BCV - Béton Composite Vicat - Vicat's composite concrete
BCV belongs to the « high performance concrete family, as specified in the AFGC recommandations.

BCV is a very compact matrix obtained by optimisation of different parameters:

- Low ratio Water / Cement : 0,25
- High dispersive Superplastifier
- Optimised granular skeleton (Dmax around 2 à 3 mm)

BCV is waterproof, non freezing and non reagent to salt for icy roads.
BCV - Béton Composite Vicat - Vicat’s composite concrete

BCV’s CHARACTERISTICS
There are 2 versions for BCV (one structural and one for decoration/color).
- 130 to 180 MPa compressive strength,
- 30/35 MPa flexural strength
- 10 MPa tensile strength, depending on formulations.

BCV allows a self-spreading flow (BCV structure) or a self-smoothing flow (BCV couleur) during 2 hours.

The stripping of formworks is possible at 16 h, thanks to a compressive strength of 40 Mpa.

Possible use of steel fiber for reinforcement.

No thermal treatments.
Caractéristiques de Malaxage

B.C.V. is manufacturéd in a classical precast unit or concrete plant mixer.

The use of a mixer equiped with a train-valseur and et changeable power improve the mixing duration.

Mixing of B.C.V. lasts around 8 to 10 minutes per batch.

These datas have to be verified along conformity tests done with the mixing means.

mischer equiped with a train-valseur
BCV - Béton Composite Vicat - Vicat’s composite concrete

BCV manufacturing in Romagnieu
**Fresch concrete Characteristics**

<table>
<thead>
<tr>
<th>Tests</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spreading test with DIN cone</td>
<td>55 à 90 cm</td>
</tr>
<tr>
<td>Rheological behaviour</td>
<td>2 heures (de 5°C à 30°C)</td>
</tr>
<tr>
<td>Density</td>
<td>&lt; 2500 kg/m³</td>
</tr>
<tr>
<td>Air included</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>
BCV - Béton Composite Vicat - Vicat’s composite concrete

Project « les Houches »
### Mechanical Characteristics

<table>
<thead>
<tr>
<th>Essais/tests</th>
<th>Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressive strength (Rc) at 28 days</td>
<td>130 à 180 MPa at 20°C</td>
</tr>
<tr>
<td>Compressive strength (Rc) at 1 yr</td>
<td>150 MPa</td>
</tr>
<tr>
<td>Rc at 28 days (BCV without fibers)</td>
<td>110 MPa</td>
</tr>
<tr>
<td>Flexural strength (4 points)</td>
<td>24 MPa</td>
</tr>
<tr>
<td>Tensile strength considered for calculation</td>
<td>8 MPa</td>
</tr>
</tbody>
</table>
### Mechanical Characteristics

<table>
<thead>
<tr>
<th>Tests</th>
<th>Results of tests</th>
</tr>
</thead>
</table>
| **Compressive strength at 16 hours**  
(adjuvants are different depending of temperature) | 30 MPa  
(from 5°C to 30 °C) |
| **Elastic modulus**       | 44 GPa                         |
| **Poisson’s ratio**       | 0.2                             |
| **Abrasion C.N.R.**       | 1.1                             |
**Mechanical Characteristics**

**4 points flexural test**

compressive stress vs deformation

**Essais de Flexion 4 points**

*Prisme 10x10x40 - 28 jours*

- **Energie : 934 Joules**
- **Résistance Maximum : 36.12 MPa**
- **Pour une déformation de : 1.2 mm**
Color Characteristics

BCV - Béton Composite Vicat - Vicat’s composite concrete
Mastering the orientation of fibers is essential for the product.

In fact, the orientation of fibers influences two confidence criteria of the product:

- Post-crack behaviour of the material in an in-situ structure.
- The level of the security coefficients to be taken into account in flexural-tensile structural calculations.
The fibers get oriented along the direction of flux.
Improvement of tensile strength

In order to improve direct tensile strength and flexural strength, the product has to go through different phases:

1. Mastering and understanding of the orientation of fibers
2. Research of more strengthenful fibers, and on the mixing of fibers of different sizes (mezo-fibers theory)
BCV - Béton Composite Vicat - Vicat’s composite concrete

CALCULATION METHODS

Documents scientifiques et techniques

Bétons fibrés à ultra-hautes performances
Ultra High Performance Fibre-Reinforced Concretes

Recommandations provisoires
Interim Recommendations

Janvier 2002
Different uses of BCV
Applications

BCV may be considered as a cold foundry material. It can be used along 3 different ways:

**BCV structure**: for structures that need optimal resistances.

**BCV mixte (two-layers)**: for poured systems needing both high resistance and an aesthetic facing.

**BCV color**: for artistic structures, molded objects, ...
BCV STRUCTURE

Bridge on A 51
Applications

BCV STRUCTURE

Aurélien LEMONIER
BCV - Béton Composite Vicat – Vicat’s composite concrete

Applications

BCV STRUCTURE

Coating Test for the mending of electrical posts
Applications

BCV MIXTE (2-layer Process)

Balcony
Applications

BCV DESIGN

Mathieu BETH/Olivier NOEL
Applications

Bicycle shed in Bern (Suisse)
Applications

BCV COULEUR

Benchs
BCV - Béton Composite Vicat - Vicat’s composite concrete

Applications

BCV COULEUR

Kitchen and sinks
Applications

BCV COULEUR

Furniture