GCC AS SOLE FILLERS IN SILYL-TERMINATED POLYETHER SEALANTS

Carbital™ 110S is recognised as being particularly suitable for use in low modulus silyl-terminated polyether sealants. Carbital 110S contributes to a valuable combination of sealant rheological and mechanical properties.

Carbital 110S can be used as the sole filler in low modulus silyl-terminated polyether sealants. **ImerSeal™ 50** and **Carbital™ SB** are also recommended for such use in these sealants where they offer potential for enhancing sealant performance and cost effectiveness.

Carbital 110S, **ImerSeal 50** and **Carbital SB** exhibit the characteristic high whiteness of marble-based products. Ultrafine **Carbital SB** can provide increased sealant modulus compared to fine **Carbital 110S** and **ImerSeal 50**.

ImerSeal 50 is additionally characterised by engineered moisture stability, ie. controlled moisture pick-up characteristics. **ImerSeal 50** permits reductions or elimination of mineral predrying, and/or reductions in intergral dehydrating agents.

Evaluations of **Carbital 110S**, **ImerSeal 50** and **Carbital SB** as the sole filler in silyl-terminated polyether sealants have shown that the choice of GCC can have significant impact on sealant performance, and potentially on cost-effectiveness. Results showed that,

- Slump resistant sealants can be formulated with **Carbital 110S**, **ImerSeal 50** or **Carbital SB**
- High sealant whiteness, or potentially whitener reductions, can be achieved, especially with **Carbital SB**
- **Carbital SB** or **ImerSeal 50** give increased sealant thixotropy. **ImerSeal 50** particularly offers potential for thixotrope reduction.
- **ImerSeal 50** gives increased sealant elongation.
- **Carbital SB** gives increased sealant modulus.
- **ImerSeal 50** is an ideal choice for low modulus sealants combining good whiteness, high elongation and low modulus with the potential to achieve formulation and process cost reductions.

Sealant mixes were carried out under vacuum in a Molteni Planimax mixer. The rheological properties of the sealants were measured after the 7 days conditioning period, using a Carrimed rheometer (2 cm cone and plate, 20°C). Sag resistance was assessed with a Boeing jig. Tensile properties were measured on "H-blocks" at room temperature after curing for 2 weeks in a moist environment.

BENEFITS:

- **High whiteness**
- **High thixotropy**
- **Low modulus**
- **Formulation & process cost reductions**

Table 1: Typical Carbonate Properties

	Coating Level(wt.%)	Brightness (ISO)	Particle size finer than (wt.%)	
			10µm	2µm
Carbital™ 110S	0.9	94.5	99	55
Carbital™ SB	1.2	95.0	99	88
ImerSeal™ 50	0.9	94.5	99	50

Table 2 - Sealant Formulation

Carbital/ImerSeal	490
Whitener	25
Polymer	245
Plasticiser	172
Thixotropic agent	49
Stabilisers	4
Dehydration agent	8
Adhesion promoters	5
Catalyst	2
Total	**1000**

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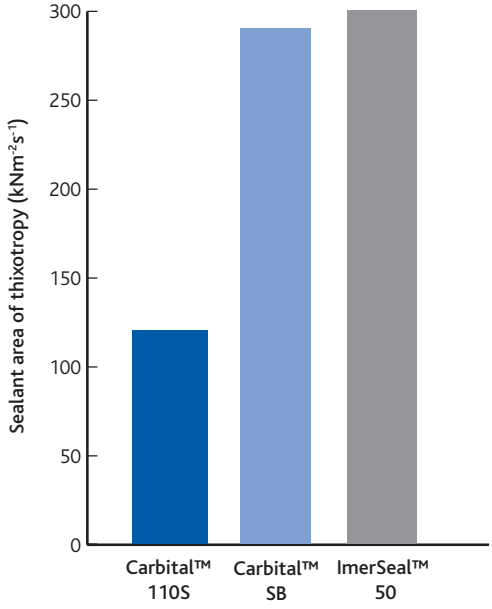
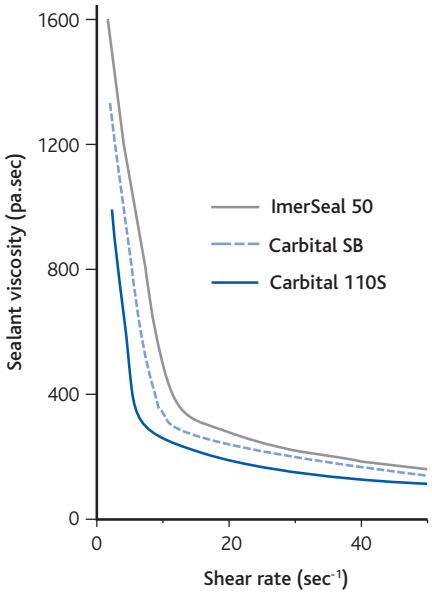
Table 3: Sealant Properties

	Carbital 110S	Carbital SB	ImerSeal 50
Colour L*	92.5	93.5	92.7
Hardness (Shore A)	41	44	38
Area of Thixotropy ($kNm^{-2}s^{-1}$) 115	289	301	
Sag (mm)	< 1	< 1	< 1
Peak Tensile Strength (MPa)	1.1	1.4	1.0
Modulus at 100% (MPa)	0.5	0.7	0.4
Elongation at Peak (%)	168	119	210





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