

Have you transformed
your formulation yet?



enhanced
by Omya



Boosting Opacity

Enhancement of Paints & Coatings
with ChameleoBoost™ Technology



THINKING OF TOMORROW




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by Omya

Boosting Opacity with ChameleoBoost™ inspired by Omya

In general terms, opacity can be described as the ability of a substance or mixture to hide a substrate. A typical example would be a coating film covering a given surface such as a wall. This simple phenomenon is actually the result of a rather complex interplay of various components and parameters. In industry, opacity is often referred to using other terms such as contrast ratio or hiding power. Whatever term is used, the common functionality they describe is the ability of an applied optical layer to hide what is underneath.





Have you transformed your formulation yet?



Simply put, opacity of a coating is high if the difference between refractive index of the coating constituents is large. In practice, this can be easily achieved by adding white pigment such as titanium dioxide to a coating formulation. The required amount of white pigment for high opacity (sometimes referred to as coverage or hiding efficiency) depends on the binder content, or more precisely on the so-called pigment volume concentration (PVC). Problem solved!

However, if we combine economic considerations with technical knowhow, the way of formulating coating materials might change significantly. In fact, the addition of mineral fillers such as calcium carbonate products can reduce formulation cost sharply, but typically have a negative impact on optical performance such as opacity.

ChameleoBoost™ by Omya offers a unique solution for boosting opacity while optimizing formulation cost. **ChameleoBoost™** will either enhance coating performance (e.g. opacity) at equal formulation cost or reduce formulation cost (e.g. partial substitution of titanium dioxide) while maintaining performance level of the coating film. Any combination of the two is of course possible as well.

Each of these factors have a direct impact on light absorption and scattering. PVC level and film porosity are particularly important when it comes to film opacity. On one hand, coatings formulated at low PVC typically exhibit high durability providing good weather and wet scrub resistance, but high pigment levels are required to achieve acceptable opacity performance. On the other



Key factors influencing opacity of a coating film are:

- Amount and type of titanium dioxide
- Volume and type of mineral filler varying in composition, particle size and shape
- Pigment volume concentration
- Spreading rate
- Film porosity

hand, formulations with high PVC are usually less durable, but require less pigment to reach good coverage due to increased film porosity. In fact, entrapped air in the pores of the coating film has a different optical density (or refractive index) compared to mineral fillers, pigments and binder, and thus increases the difference between refractive indices. Furthermore, ultrafine mineral particles support the even distribution and stabilization of single pigment particles and provide an additional boost of opacity. The latter phenomenon is called pigment spacing which leads to more efficient light scattering by increasing particle interface surface area compared to a situation where pigment particles are agglomerated. **ChameleoBoost™** by Omya allows for the optimal adjustment of coating opacity while keeping formulation cost to a minimum through the use of qualified functional mineral offering consists of:

Powder products:

Omyabrite®
Omyawhite®
Omyacarb® Extra
Calcigloss®
Omyacoat®
Omyaspace®

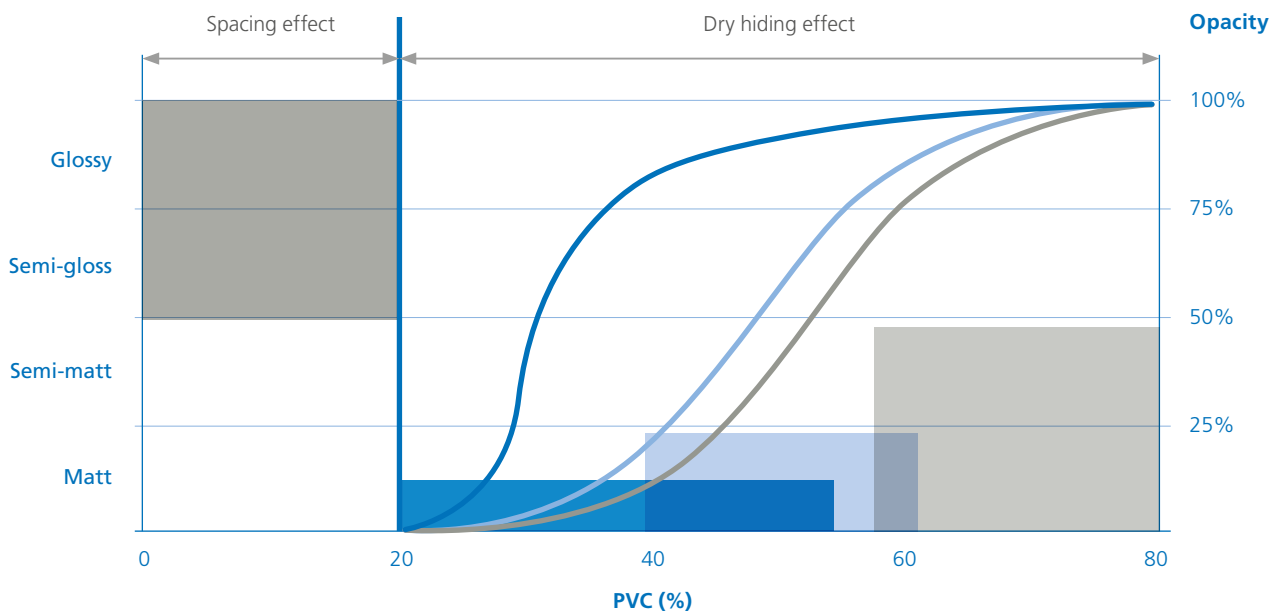
Slurry products:

Omyaflow®
Omyaspace®
Omyawhite®

ChameleoBoost™ inspired by Omya

ChameleoBoost™ inspired by Omya offers functional mineral fillers combined with formulation expertise for a large application field covering the entire PVC range of decorative paints for matt over semi-matt and semi-gloss to glossy paint systems.

ChameleoBoost™



Application recommendation

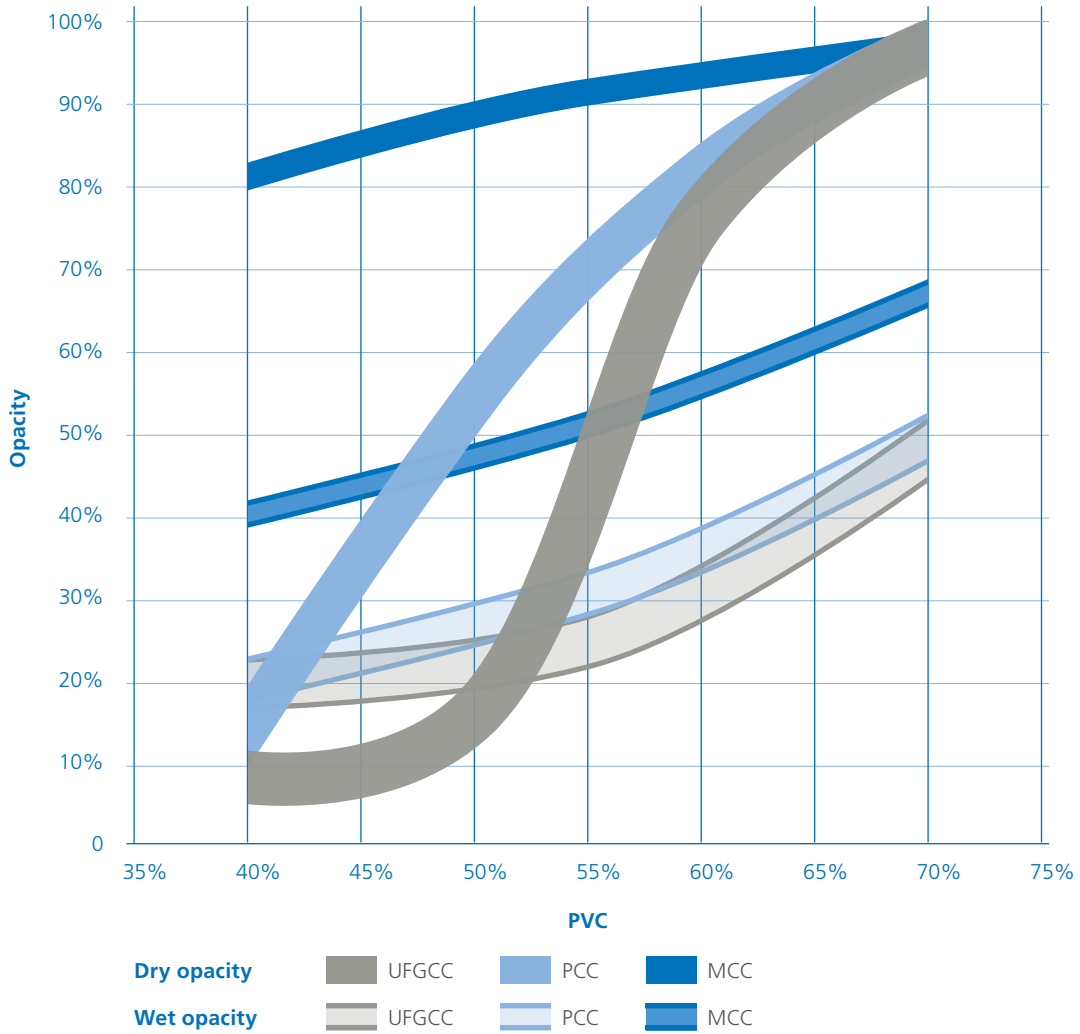
- Omyacarb® Extra, Calcigloss®, Omyaspace®
- Omyabrite®
- Omyawhite®
- Omyacarb® Extra, Omyacoat®, Omyaspace®, Omyaflow®

Development of opacity without white pigments

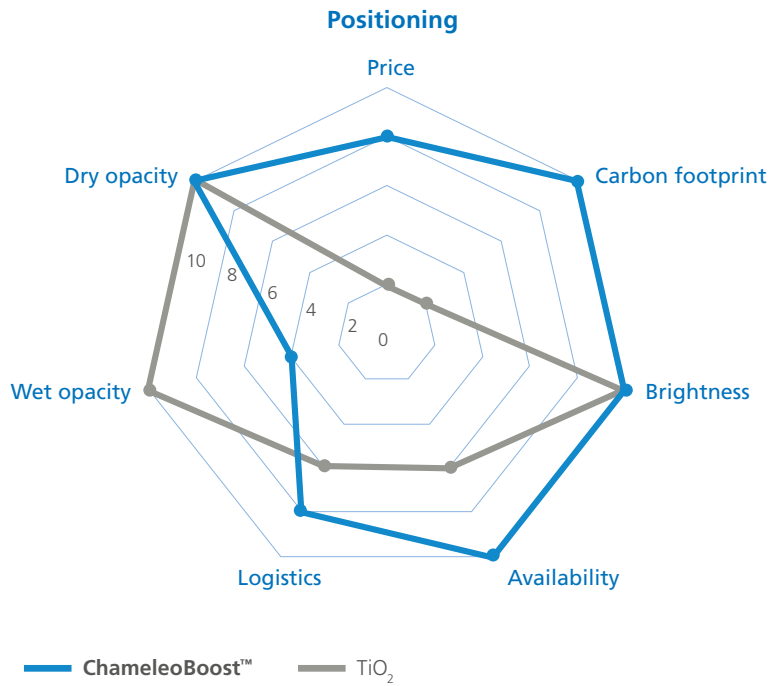
- MCC
- PCC
- UFGCC



Development of dry and wet opacity of different CaCO₃ without white pigments

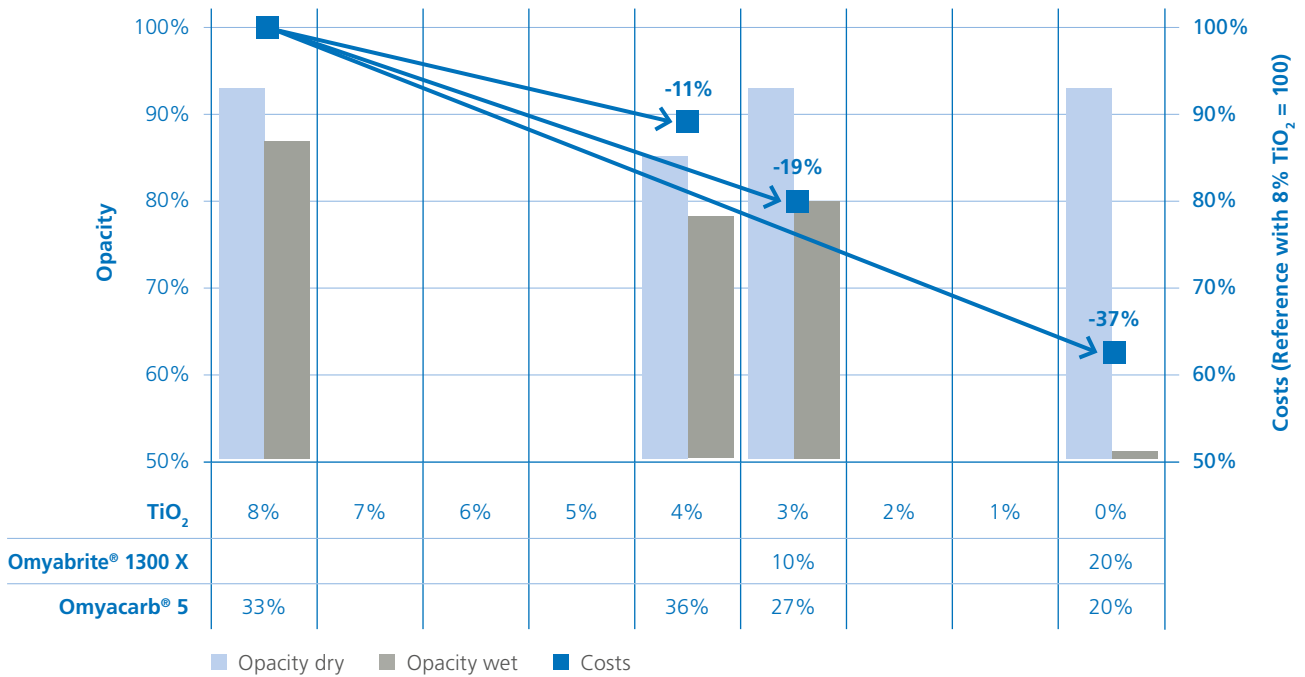


ChameleoBoost™ versus TiO₂



In many cases, **ChameleoBoost™** is used in combination with high quality GCC fillers such as Omyacarb® to balance additional coating properties such as wet scrub resistance, solids, rheology and workability through optimized particle packing.

Cost impact onto dry and wet opacity in emulsion paint at PVC 65% at different TiO₂ levels



The use of Omya ChameleoBoost™ offers a series of benefits:

- Opacity boosting
- High brightness
- Enhanced TiO₂ performance through spacing effect & pigment stabilization
- Formulation cost optimization (e.g. partial substitution of TiO₂)
- Gloss control
- Reduced carbon footprint of coating formulation

ChameleoBoost™
Technology



Product Matrix

The **ChameleoBoost™** Technology offers a wide product portfolio for water- and solvent-based as well as powder coatings. No matter where you demand boosting opacity, Omya supplies with smart logistics all over the world. Production is located in our regions Americas (RAM), Asia-Pacific (RAP), Europe (REU) and Greater South & East (RSE).

Solvent based

Product	Produced in	Market (Region)	Technology	Delivery Form	Decorative	Industrial
Omyacarb® Extra	Various	REU, RSE	UFGCC	Powder	++	++
Calcigloss®	Various	RSE, RAP	UFGCC	Powder	++	++
Omyacoat® 420	Various	REU, RSE, RAP	UFGCC	Powder	++	++
Omyacoat® 850	France	REU	UFGCC	Powder	++	++
Omyacoat® 852	Finland	REU, RSE	UFGCC	Powder	++	++
Omyacoat® 855	Korea	RAP	UFGCC	Powder	++	++
Omyaspace®	Various	RAM	UFGCC	Powder	++	++
Hakuenka® CCR-S	Austria	REU	PCC	Powder	+	+

Powder Coating

Product	Produced in	Market (Region)	Technology	Delivery Form	Gloss
Omyacarb® Extra	Various	REU, RSE	UFGCC	Powder	++
Calcigloss®	Various	RSE, RAP	UFGCC	Powder	++
Omyacoat® 420	Various	REU, RSE, RAP	UFGCC	Powder	+
Omyacoat® 852	Finland	REU, RSE	UFGCC	Powder	+
Omyacoat® 855	Korea	RAP	UFGCC	Powder	+
Omyaspace®	Various	RAM	UFGCC	Powder	++

Water based

Product	Produced in	Market (Region)	Technology	Delivery Form	Decorative				Industrial
					Gloss	Semi-Gloss	Semi-Matt	Matt	
Omyacarb® Extra	Various	REU, RSE	UFGCC	Powder	++	++	++	+	++
Calcigloss®	Various	RSE, RAP	UFGCC	Powder	++	++	++	+	++
Omyacoat® 420	Various	REU, RSE, RAP	UFGCC	Powder	-	+	++	++	+
Omyacoat® 850	France	REU	UFGCC	Powder	-	+	++	++	-
Omyacoat® 852	Finland	REU, RSE	UFGCC	Powder	-	+	++	++	+
Omyacoat® 855	Korea	RAP	UFGCC	Powder	-	+	++	++	+
Omyaspace®	Various	RAM	UFGCC	Powder	+	++	++	++	+
Omyaflow® 5	Various	REU, RAM	UFGCC	Slurry	+	++	++	+	+
Omyaflow® 6	Malaysia	RAP	UFGCC	Slurry	+	++	++	+	+
Omyaflow® 7	Various	REU, RAM	UFGCC	Slurry	+	++	++	+	+
Omyaflow® 8	Various	REU, RSE	UFGCC	Slurry	+	++	++	+	+
Omyaflow® 9	Various	REU	UFGCC	Slurry	-	+	++	++	+
Omyaflow® 10	Various	REU, RAM, RAP	UFGCC	Slurry	-	+	++	++	+
Omyaflow® 15	Various	REU, RAP	UFGCC	Slurry	-	+	++	++	+
Omyaflow® 16	Various	REU, RAM	UFGCC	Slurry	-	+	++	++	+
Omyaspace®	Various	RAM	UFGCC	Slurry	+	++	++	++	+
Omyawhite® 18	Austria	Global	PCC	Powder	-	-	++	++	-
Omyawhite® 20	Austria	Global	PCC	Powder	-	-	++	++	-
Omyawhite® Plus	Austria	Global	PCC	Powder	-	-	++	++	-
Hakuenka® CCR-S	Austria	REU	PCC	Powder	++	++	-	-	+
Omyawhite® Plus	Austria	Global	PCC	Slurry	-	-	++	++	-
Omyabrite® 1300 X	France	Global	MCC	Powder	-	-	+	++	-

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