



# Texan Minerals and Chemicals

14090 Southwest Freeway, Suite 310, Sugar Land, TX 77478

Phone: 713-294-4180 Email: Mani@TMCgreen.com



## Product Data Sheet

### TEXAN DRY-FRESH

#### *Fresh Water / Mid Brine Friction Reducer Viscosity Building*

#### **Description**

TEXAN DRY-FRESH is a premium anionic high molecular weight terpolymer, mostly polyacrylamide based friction reducer that is highly effective in fresh to mid brine water applications. It is easily dispersed, inverted, and hydrated into solution with minimal amount of shear. TEXAN DRY-FRESH is APE (alkyl phenol ethoxylates) and NPE (nonyl phenol ethoxylates) free, thus making it environmentally friendly.

TEXAN DRY-FRESH will build fluid Viscosity in fresh to low brine water applications by increasing loadings.

#### **Applications**

TEXAN DRY-FRESH has been specifically optimized for use as a fresh water-to-mid brine friction reducer that can build viscosity. It can be used directly in dry powder form with excellent hydration properties or can be blended as a suspension. It is compatible with common non-ionic and anionic stimulation additives such as surfactants, scale inhibitors, biocides, and clay stabilizers.

#### **Properties**

Form: White Powder

Charge: 28-33 (Anionic)

Mesh Size: 100

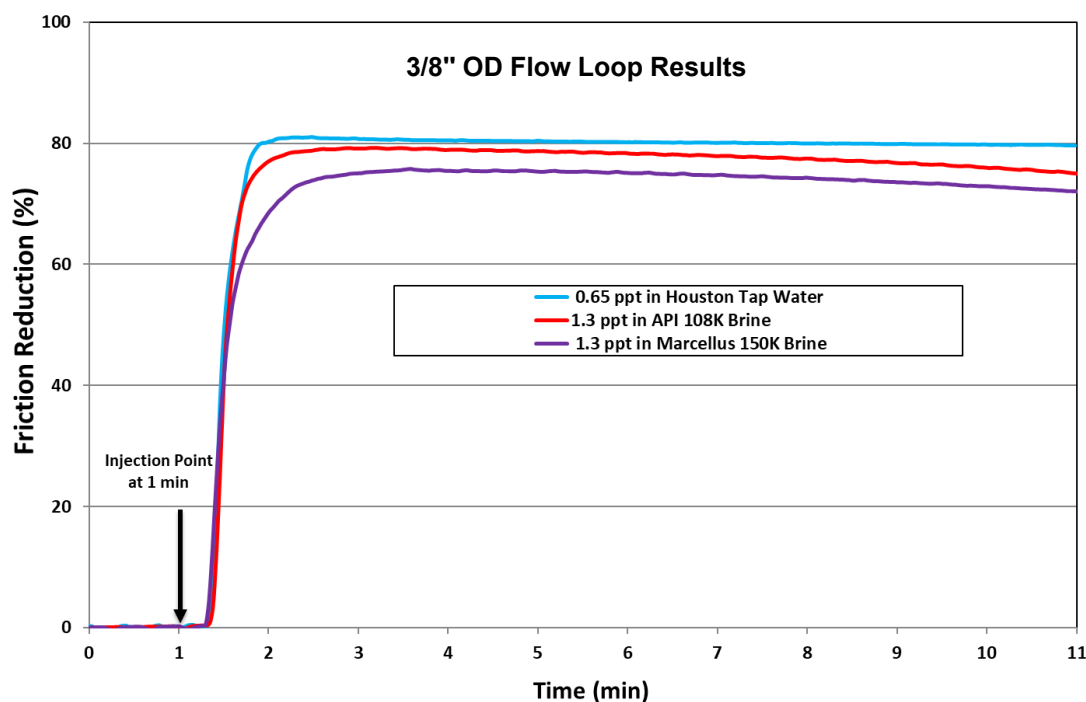
Smell: Odorless

Density: 0.82g/cm<sup>3</sup>

Insoluble Content: ≤ 0.2%

Molecular Weight: 18-20 (million)

#### **Fresh to Mid Brine Performance:**





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## FRESHWATER VISCOSIFYING FRICTION REDUCER DPAM

The proppant transport ability of a Polymer depends on two major factors:

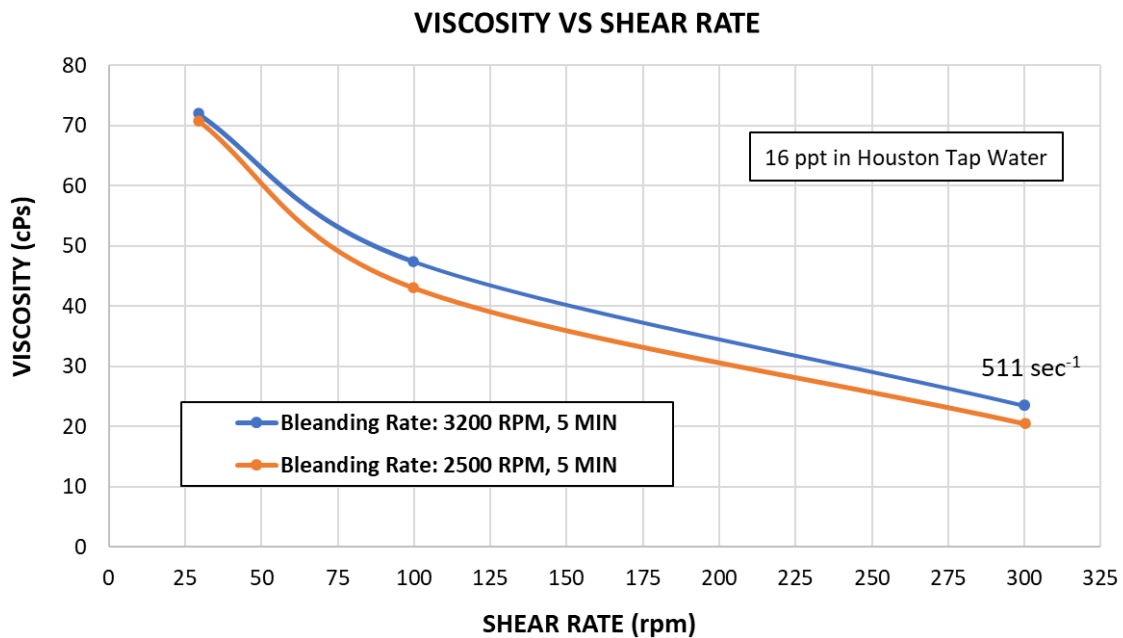
- 1) Viscosity, 2) Elasticity.

### TEST METHODOLOGY

Two tests were carried out to analyze the proppant transport characteristics of Texan Dry Fresh: 1) Viscosity vs Shear Rate using Grace M3600 rheometer 2) Elasticity and Storage Modulus using Anton Paar rheometer in Amplitude sweep and Frequency Sweep

**Dosage:** 16 lbs. of FR/1000 gallons of Fresh Water (0.192 % solution)

**BLENDING RATE:** 1) 2500 RPM, 5 MIN; 2) 3200 RPM, 5 MIN



Shear Rate (rpm)	Viscosity (cPs)	
	2500 RPM, 5 MIN	3200 RPM, 5 MIN
29.37	70.8051	72.0052
99.87	43.0568	47.4095
300.18	20.509	23.4445

The viscosity readings at 300 rpm or 511 sec<sup>-1</sup> are above 20 cps in both blending parameters suggesting superior sand carrying ability with an increased dosage in Texan Dry Fresh.



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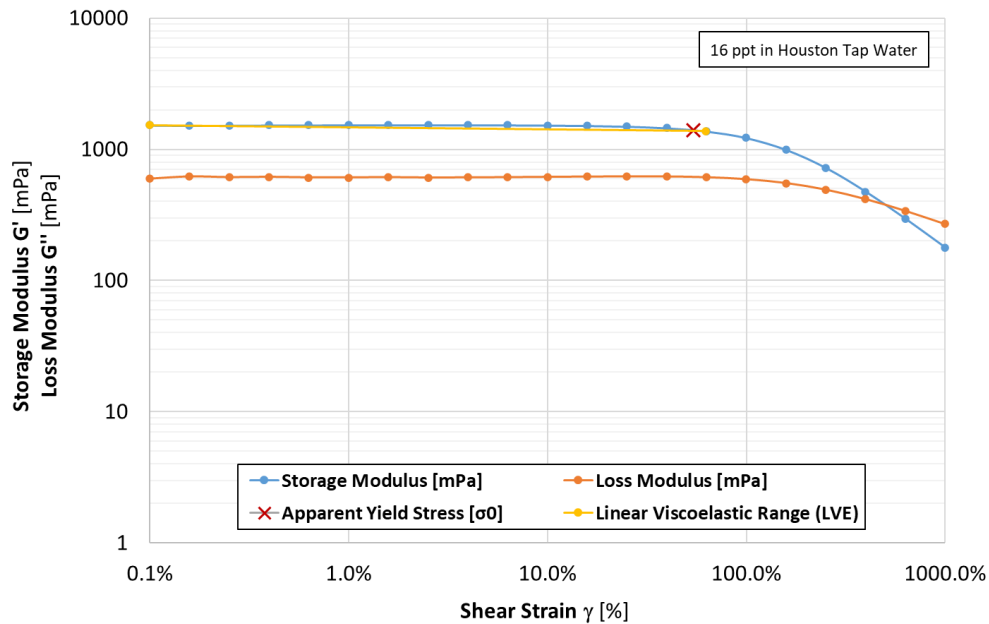
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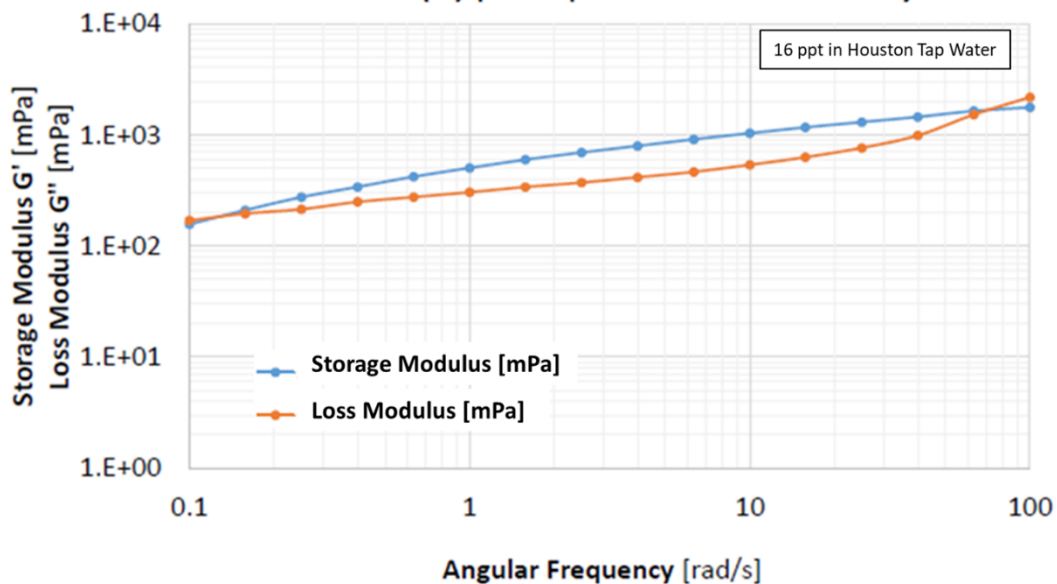


## G' and G'' Analysis

Amplitude Sweep - Storage/Loss Modulus vs. Shear Strain  
6.28 rad/s Angular Frequency Constant ( $\omega$ ) | 75°F | Cone & Plate Geometry



Frequency Sweep - Storage/Loss Modulus vs. Angular Frequency  
1.0 % Shear Strain (%) | 75°F | Cone & Plate Geometry





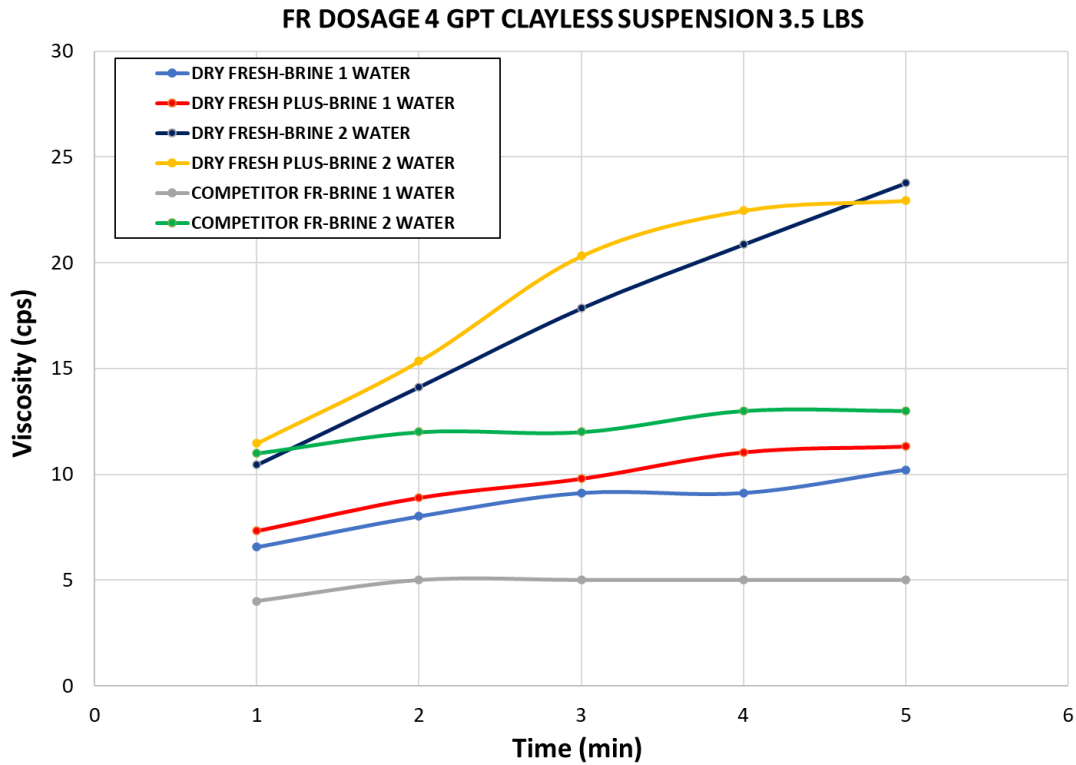
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## Complex Brines Applications:



## WATER COMPOSITION (mg/L)

	Ca <sup>2+</sup>	Mg <sup>2+</sup>	Na+	Cl-	CO <sup>3-</sup>	HCO <sup>3-</sup>	SO <sub>4</sub> <sup>2-</sup>	Total TDS
Brine 2	40	50	1072.3	1075	46	486	750	3,519
Brine 1	335	168	3934	7147				11,584



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## TEXAN Dry Fresh Clayless Suspension 3.5 lbs

<b>BRINE 1 - FR DOSAGE 4 GPT TESTING DONE BY BLENDER IN MIDLAND WITH TEXAN SHALE CHEMICALS DRY POWDER SUSPENDED</b>			
<b>Time (MIN)</b>	<b>TEXAN DRY FRESH 3.5 lbs</b>	<b>TEXAN DRY FRESH 3.5 lbs HYBRID</b>	<b>FR 26 Customer Target</b>
1	6.57	7.32	4
2	8.02	8.89	5
3	9.12	9.79	5
4	9.12	11.04	5
5	10.22	11.31	5

<b>BRINE 2 - FR DOSAGE 4 GPT TESTING DONE BY BLENDER IN MIDLAND WITH TEXAN SHALE CHEMICALS DRY POWDER SUSPENDED</b>			
<b>Time (MIN)</b>	<b>TEXAN DRY FRESH 3.5 lbs</b>	<b>TEXAN DRY FRESH 3.5 lbs HYBRID</b>	<b>FR 26 Customer Target</b>
1	10.45	11.47	11
2	14.13	15.35	12
3	17.85	20.32	12
4	20.87	22.47	13
5	23.77	22.94	13

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