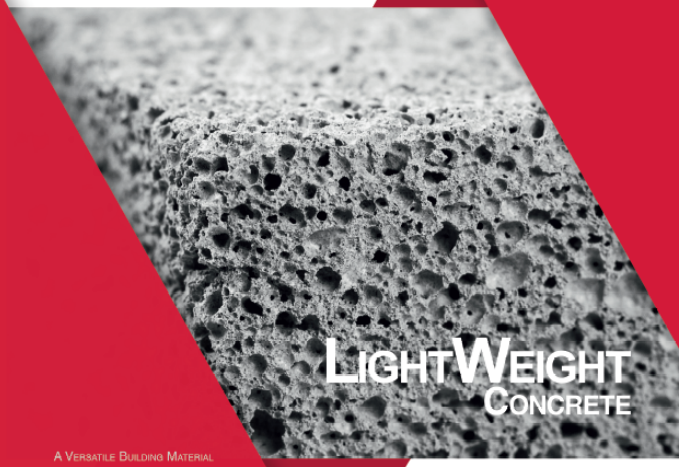
CHERRYTREE
Cherrytree Technical Services L.L.C

Cherrytree Technical Services are specialist in: all type of screed, decorative concretes, supply and apply A.A.C products and steel framing systems.



LIGHTWEIGHT CONCRETE

A Versatile Building Material

For some applications, regular concrete may be too dense, too heavy and too hard to work with. Once set, cutting is very difficult or even not possible.Foam concretes have a lower density and are easy to work with.

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LIGHTWEIGHT CONCRETE

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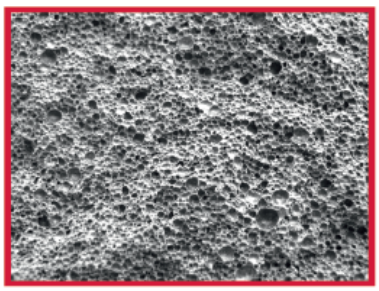
What is foam concrete?

Foam concrete, also known as lightweight aerated concrete, variable density concrete, cellular concrete and lightweight or ultra-lightweight concrete, is defined as a cementitious material with a minimum of 20% by volume of mechanically entrained foam in the plastic mortar. As mostly no coarse aggregate is used for production of foam concrete the correct term would be called indeed mortar instead of concrete. Sometimes it may also be called as "foamed cement" or "foam cement" because of mixture of only cement and foam without any fine aggregate. However, foam concrete is not to be confused with aerated autoclaved concrete, which is manufactured offsite using an entirely different method.

The density of foam concrete usually varies from 400 kg/m³ to 1,600 kg/m³. The density is normally controlled by substituting fully or part of the fine aggregate with foam.



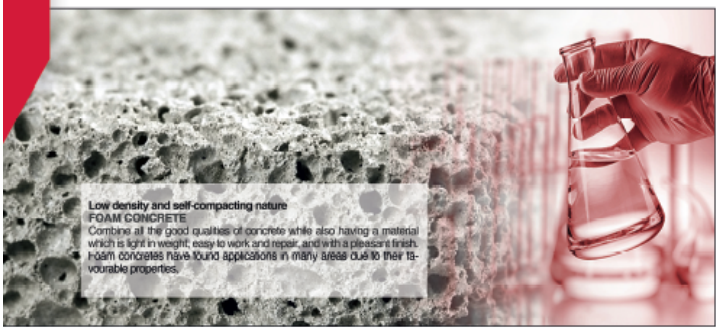
Displacing concrete with air

The variable density is normally described in kg per m³, where regular concrete is 2,400 kg/m³. Variable density can be as low as 300 kg/m³, although at this density it would have no structural integrity at all. By replacing the dense heavy concrete with air, the variable density reduces strength to increase thermal and acoustical insulation. There are many competing products, e.g. foaming agents that resembles shaving cream, to mix air bubbles in with the concrete, but all accomplish the same outcome: to displace concrete with air.

Applications

Foam concrete can be produced with dry densities of 400 to 1,600 kg/m³, with 28-day strengths of approximately 1 to 10 N/mm² respectively. Foam concretes are fire resistant, and their thermal and acoustical insulation properties make them ideal for a broad range of purposes, from insulating floors and roofs, to void filling. It is also particularly useful for trench re-instatement. Applications of foam concrete include, but are not limited to:

- Blocks and panels for walls
- Levelling floors
- Road subbases and maintenance
- Bridge abutments and repairs
- Ground stabilisation
- Roof insulation



Controlled density over a broad range of applications

OUR EFFECTIVE COMBINATION

To ensure that the final product is acceptable to builders, architects, consulting engineers and authoritties, we focus on the application aspect of the product. To meet customers' specific requirements, we combine high-quality foaming agents and technical and application support.

Talking about benefits...

Foam concrete is a highly versatile material, featuring benefits like:

Weight reduction of superstructure using foam concrete walls: less steel reinforcements required for slabs, columns, beams and foundation due to lesser load.

Reduced cost of raw materials: By adding air, enclosed in foam bubbles, the volume of concrete can be increased at very low cost.

Environmentally-friendly / Energy savings: Compared to autoclaved aerated concrete (AAC), air curing is possible for foam concrete. This saves up to 9 m2 of gas for curing one cubic meter of AAC and therefore protects our environment.

Cost reduction for transportation and storage: Less raw materials, very efficient foam concentrate.

Faster construction using cast in-situ application improved thermal insulation: Foam concrete can achieve the same insulation results as normal concrete with only 20% of the weight and 10% of raw materials. Improved fire protection: A wall of 13 cm thickness and 1,250 kg/m³ can withstand a fire for 5 hours. A wall of 10 cm thickness and only 400 kg/m³ achieves the same result, due to the air enclosed in the foam concrete. Easy to use/ produce/ handle.

High flowing capability: Can fill hollow spaces.

Avoid variations

With many chemical formulations available on the market, foam concrete, its performance and thus the final product may differ. The wide variations in strength and consistency may the result of a high content of organic protein, a long supply chain or various suppliers using different raw materials.

PANTAPOR FA & PANTAPOR CLC

To ensure and control quality, we use a developed special foaming agent. PANTAPOR FA allows to produce foam concrete of a bulk density between 0.4 and 2.0 kg/dm³. PANTAPOR FA is a protein based foaming agent that features higher strength performance. PANTAPOR CLC on the other hand is synthetic based, focusing on longer storage times, simple handling and less energy to produce foam.

Supply module (SUMO)

Having high-performance foaming agents is, however, only the first step for offering a complete solution for producing foam concrete. The foam itself is produced in a specially developed and calibrated foam generating device that controls both the rate of production and the proportion of air and solution in the foam. The bubbles are stable and able to resist the physical and chemical forces imposed during mixing, placing and hardening of the foam concrete.

Required density

Typical applications of foam concrete according to its density:

300 - 600 kg/m³: Heat insulation
700 - 800 kg/m³: Filling of pipes etc.
900 - 1,100 kg/m³: Non-structural elements
1, 200 - 1,400 kg/m³: Wall elements as non-structural and floors
1,600 - 1,800 kg/m³: Structural elements with higher strengh.

Concrete Trials

Trials with:	Ha-Be Middle East FZE	**Admixtures:**	PANTAPOR® FA STABILISIERER LC ME
BTU No.:	U_35_17	**Cement:**	OPC
Plant:	SAIF Zone - Concrete Lab	**Aggregate:**	Dune Sand 0/5mm
Trial aim:	Testing our Foam Concrete mix designs for flaws	**Trial execution:**	Ha-Be Central Lab Technical Department SAIF ZONE Sharjah - U.A.E.
Trial description:	Comparison of the fresh- and the hardened concrete Comparative trials: - consistency - strength development	**Participants:**	Sean Hogg, Concrete technician - Ha-Be Middle East Kamal H., Lab Technician - Ha-Be Middle East
Date:	04/07/2017 & 06/07/2017	**Attachments:**	Test results Diagram: slump Diagram: strength
Concrete type:	CLC800 - OPC 360kg CLC1000 - OPC 390kg CLC1200 - OPC 400kg CLC1400 - OPC 410kg CLC1500 - OPC 500kg CLC1600 - OPC 430kg	**Status:**	Sharjah, 06.07.2017

Testresults

Testing our Foam Concrete mix designs for flaws

Information			Mixdesign										Foam Generator settings						Fresh concrete						hardened concrete		
										Admixtures			Valves			Foam			Density				Temperature				
Trial No.	Date	Concrete classification	Binder type & combi	Cement	Dune Sand	0/5mm cr. Sand	Foam	Total water / Free water	w/c Value required	TYPE	kg/m³	% o.C.	Air pressure valve	Water pressure valve	Admixture pump	time to produce 200ltr	production rate	density	Target fresh density	ø10	ø30	ø60	density increase after 60min.	concrete	air	testing age	hardened concrete density	compressive strength
				[kg/m3]	[kg/m3]	[kg/m³]	[ltr./m³]	[kg/m3]					[bar]	[bar]	[%]	[sec]	[ltr/sec]	[g/ltr]	[kg/m³]				[%]	[°C]		[days]	[kg/m3]	[N/mm²]
635	04.07.2017	CLC 1000	OPC	390	260	265	595	150	0,38	PANTAPOR® FA	1,0	0,26	7,5	6,0	2,5	34,00	8,3	60	1050	1102	-	-	-	-	-			
636		CLC 1200		400	266	267	467	166	0,41	STABILISIERER LC	0,5	0,13							1240	1273	-	-	-	-	-			
637		CLC 1500		500	247	268	300	230	0,46	PANTAPOR® FA	0,8	0,23							1440	1517	-	-	-	-	-			
642	06.07.2017	CLC 800		360	173	176	630	135	0,38	STABILISIERER LC	1,0	0,25							1888	1517	=	=	=	=	=			
643		CLC 1400		410	270	642	370	180	0,44	PANTAPOR® FA	0,7	0,14																
644		CLC 1600		430	321	763	290	200	0,47	STABILISIERER LC	2,0	0,40																
										PANTAPOR® FA	1,2	0,33							850	848	-	-	-	-	-			
										STABILISIERER LC	0,5	0,14																
										PANTAPOR® FA	0,7	0,17	7,5	6,0	2,5	-	-	91	1512	1400	-	-	-	-	-			
										STABILISIERER LC	1,5	0,37																
										PANTAPOR® FA	0,6	0,14							1706	1684	-	-	-	-	-			
										STABILISIERER LC	1,5	0,35																

Up until 7 Days fc,cube = Stren 28 Days: fc,cube= 0,92 x fc,dry

Comparison Fresh Concrete Density

Testing our Foam Concrete mix designs for flaws