Selection of the profile:
Selection of the appropriate profile depends on the required radius of the arch as well as on the span and the expected load.

ThyssenKrupp Bausysteme offer the following services:

Preliminary design using our calculation software for structural analysis which leads to the selection of the most cost-effective profile.

The best results in terms of structural analysis are achieved when the dimensions of the span and the radius of the arch are identical.
**Supports**
If the Hoesch Arched Roof is freely spanned, no purlins or trusses are required. The arch may be supported by a structure of steel, reinforced concrete or wood. The horizontal support pressures are either transmitted into the rigid supporting structure or additional tiebacks are provided.

**Eaves design (steel)**

**Arched roof on concrete floor**
Valley gutter design

The Hoesch Arched Roof may be designed as a single-bay or multi-bay roof. Higher loads arising from snow accumulation must be taken into account.
Verge design
Connecting flashings, e.g. barge boards, are available as standard flashings for various arch radii.

Load transmission from the gable walls into the skins of the arched roof requires a separate structural analysis.

Cantilevered verge detail

Note: supporting structure in cantilever design
Domelight installation

Integrated transparent panels

Lighting

Various alternatives such as integrated transparent panels, framings for domelights, smoke and heat outlet systems and ventilation fans are available.

Domelights can only be installed in the top of the roof.

Integrated transparent panels consist of bent panels which are installed in the span direction of the arch.

The width of these panels and domelights is limited to 1,200 mm.

Distance between domelights and transparent panels ≥ 5,000 mm.

A structural analysis is required in any case, joint beams must be provided as required.
### Accessories

<table>
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<th>Domelight installation</th>
<th>Part no.</th>
<th>Designation</th>
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<td>S 35 - 033</td>
<td>Clamping plate, galvanised for profile HP 41 B</td>
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<tr>
<td></td>
<td>S 35 - 034</td>
<td>Clamping plate, galvanised, painted for profile HP 41 B</td>
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<tr>
<td></td>
<td>S 35 - 035</td>
<td>Clamping plate, galvanised for profile HP 107 B</td>
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<tr>
<td></td>
<td>S 35 - 036</td>
<td>Clamping plate, galvanised, painted for profile HP 107 B</td>
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<td>S 35 - 044</td>
<td>Profile filler, 30 mm wide for profile HP 41 B</td>
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<td>Profile filler, 30 mm wide for profile HP 107 B</td>
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<td>S 35 - 047</td>
<td>Profile filler, 50 mm wide for profile HP 107 B</td>
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<td>S 35 - 021</td>
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<td>S 35 - 012</td>
<td>Hat profile, material thickness 1.50 mm, length: 6000 mm</td>
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<td></td>
<td>S 35 - 013</td>
<td>Hat profile, material thickness 2.00 mm, length: 6000 mm</td>
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</tbody>
</table>