Omya
Construction Application - Functionality
Omya – The Right Partner for Functional Minerals in Construction Applications

Omya has a long history of success with Betocarb® in concrete and construction. Due to the early efforts in France, Omya has been able to spread the value and importance of Betocarb® across the globe. Today we can offer a range of Betocarb® products in North & South America, Europe and Asia Pacific, giving us the opportunity to continue our leadership in all regions in the concrete and construction segment.

Omya provides products with clear value propositions for various applications in the wide field of cement based systems (Figure 1).

Depending on the characteristics of the final product, Omya can add value through its range of carbonate based functional minerals (Figure 1). In technically high complex systems such as High Performance Concretes, Betocarb® HP can provide strong benefits like improved water cement ratio and therefore an optimization of the admixture efficiency. This way we cover both, economic and ecological optimization of the concrete composition.

Whatever the type of cement used, when Betocarb® is formulated in the concrete the expected benefits are:

- Optimisation of water/cement ratio
- Higher casting for dry and plastic concrete
- Improvement of particle packing
- Development for fluid and self-compacting concrete
- Better aesthetics of end products
- Contribution to lower CO₂ emissions

Betocarb®: Categorization of the Functional Minerals

In order to clearly define the value proposition of each Betocarb® grade, Omya established three categories of Betocarb®, namely the standard Betocarb® HP and Betocarb® F (Table 1). However, particles size alone is not sufficient to differentiate between the different grades. Omya therefore invented the LG system to clearly distinguish between the three types.

Figure 1: Cement based products in focus (different pictures) and possibility of value creation through functional minerals
Based on the LG system the effects in the final applications can be understood and following rule of thumb can be applied.

- **Betocarb®** for general use
- **Betocarb® HP** for technical mortars and concrete
- **Betocarb® F** for lower permeability, better durability and strength
- **Betoflow® D** is a micro GCC for technical mortars and concrete

The **Betocarb®** grades are complementary additions to cement based systems and should always be seen in the big picture together with other ingredients Table 2 therefore summarizes the properties which can be influenced by Betocarb and other ingredients of cement based Products.

### Table 2: Ingredients of Cement Based Systems and the Properties which can be Controlled and /or Enhanced

<table>
<thead>
<tr>
<th>Segmentation</th>
<th>Cement</th>
<th>Betocarb®</th>
<th>Sand</th>
<th>Gravel</th>
<th>Water</th>
<th>Admixture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durability</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Strength</td>
<td>x</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>W/C reduction</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Flowability</td>
<td>x</td>
<td>x</td>
<td></td>
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<td>x</td>
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<td>Packing density</td>
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<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Technical concrete</td>
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<td>x</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
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</table>
Special Situations require a Special Approach!

Natural Products for Sustainability

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