



Technical Manual – Section 13

Lytag for Precast Concrete

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Precast concrete Introduction

Lyttag lightweight aggregate is used extensively in a variety of precast products. Giving added benefits in handling, coupled with the performance of normal weight aggregate concrete makes Lyttag the natural alternative.

Why Use Lyttag

Lyttag granular aggregate produces concrete with a weight saving of approximately 25% over normal weight concrete. This can lead to significant advantages in production techniques and logistics and allows for overall cost savings to be made. Lyttag Sand 0/4mm could also be considered. This fine material, when used in a concrete mix in conjunction with Lyttag granular aggregate, results in weight savings of approximately 30% compared to normal weight concrete.

Larger units can be lifted, for a given crane capacity or transported for a given carrying capacity. Larger panel sizes may reduce the number of joints required. This speeds up construction; reducing the cost of jointing and lowering the cost of casting by cutting mould costs. Drilling and cutting for fixings is highly accurate due to the aggregate offering no deflection to drills. Tool wear is also reduced extending usable life.

External walls, using Lyttag aggregate concrete panels, possess improved thermal insulation over similar panels cast with natural aggregate concrete. Lyttag wall and floor panels are more resistant to accidental loadings as they are generally more resilient and absorb more energy in the elastic range than natural aggregate concrete. These benefits can be directly useful to precasters as well as helping them market their products.



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Mix Designs

Skip Mix (Lytag Granular / Natural Sand)

TABLE 13.1. TYPICAL MIX DESIGN PER M3 OF COMPACTED CONCRETE

Compressive Strength Class	Cement to BS EN197-CEM 1 (kg/m3)	Suitable Sand to BS EN 12620 (Dry) (kg/m3)	Lytag BS EN 13055 (Oven dry) 4/14mm(m3)	Recommended Consistence (Slump mm)
LC20/22	280	670	0.88	70
LC25/28	320	638	0.88	70
LC30/33	370	592	0.88	70
LC35/38	420	546	0.88	70
LC40/44	480	485	0.88	70
LC45/50	600	345	0.88	70

TABLE 13.2. TYPICAL CONCRETE DENSITIES

Strength Class	Fresh Wet (kg/m3)	Oven Dry (kg/m3)
LC20/22 – LC45/50	1910-2000	1600-1800 D1.8

Skip Mix (Lytag Granular / Lytag fines)

TABLE 13.3 TYPICAL MIX DESIGN PER M3 OF COMPACTED CONCRETE

Compressive Strength Class	Cement to BS EN 197-CEM 1 (kg/m3)	Lytag BS EN 13055 (Oven dry) 4/14mm(m3)	Lytag BS EN 13055 Oven dry 0/4mm(m3)	Recommended Consistence (Slump mm)
LC20/22	280	0.75	0.51	70
LC25/28	320	0.75	0.48	70
LC30/33	360	0.75	0.45	70
LC35/38	400	0.75	0.42	70
LC40/44	460	0.75	0.38	70

TABLE 13.4 TYPICAL CONCRETE DENSITY OF LYTAG GRANULAR / LYTAG FINES MIXES

Strength Class	Fresh Wet(kg/m3)	Oven Dry(kg/m3)
LC20/22 –LC40/44	1800-1850	1400-1600 D1.6



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Pre-stressed / post tensioned lytag aggregate concrete

The design parameters for pre-stressed or post tensioned Lytag concretes generally follow the recommendations in Section 4 BS 8110 – 1:1997 with modifications to allow physical characteristics being set out in Section 5 BS 8110 – 2:1985.

Examples of precast lightweight aggregate concrete:

- Sports stadia, such as terracing and cantilever stands at Twickenham RFC, Doncaster Racecourse and Cheltenham Racecourse
- Tidal mats for seabed protection of pipelines
- Bridge parapets
- Standard building products such as lintels, beams, staircases
- Cantilever beams
- Cladding panels for building facia
- Sectional buildings
- Fencing posts and panels
- Concrete roof tiles
- Flue liners
- Architectural mouldings
- Garden furniture
- Masonry blocks
- Flooring blocks



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