

# LIGHTWEIGHT FOAM CONCRETE (METHOD STATEMENT)

## INTRODUCTION:

The Lightweight Foam Concrete is a foam screeding material when applied over a structural concrete deck; it forms a strong continuous, fireproof layer with considerable thermal insulation properties and provides effective slopes for proper drainage.

The mixing and casting of the lightweight foam concrete is done with an automated machine mainly composed of mixer, aerator, pump, water tank, electric panel board and related accessories all set on special trailer.



Light Weight Foam Machine : STANDARD

The finished surface of the lightweight foam concrete is smooth, strong and easily repairable in case of any crack development. However, due to its relatively higher shrinkage factor, in comparison to normal concrete or screed, the development of hair crack and minor cracks is an unavoidable phenomenon.

Damages to the lightweight foam concrete surface shall be repaired with sand cement mortar mix with suitable bonding agent.

## MIX DESIGN:

For an average dry density of 800 kg/cm<sup>3</sup>, the following composition is to be implemented per cubic meter.

Sand	370 kg
Cement	350 kg
Water	120 kg
Foam Agent	0.8 liter

## METHOD OF APPLICATION:

- The foam concrete is casted in multiple layer procedure, as the multiple density casting is an accepted method of placing, provided each layer thickness is not less than that of the minimum accepted 50 mm and not more than the maximum accepted 100 mm.
- Set the foam machine and so with the foaming agent, water and cement ratio depends on the required density designed for the project.
- Deck surface shall be swept clean, shall be clear of standing water, dirt, construction debris and other foreign matters.
- Prior to initiating the casting, the deck slope and levels are set using

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## MAS PAINTS & CHEMICAL INDUSTRY

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metal guideline bars and chalk line marks on up stands or to create a placement bay out of concrete mortars onto the drainage outlet.

- Immediately before casting the lightweight foam concrete, the surface shall be moistened. The first foam layer shall be left for 12 hours to set, during this setting period, no traffic is allowed.
- The same will be repeated for the subsequent layers until reaching the finished upper layer, which finishing is done by using straight edge aluminium finishing bar. An average of 5% tolerance is anticipated in the finishing of lightweight foam concrete surface level. After 12 hours from casting, the fished level surface of the lightweight foam concrete shall be water cured, one or more times a day (depending on prevailing weather condition), during which it will be covered with either jute mate or polyethylene sheet. Afterwards, it will be left for 2-3 days to fully cured.

## VARIOUS COMPONENTS OF LIGHTWEIGHT FOAM CONCRETE ARE INTRODUCED TO THE CEMENT MIXER AS FOLLOWS:

### WATER, CEMENT AND FOAMING AGENT

While the mixer is in motion, water cement and sand are introduced, subsequently the right quantity of foam is automatically injected, which is directly related to the quantity of cement. The

mixing process must then continue until all the foam is completely mixed with the liquid mortar, whereby white foaming will appear on top face of the mixer. It is advisable to complete the three operations, mixing, transporting and casting as quickly as possible in order to ensure best results.

### FOAM CHEMICAL

Foaming agent is a chemical agent obtained by means of a special process of protein hydrolization. It contains natural surfactants and is mixed with organic vegetable raw materials, which work in synergy with them. For complete details, please refer to the Technical Data Sheets (MAS FOAMCEM).

### MECHANICAL PROPERTIES:

Properties	Result	Standards
Density	800 kg/cm <sup>3</sup>	ASTM C-796
Compressive Strength	2.0 N/mm <sup>2</sup>	ASTM C-796
Thermal Conductivity Coefficient	0.21 Kcal./(m.h. <sup>o</sup> C)	ASTM C-518
Flammability	none	ASTM E-84

### Notes: Compressive Strength

In general, the main demand on the quantity of lightweight foam concrete is a certain compressive strength and density. However, unlike the regular screed, the compressive strength of air dried lightweight screed is strongly influenced by its age and even more by its moisture contents.

One year after the production, the compressive strength of the lightweight foam concrete increased by about 40% and about 60% after 2 years.

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