



Omya



Construction
Application - Functionality



Omya – The Right Partner for Functional Minerals in Construction Applications



- Headquarters in Oftringen, Switzerland
- 8000 employees
- 130 years of business since 1884
- 180 plants in over 50 countries
- ISO 9001 / ISO 14001 certified in most of the plants

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 oppor-

tunity 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).

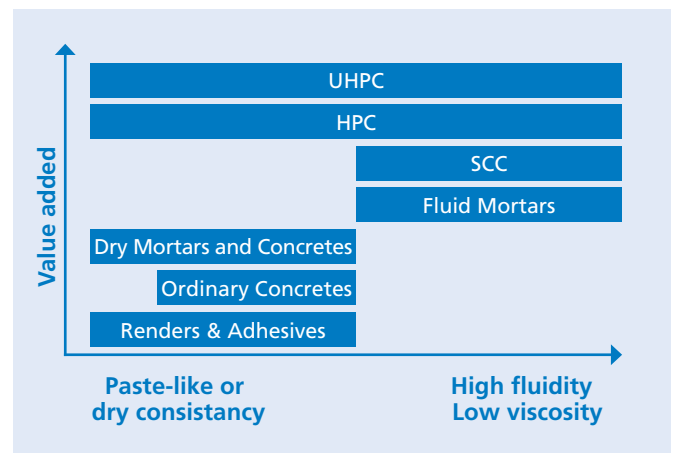
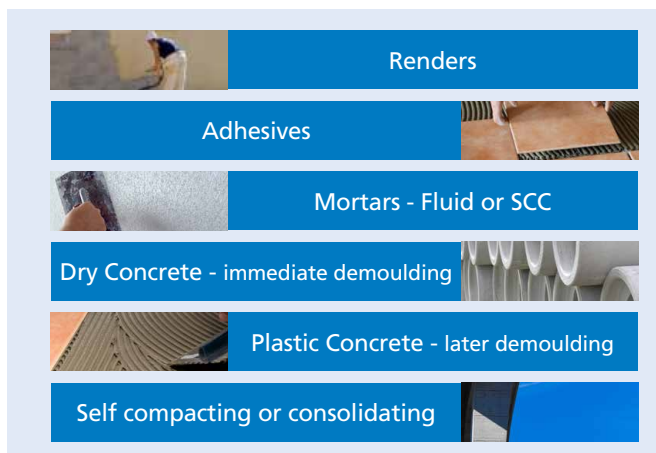


Figure 1: Cement based products in focus (different pictures) and possibility of value creation through functional minerals

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 2: LGsystem - Betocarb® Effect on the Concrete Workability

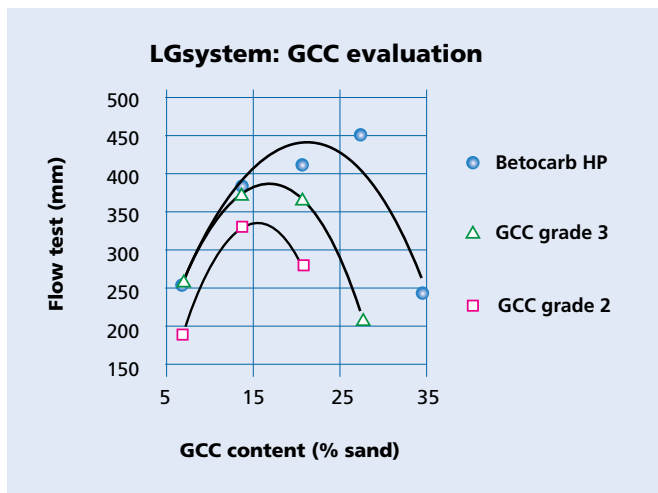


Table 1: Categories of Betocarb® and there Particle Size Range

| Segmentation | 1 - 5 µm | 5 - 20 µm |
|--------------|-------------|--------------|
| Designation | Micro GCC | GCC |
| Paste-like | Betocarb® F | Betocarb® |
| Fluidity | Betoflow® D | Betocarb® HP |



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

| Segmentation | Cement | Betocarb® | Sand | Gravel | Water | Admixture |
|--------------------|--------|-----------|------|--------|-------|-----------|
| Durability | x | | x | x | x | x |
| Strength | x | | | x | x | x |
| W/C reduction | x | | | | x | x |
| Flowability | x | x | | x | x | x |
| Paste content | x | x | | | x | |
| Packing density | x | x | x | | | x |
| Cost saving | x | x | x | | x | x |
| Technical concrete | x | x | x | x | x | x |

Special Situations require a Special Approach!



Natural Products for Sustainability



BUILDING MATERIALS

- Fillers
- Pigments
- Additives
- Customer-specific solutions



R&D

- Interdisciplinary
- Targeted
- Cost-oriented
- Research clusters



SERVICE

- Technical customer service
- Expert skills
- Analytics
- Pilot facilities



PRODUCTION

- Secure supply of raw materials
- State-of-the-art production facilities
- ISO-certified quality control



LOGISTICS

- Optimized supply chain
- Flexibility
- Distribution network
- Warehouses

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