

Powered by  
**NRGMAX**<sup>®</sup>

Our NRGMax-powered Aphron Foamers provide service companies and operators a fresh, economical solution that outperforms the market incumbent. Aphrons, or multi-layered bubbles surrounded by surfactant film, are known for their ability remain stable under pressures up to 4,000 PSI and minimize formation damage. With the addition of our proprietary NRGMax formulation technology, we've stabilized the technology to provide solutions that can be effective in varying salinity levels (even high brine environments) and with gelling agents of varying quality (xanthan or non-xanthan gel-based agents).

## APPLICATION

Shotwell Aphron Foamers can be used for frac-plug drill outs. Some service companies and operators use the gas microbubbles created from surfactants and polymers in workovers, recompletions, drilling, re-entry drilling, horizontal re-entry drilling, and completions.

### Salinity:

Shotwell offers Aphron Foamers that can stand up in high brine environments. Depending on the level of salinity you're facing, our team can recommend a solution that's right for your application and conditions. Verified by university studies, our NRGMax additive enhances salinity stability across a number of oil and gas chemicals.

### Gelling Agent:

Whether you're using a high-quality xanthan gel, or a non-xanthan gelling agent, we can guide you on product selection that will be most effective with your gelling agent.

### Stability:

Foam stability (half-life) is greater in both SHSFH1-1082 and SHSFH1-1084 compared to the industry incumbent foamer, with a 300% increase for SHSFH1-1084.

## BENEFITS AND FEATURES

- Protects producing formations
- Drill depleted reservoirs
- Seal permeable zones
- Minimizes loss of permeability and formation damage

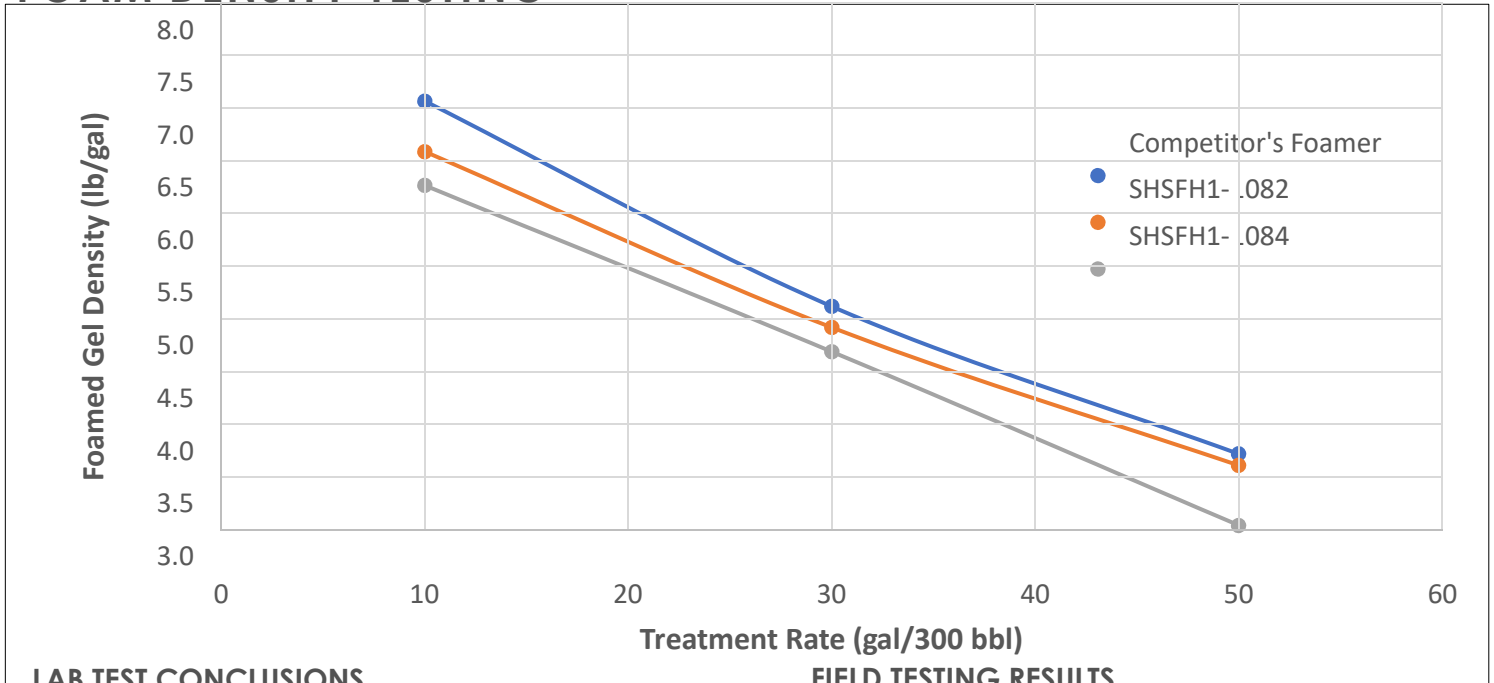
## SAFETY, STORAGE & HANDLING

- Before handling, storage, and use of this material, please refer to the Safety Data Sheet (SDS) for details.

## PACKAGING

- 55-gallon drums
- 330 Gallon One-Way Totes

## FOAM DENSITY TESTING



### LAB TEST CONCLUSIONS

- Foam density improved in both SHSFH1-1082 and SHSFH1-1084 foamers compared to the competitor's foamer
- SHSFH1-1084 offers best foam density at each treatment rate | 17% lower density vs. top competitor at 50 gal foamer/300 bbl of gel

### FIELD TESTING RESULTS

- Service companies trialing have been able to use 57% less product to attain the same desired foam density
- March Viscosity testing to reach 6.5 lbs/gal showed Shotwell aphron foamers achieved industry standards at 35 seconds

## PHYSICAL PROPERTIES

PROPERTY	SHSFH1-1082	SHSFH1-1084
Appearance	Liquid	Liquid
Color	Clear to Light Amber	Clear to Light Yellow
Solubility	Liquid   Soluble in Water	Liquid   Soluble in Water
pH Neat	7.0-9.0	7.5-9.5
Bulk Density	8.75-9.25 lb/gal	8.40-8.75 lb/gal
Freezing Point	4° F	11° F