



# Texan Stone LLC

11806 Wilcrest Drive, Suite 202, Houston, TX 77031  
Phone: 281-741-0226 Mani@texanstone.com



## PRODUCT DATA SHEET

### FRICITION REDUCER **TS-MB**

#### *Anionic Mid Brine Emulsion*

#### PRODUCT DESCRIPTION

TS-MB is a premium anionic water soluble polyacrylamide based friction reducer (FR) that is highly effective in Mid brine conditions. It has high molecular weight and is manufactured as a liquid-emulsion. Addition of small amounts, typically 0.25 – 1.00 gpt (gallons per thousand gallons), to water based frac fluids can deliver friction reduction (pressure loss) of over 70% in a short period of time. Due to its rapid hydration properties, TS-MB can be pumped continuously into the stimulation fluids as supplied or by batch mixing before treatments. TS-MB is APE (alkyl phenol ethoxylates) and NPE (nonyl phenol ethoxylates) free, thus making it environmentally friendly. It is a field tested and proven product in oil field operations.

#### APPLICATIONS

TS-MB has been specifically optimized for use as a Mid Brine friction reducer, which can be added as supplied due to its emulsion form and excellent hydration properties. It is compatible with common non-ionic and anionic stimulation additives such as surfactants, scale inhibitors, biocides, etc., and can be used with low to moderate salt concentrations. TS-MB can achieve optimal performance at low dosages (0.25 – 1.00 gpt), reducing overall treatment costs.

#### TEST METHODS

Test Method(s): Friction reduction properties were tested on a custom Flow Loop at a flow rate of 6 gpm generating 80,000 Reynold's number. The test section of the loop consisted of pipe having 3/8" O.D. Typical dosage of 0.25 gpt was used and the polymer was injected on the fly through the suction header of the mono-pump. TS-MB was tested in city tap water (fresh water) , Bakken SPF-14 (light brine) brine, having the following TDS: Na<sub>2</sub>SO<sub>4</sub> (0.53 g/L), NaHCO<sub>3</sub> (0.62 g/L), CaCl<sub>2</sub> (0.89 g/L) and MgCl<sub>2</sub> (0.33 g/L) and Sea Water 33 K having the following TDS: NaCl- (34 g/L).



# Texan Stone LLC

11806 Wilcrest Drive, Suite 202, Houston, TX 77031  
Phone: 281-741-0226 Mani@texanstone.com

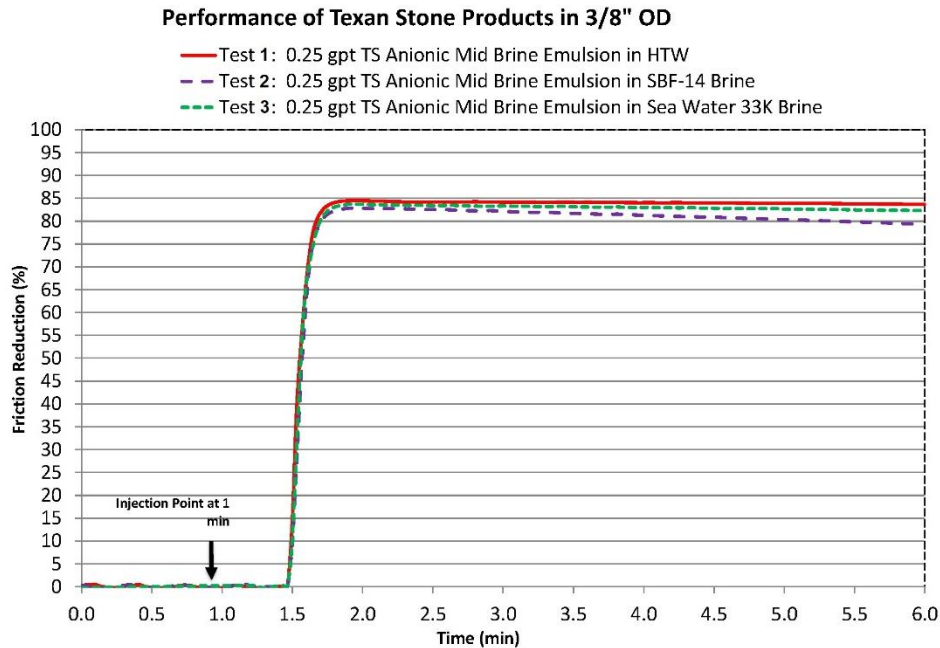


## PERFORMANCE & RESULTS

The following figures represent test results in three brines in 3/8" OD.

**Figure 1. FR performance of TEXAN STONE TS-MB in 3/8 " OD in city Tap Water, SBF-14 Brine and Sea Water 33K Brine at room temperature**

The test results illustrate that TEXAN STONE TS-MB in 3/8 " OD achieves a FR value of 84.53% in City Tap Water, 82.88% in SBF-14 Brine and 83.72% in Sea Water 33K Brine.



## PROPERTIES

Form	Opaque Liquid
Flash Point	> 140 F (60.0 C). Method used: ASTM D Closed Cup
Freeze Point	-40 F (-40 C)
Viscosity (cps)@Temp	No data available
Color	White / Off-White
Odor	Slight petroleum oil
Density	8.8 lbs/gal
pH	5-8 (1% solution)
Solubility	Water Soluble
Shelf Life	6 Months (It is recommended to store indoors between 5 – 30 C.)

## PACKAGING (customized packaging available upon request.)

Size	Packaging	Weight
55 gal.	Drum	475 lbs
275 gal.	Tote	2,300 lbs
330 gal.	Tote	2,800 lbs
5000 gal.	Bulk/ISO	45,500 lbs

*Disclaimer: The information provided in this document is for general purpose only and is believed to be accurate to the best of our knowledge. Texan and its affiliates do not make any guarantee or warranty regarding the accuracy of the data, merchant ability, fitness for a particular purpose or use, title, non-infringement, etc. The user agrees to assume all liabilities related to the use of or reliance on such information. Texan and its affiliates shall not be liable for any direct, indirect, special, punitive, exemplary or consequential damages from any cause whatsoever including but not limited to its negligence.*