



Omya Smartfill

Improves engineering polymers
with lower overall costs and
reduced environmental impact



THINKING OF TOMORROW

Omya Smartfill

Omya Smartfill is a natural calcium carbonate powder with a special surface modification for compatibility with Engineering Polymers like Polyamides and Polycarbonate.

Selected Omya Smartfill grades are made of 100% pre-consumer recycled calcium carbonate, increasing the overall proportion of recycled material in the material composition.

Polyamide (PA) with improved ductility at lower cost and carbon footprint

Omya Smartfill improves the elongation and impact strength of Polyamides due to an improved isotropy and provides processing benefits such as reduced warpage and improved surface finish in glass fiber compounds.

Compared to other minerals such as wollastonite, talc and kaolin, Omya Smartfill offers higher impact strength and excellent whiteness.

Material	Modulus [MPa]	Elongation at break [%]	Charpy Notched Impact [kJ/m²]	HDT (120°C/1.80 Mpa) [°C]
Daunyl DPN 27 AV (Natural PA6)	3190	8	2.4	60
PA6 + 30% Omya Smartfill 55 - AV	3930	19	4.1	65

Replacing 5% glass fiber with 10-20% Omya Smartfill improves the overall performance of the PA6GF30 compound.

		Omya Smartfill		
		0%	10%	20%
E-Modulus [N/mm²]	PA6GF30	8070	9010	10600
Charpy Notched Impact [kJ/m²]		10.8	11.1	10.0
Yield Strength [N/mm²]		142	135	130
E-Modulus [N/mm²]	PA6GF25		8060	10400
Charpy Notched Impact [kJ/m²]			10.4	9.8
Yield Strength [N/mm²]			122	133
E-Modulus [N/mm²]	PA6GF20		6740	7370
Charpy Notched Impact [kJ/m²]			8.1	8.6
Yield Strength [N/mm²]			106	106

Polyamides are significantly more expensive and have a higher carbon footprint than Omya Smartfill. Using Omya Smartfill in polyamides and polyamide-glass fiber compounds improves both cost and carbon footprint.

Benefits for PA

- Higher ductility compared to other minerals
- Reduced warpage
- Improved surface finish in GF compounds
- Excellent whiteness
- Reduced carbon footprint

Mineral Modified PA6	Charpy Notched Impact [kJ/m²]
100% Natural PA6	2.4
PA6 + 30% Omya Smartfill	4.1
PA6 + 30% Talc	3.3
PA6 + 30% Wollastonite	3.1
PA6 + 30% Mica	2.2

White Polycarbonate with improved stiffness, excellent opacity and lower cost

Other minerals and pigments degrade Polycarbonate and reduce its mechanical properties.

Thanks to an innovative surface modification, Omya Smartfill offers improved properties compared to conventional calcium carbonate and titanium dioxide, which increases both the modulus and impact resistance.

Omya Smartfill can partially replace titanium dioxide without affecting the color values, thus improving the environmental impact and overall costs.



Material	Modulus [MPa]	Yield Strength [MPa]	Elongation at break [%]	Charpy Notched Impact [kJ/m²]	Opacity [%]	Color Value		
						L	a	b
94% PC + 6% TiO ₂	2459	63	43	9	100	93	0	3
90% PC + 3% TiO ₂ + 7% Omya Smartfill	2546	60	23	12	100	92	-1	3

Benefits for PC

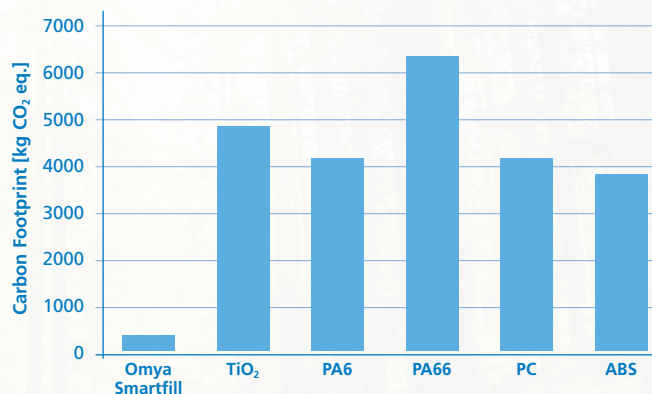
- Improved impact strength in white Polycarbonate
- Increased stiffness
- Excellent whiteness
- Lower overall costs
- Reduced carbon footprint
- Increased recycled content*



*on selected grades

Sustainability

Omya Smartfill has a carbon footprint of <300 kg CO₂ equivalent per metric ton and improves the carbon footprint of compounds when displacing polymer or glass fiber.



Some grades, such as Omya Smartfill 55-AV, are made from 100% pre-consumer recycled calcium carbonate, certified by Bureau Veritas. The recycled status of this material does not affect suitability for use in contact-sensitive applications (like Food Contact/Food packaging).



Omya International AG, Baslerstrasse 42, CH-4665 Oftringen, info.polymers@omya.com

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