

Uniclass L331:P224	EPIC C311:X223
CI/SfB (-A) Eq7	



Technical Manual – Section 17

Self-Compacting Lightweight Aggregate Concrete

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Introduction

Developments in admixture technology, especially in self-compacting admixtures, have now made Self-Compacting Lightweight Aggregate Concrete (SCLWAC) possible with coarse and fine Lytag aggregate.

Due to the continuous grading and high fines content of the 0/4mm fine Lytag, when it is combined with Lytag coarse aggregate and cement an excellent, even grading curve results. With no gap in the grading between the aggregate and cement, this makes it ideal for SCLWAC. This allows contractors or precast concrete manufactures to get all the benefits of Self Compacting Concrete like ease of placing without vibration and noise, filling around very congested reinforcing, while giving the designer the benefits of reduced concrete density.

Mix Details

Table 1 gives guidance on suggested mix proportions as a starting point. With a number of admixture suppliers offering SCC admixture it is not possible to give definitive mix designs. Depending on the supplier, the admixture may contain superplasticiser and viscosity modifiers combined as a single addition or in individual components. Dosage rates and water demands also can vary. It is recommended therefore that trials are conducted by the concrete manufacturer using the proposed admixture prior to concrete use.

In order to successfully produce Self Compacting Concrete, generally, cementitious contents are high, this provides ultra fine material to allow the high workability while maintaining the cohesion required. It is therefore envisaged that for most applications the range of mixes detailed will be sufficient. However for special applications or non-standard strength requirements please either contact Lytag or the admixture supplier.

In the first instance the concrete mixes have been designated as Prescribed mixes until a suitable strength is agreed or no strength requirement is specified.



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TABLE 1 SUGGESTED MIX DESIGN PER M3 OF COMPACTED CONCRETE

Compressive Strength Class	Cement to BS EN197 – CEM 1 (kg)	Lytag BS EN 13055 4/14mm	Lytag BS EN 13055 0/4mm	Recommended Target Consistence
P450	450	0.52	0.56	780mm
P500	500	0.51	0.55	780mm

TABLE 2.TYPICAL CONCRETE DENSITY OF LYTAG / LYTAG FINES MIXES

Strength Class (N/mm2)	Fresh Wet (kg/m3)	Oven Dry (kg/m3) / Density Class
LC20/22 – LC40/44	1800-1880	1400 – 1600 D1.6



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