



Allied Foam Tech Corp.

LIGHTWEIGHT CEMENT/CONCRETE

Allied Foam Tech

Products



Technology



Cast in Place



Precast





Allied Foam Tech

146 Keystone Drive, Montgomeryville, Pennsylvania 18936

- . Aqueous foam technology
- . Foam equipment
- . Foaming agents

Description:

Allied AFT foam systems provide the most stable aqueous foams currently available in the construction industry.

The AFT series of foam agents, using compressed air and AFT foam generating equipment, generate very fine and stable foams. They provide cement, concrete and gypsum mixes with reduced weight, improved workability, insulation value, sound proofness, and expanded applications. and expanded applications.

Advantages: Excellent Foam Stability -

Aqueous foams derived from AFT foaming agents will maintain foam stability for hours or longer. This ensures that the foamed cement/concrete maintains a fine and uniform foam texture through the whole hardening process. No other foam products available in the industry can match such foam stability.

Provide a wide spectrum of rheological properties

The dynamic nature of the AFT foam systems allow different foam rheology to be incorporated into the host cement/concrete matrix to satisfy a wide range of slump loss requirements in different applications.

Broad compatibility with various cement/concrete admixtures -

AFT foams, unlike the conventional surfactant or protein based foams, are quite compatible with different kinds of cement, fly ash, sand/aggregate fillers, retarders,

accelerators and water reducers.

Provide a wide spectrum of water uptake profiles for different applications -

The **AFT 500** series of foam reagents provide cement/concrete with very low water uptake. Cementitious foams at densities as low as one tenth (1/10) that of dense concrete will still maintain lower than 15 % volume water uptake in a 24 hour water immersion test. Thin cast at < 1/4" (0.63 cm) can also cure properly.

The **AFT 400** series of foam reagents provide cured cement, mortar and concrete mixes with efficient moisture penetration, ideal for roadway repair and trench fill applications.

Effective density reduction while still providing excellent strength for target applications

The **AFT-400** foam system provides effective density reduction of various cement and concrete mixes while still retaining the needed strength and other properties requirement for the intended applications.

Effective sound and temperature barriers

Cementitious foams based on the **AFT-500** foam system maintains good foam stability and fine foam texture even at a nominal density of one fortyth (1/40) that of dense concrete. Such materials will function as effective sound and temperature barriers without the fire hazards associated typically with many other insulative foams.

Provide cementitious foams with an excellent combination of weight reduction, adhesion,

abrasion resistance and strength

Foamed cement and concrete based on the **AFT-500** system not only possess good insulative properties they also exhibit excellent adhesion, abrasion resistance and good durability even at thin cast. such thicknesses.

Properties:

Foaming agents -

AFT-400 Series Our standard foam concentrates that provide foamed cement and concrete with excellent early (one day) and 28 day compressive strengths and high water resistance. Such materials are ideal for load bearing or light load bearing panels, blocks, and bricks.

Foamed cement at densities as low as 3 pcf (0.05 gram/cc) with fine cell size can be made with AFT-400. Such highly insulative, very low density cementitious foams with their high R value and non-flammability are ideal core materials as wall and cinder block infills.

AFT-500 Series Our premium foam concentrates that provide cementitious foam coating with good cured properties at thin sections. It is ideal for various precast manufacturing processes and cast-in-place applications where lightweight and high integrity is needed.

Foam Generating Equipment

The **AFT G-** series of foam generators are economical, mobile and compact. The typical rate of foam production is from 3 to 20 cu. ft. per minute (depending on the model used). These foam generators incorporate a special design to refine



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foam internally at low running air pressure (< 100 psi). The design is superior to conventional foamer that refines foam with a lengthy hose under high air pressure. All the **AFT G-** series of equipment can be locally operated, or remotely controlled with a hand held controller. The equipment is further provided with various flow valves, solenoid valves, and digital timer controls for precise and repeated foam generation.

Physical Properties and Test Results

Many applications have been undertaken successfully at various precast plants in North America and Europe. Some examples are given below:

Application 1:

Vertically applicable and highly insulative cementitious foams based on AFT-500 foam system

Materials :

- . Portland cement with suitable cement admixtures
- . AFT-500 foam system

Density produced (dry) : 6 - 35 pcf

Application: cinder block and wall infills, roofdecks, vertically trowellable (low slump) and insulative foam on various wooden and cementitious substrate.

Properties: . various slump features. Some foams can be applied at 45 degrees slope and as thick as several inches without sagging.

- . excellent sound and temperature barrier.
- . hardened foam maintains very fine pore size.
- . low water uptake.
- . good 28 days compressive strength.

foamed cement with very low slump



foam application over the roof of 4 stories underground structure.

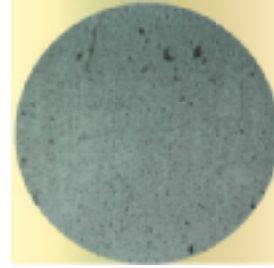


Finished landscape on the roof in 2008

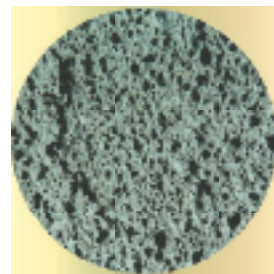


3 inch thick, 35 pcf, 300 psi roofdeck over then roof of a 4 stories underground structure with low slump Allied foam cement mix (Harvard University, NW Labs., 2008)

FOAMED CEMENT MIX

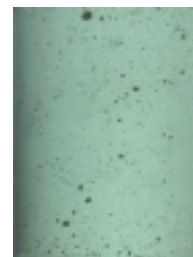


Foamed Cement Using Allied AFT-500 Foam
Density = 0.24 g/cc (15 pcf)

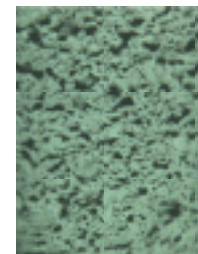


Foamed Cement Using conventional proteinaceous Foam
Density = 0.24 g/cc (15 pcf)

FOAMED CONCRETE MIX



Using Allied AFT-500 Premium Foam
Density = 1.25 g/cc (77.5 pcf)



Using conventional proteinaceous Foam
Density = 1.25 g/cc (77.5 pcf)



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Application 2:

Lightweight and load-bearing cementitious panels, blocks and bricks

Materials :

- . Portland cement/aggregate mixes with suitable concrete admixtures such as superplasticizers
- . AFT-510 foam system

Density produced : 40 - 85 pcf

Application: roofing, wall and floor panels, construction bricks and blocks.

Properties: . lightweight with good strength profile, water resistance and workability (various slump loss characteristics), good sound and thermal insulation

Application 4:

Foamed Cement Roofdeck as Sports Field

First of its kind (Georgetown University, Washington D.C., 2003)



1. Equipment/Material Mobilization



2. Lightweight Cement Poured on top of the roof from ground



3. Hardening of Foamed Cement (140,000 square feet, 35 pcf, 300 psi)



4. Finished Sports Field w. Turf Cover (Georgetown University, Washington D.C., 2003)

FOAMED CEMENT OR CEMENT/AGGREGATE MADE WITH AFT-420 FOAM

	Density ^a (28 day)	Compressive Strength (28 day)
	(g/cc)	
Cement	0.49 (30.4 pcf)	362 psi (2.50 N/mm)
Cement	0.58 (36.0 pcf)	487 psi (3.36 N/mm)
Cement	0.75 (46.5 pcf)	966 psi (6.66 N/mm)
Cem./Agg.	1.21 (75.0 pcf)	>2,500 psi (17.2 N/mm)

^aASTM-796

Application 3:

Foamed concrete for void fills

Materials :

- . regular cement or mortar mix
- . admixtures such as plasticisers and superplasticizers
- AFT-400 foam system

Density produced : 20 - 40 pcf

Application: void fill, pipe, tunnel & trench infills, floor slabs

Properties: . lightweight with good strength profile, good depth profile per pour without foam collapse, water resistance and workability, good sound and thermal insulation



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Explanation :

Autoclaved lightweight concretes (ALCs) typically have much higher compressive strength than that of cast-in-place cement and concrete at the same densities, higher strength allows ALCs be used as load bearing roof and wall panels, construction bricks and blocks, their room temperature cast-in-place counterparts are usually restricted to non-load bearing roofdecks and void fills. However, the capital investment for an ALC plant and the energy consumption for making ALCs are extremely high, and the ALCs are for precast applications only. Allied Foam Tech Corporation, using an extremely innovative approach towards aqueous foam technology, has revolutionized the precast and cast-in-place applications for foamed cement and concrete. Aqueous foams derived from the AFT technology usually have hours or longer of foam stability after foam generation while foams derived from conventional surfactants or protein start to show foam collapse within minutes. Foamed cement and concrete derived from the AFT foam system, unlike the conventional room temperature cast materials, have strength characteristics that match quite well with the ALCs (see table on page 3). Furthermore, the cement and concrete from the AFT foams have coloring capability, much finer foam texture and significantly better water resistance than their ALC counterparts. Foamed cement and concrete based on the AFT foam technology, because of their unique strength and other performance characteristics, are suitable for both pre-cast/load-bearing and cast-in-place applications.



Lightweight Blocks



Cinder Blocks Fill

Lightweight Precast - Exhibits



Decorative Pieces for Wall



Baluster



Decorative Wall Panels



Allied Foam Tech

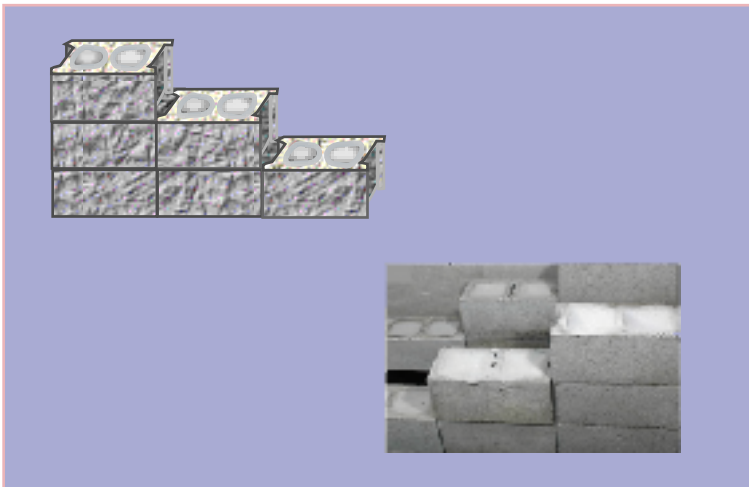
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AFT FOAM APPLICATIONS-SCHEMATICS

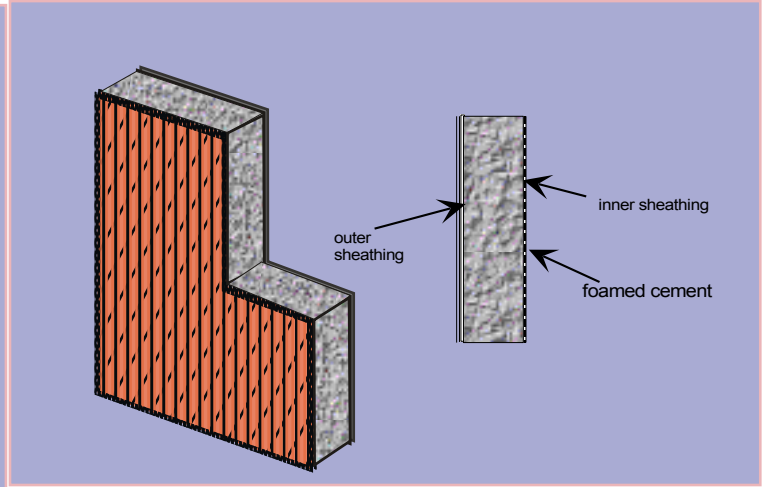
PRECAST APPLICATIONS

CAVITY FILL FOR BLOCKS



CAST IN PLACE APPLICATIONS

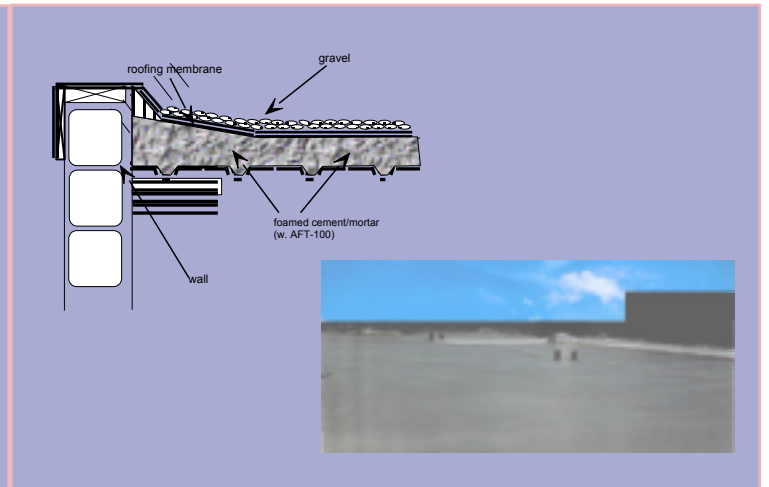
WALL PARTITIONS



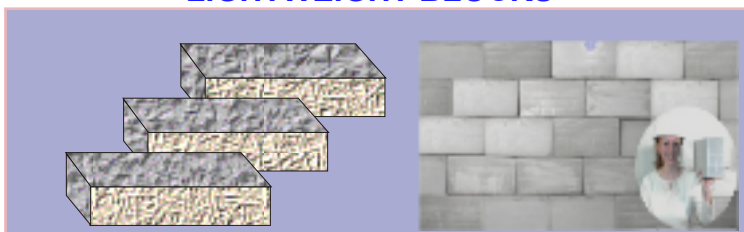
WALL PANEL 1



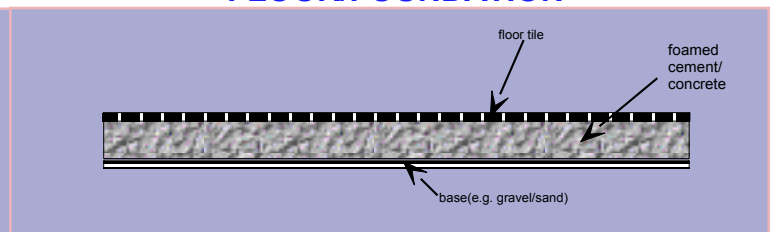
ROOFING & RE-ROOFING



LIGHTWEIGHT BLOCKS



FLOOR/FOUNDATION





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ALLIED FOAM TECHNOLOGY

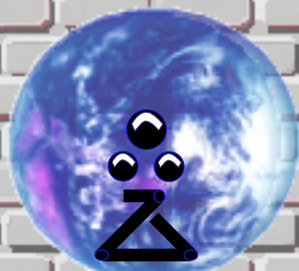
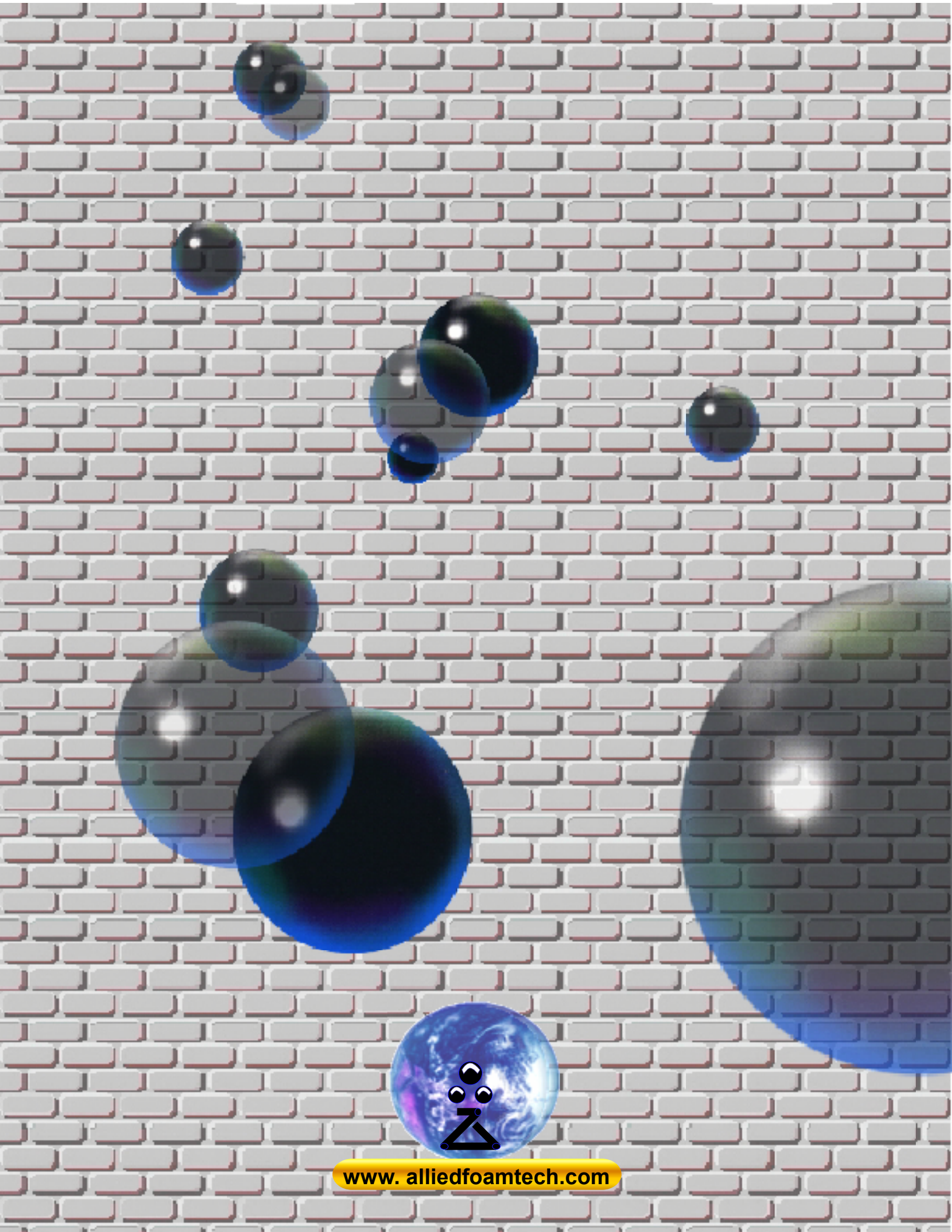
- FOAMED CONCRETE, GYPSUM AND CERAMICS
- FOAM FOR ODOR CONTROL AND AS LANDFILL COVER
- FOAMED ADHESIVE, TEXTILE BINDER

ALLIED FOAM TECH HAS DEVELOPED A SERIES OF FOAM REAGENTS AND FOAM GENERATING EQUIPMENT. AQUEOUS FOAMS BASED ON THE AFT TECHNOLOGY ACHIEVE EXTREMELY FINE STRUCTURE AND EXCELLENT FOAM STABILITY UNPARALLELED IN THE INDUSTRY.



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