



GYPSUM WALLBOARD FOAMING SOLUTIONS

The core structure of a gypsum board can significantly affect its properties. Achieving the desired core structure in a gypsum board depends on:

- Board processing conditions
- Gypsum slurry formulation
- Foamer chemistry
- Stucco conditions
- Mixer design

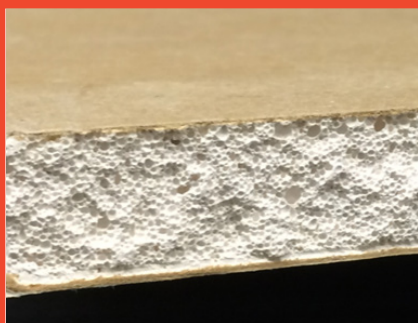
Stepan Company offers a variety of foamers, allowing a board manufacturer to select an optimal chemistry for a specific formulation, process condition, or need in order to achieve the desired core structure and board properties.

Stepan Gypsum Foamer Technologies:

- Wide range of coalescing abilities to obtain desired bubble size
- High flash point options
- Low actives (30-40%)
- High actives (50-60%)
- Formaldehyde-free options

Product	Activity	Flash Point*	Coalescing
STEOL® CS-230	Low	High	Low
STEOL® FA-403 M	Low	High	
CEDEPAL® FA-406	High	Low	
CEDEPAL® FA-406-G	High	High	
STEOL® DES32-IS	Low	High	
CEDEPAL® EAK	High	High	Medium
CEDEPAL® EAK-2	High	High	
ALPHA FOAMER®	High	Low	
ALPHA FOAMER® G	High	High	High
CEDEPAL® GFA-02 M	Low	High	
CEDEPAL® GFA-01 M	Low	High	
CEDEPAL® GFA-03 M	Low	High	

*Low: <201°F (94°C) and High: >201°F (94°C)

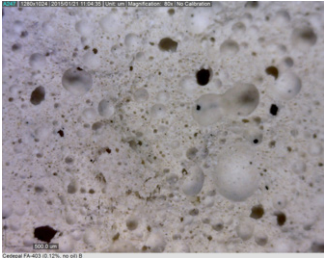


- Dedicated Gypsum R&D
- On-site technical support
- Diverse product portfolio
- New product development
- Global manufacturing footprint
- High level of quality and service

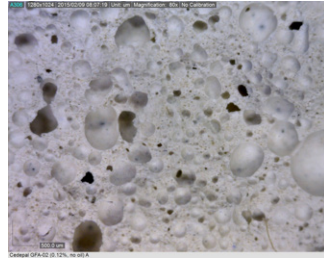
CEDEPAL GFA M SERIES

A unique combination of coalescing ability and foam efficiency to help make a stronger, lighter board.

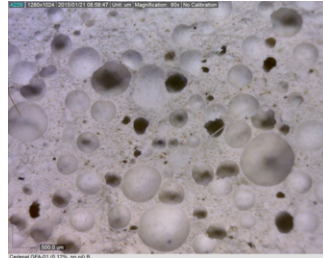
Ability to Produce Lightweight Boards¹



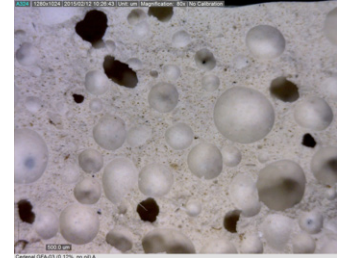
STEOL FA-403 M



CEDEPAL GFA-02 M



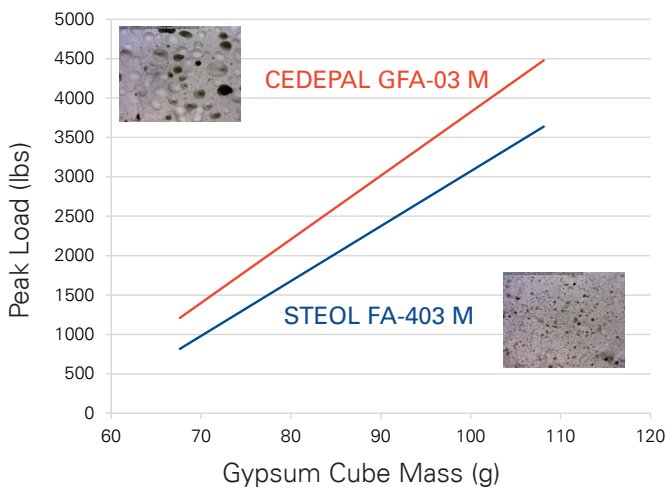
CEDEPAL GFA-01 M



CEDEPAL GFA-03 M

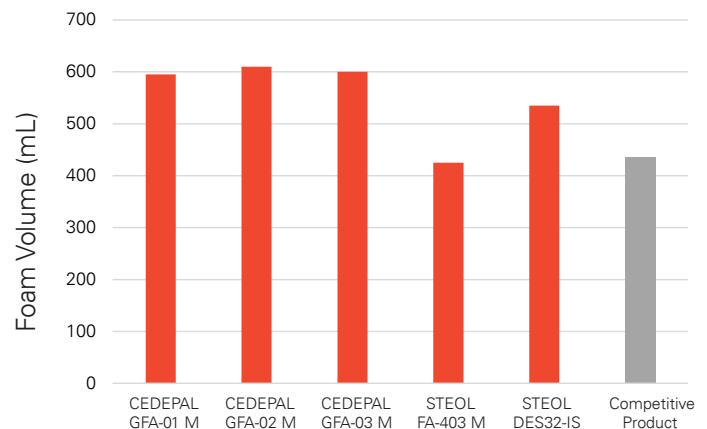
Increasing Coalescence For Larger Bubbles

Increased Strength^{1,2}



Gypsum cubes made with larger bubbles can have higher peak load strengths than equal mass cubes with smaller bubbles. CEDEPAL GFA M series can produce larger bubbles compared to lower coalescing chemistries.

Improved Foam Efficiency³



The CEDEPAL GFA M series of foamers is formulated to produce high foam volumes, which can result in up to 30% more foam than competitive products, lowering overall usage and cost.

¹ - Images are from Stepan-produced lab slump cores

² - Method: Peak load data obtained from crushing gypsum cubes of varying densities made from CEDEPAL GFA-03 M and STEOL FA-403 M

³ - Method: Foam obtained from mixing 100 g of 0.12% active foamer solution for 60 seconds at 26,000 rpm