

P-HTR400

TECHNICAL DATA SHEET

JANUARY 1, 2026

P-HTR400 (PETROCHEM - HIGH TEMPERATURE RETARDER 400 POWDER)

TECHNICAL DATA

- **P-HTR400** is a high-performance powdered cement retarder, specifically engineered for high-temperature and high-pressure (HTHP) oilfield cementing applications.
- **P-HTR400** provides precise, predictable, and repeatable retardation control in cement slurries exposed to bottom-hole circulating temperatures (BHCTs) ranging from 250°F to 400°F (121°C – 204°C).
- **P-HTR400** ensures consistent thickening-time control, excellent solubility, and stable slurry rheology under extreme conditions, maintaining pumpability, set-time predictability, and zonal isolation during critical well-bore operations.
- **P-HTR400** can be dry blended with cement or directly dispersed into the mix water to achieve uniform distribution throughout the slurry.

PHYSICAL PROPERTIES

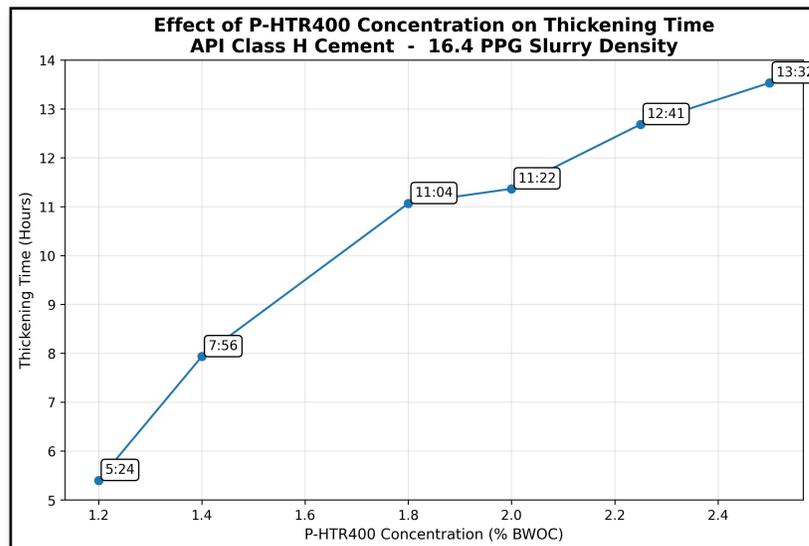
- **Appearance:** Light tan powder
- **Specific Gravity:** 1.67
- **Temperature Range:** 250–400 °F (121–204 °C)

RECOMMENDED TREATMENT

- **Typical Concentration:** 0.5–2.5% BWOC (by weight of cement)
- **Performance Verification:** Specific thickening-time performance must be verified through API-standard laboratory testing using the actual cement, mix water and other additives (prior to the cement job being pumped).

TEST MATRIX & BLEND IDENTIFICATION

- Starting at 2.50% BWOC **P-HTR400**, the retarder concentration was reduced in approximately 10% increments, generating a total of six data points that show a clear, near-linear decrease in thickening time with decreasing dosage, confirming strong dosage sensitivity in an API Class H, 16.4 PPG cement system.



TEST BLEND ID	P-HTR24 (% BWOC)	CEMENT CLASS	SLURRY DENSITY (PPG)	TT (HRS:MIN)
Test Blend #1	2.50	API Class H	16.4	13:32
Test Blend #2	2.25	API Class H	16.4	12:41
Test Blend #3	2.00	API Class H	16.4	11:22
Test Blend #4	1.80	API Class H	16.4	11:04
Test Blend #5	1.40	API Class H	16.4	7:56
Test Blend #6	1.20	API Class H	16.4	5:24

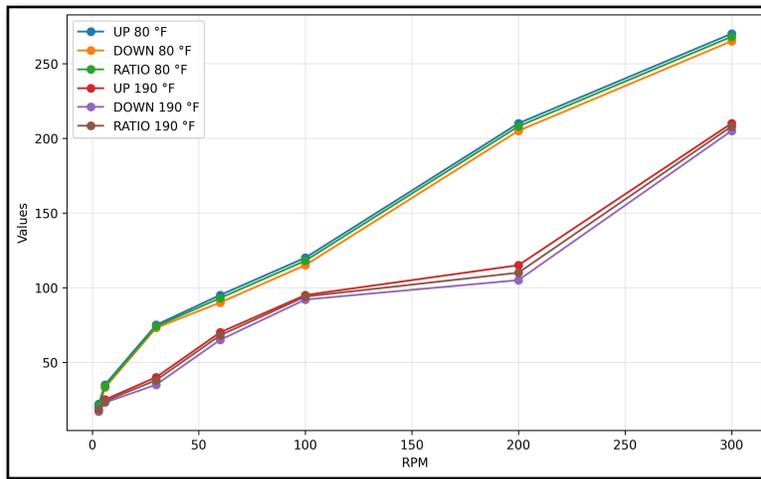
TEST BLEND #1 – COMPOSITION & SLURRY PERFORMANCE

P-HTR400 Concentration: 2.50% BWOC | **BHST:** 385 °F | **Density:** 16.4 ppg | **BHP:** 13,780 psi | **Cement:** API Class H

- 100% – API Class H Cement
- 30% – 325 Mesh Silica Flour
- 5% – Micro-Silica
- 0.4% – Dispersant
- 0.3% – Fluid Loss
- 0.25% – Tri-Functional Additive
- 0.02 gal/sk – Anti-Foam
- 2.50% BWOC – P-HTR400 (High-Temperature Retarder)

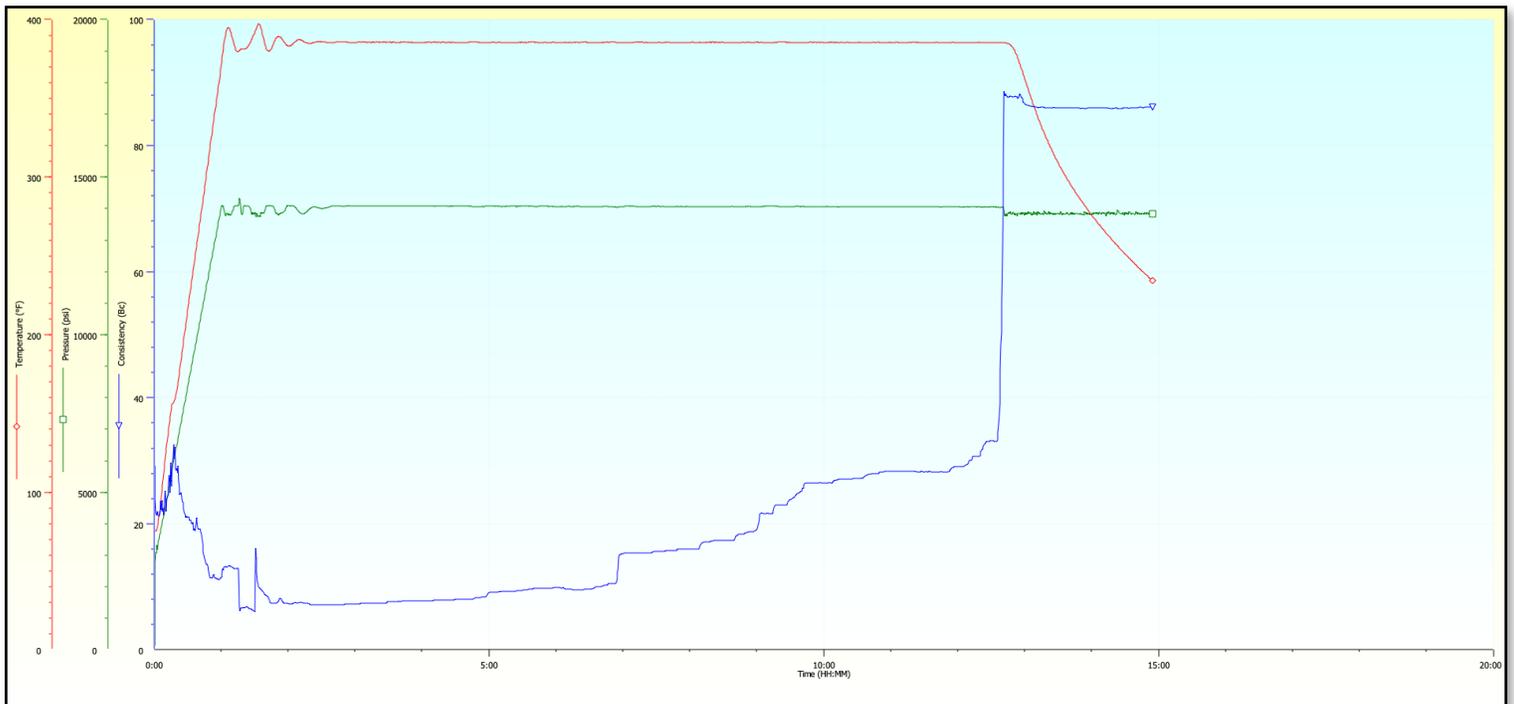
RHEOLOGICAL RESULTS @ 2.50% (BWOC)

- 1-Min Gel Strength: 18 @ 80 °F | 17 @ 190 °F
- 10-Min Gel Strength: 27 @ 80 °F | 25 @ 190 °F
- Mix Time (T): 25 seconds
- Free Water: None observed after 2 hours @ 1 atm, 190 °F, 45° angle



THICKENING TIME RESULTS @ 2.50% (BWOC)

- BHCT/BHST: 385 °F (196 °C) | BHP: 13,780 psi
- 70 Bc Thickening Time: 13:32 (HH:MM)





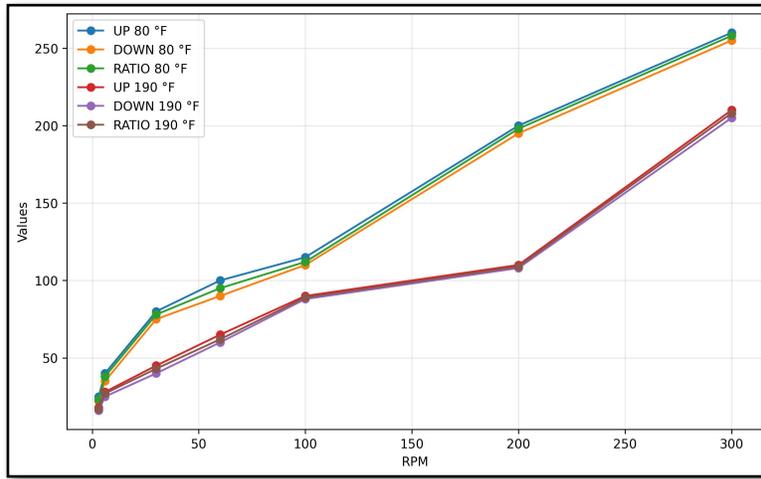
TEST BLEND #2 – COMPOSITION & SLURRY PERFORMANCE

P-HTR400 Concentration: 2.25% BWOC | **BHST:** 385 °F | **Density:** 16.4 ppg | **BHP:** 13,806 psi | **Cement:** API Class H

- 100% – API Class H Cement
- 30% – 325 Mesh Silica Flour
- 5% – Micro-Silica
- 0.3% – Dispersant
- 0.3% – Fluid Loss
- 0.20% – Tri-Functional Additive
- 0.02 gal/sk – Anti-Foam
- 2.25% BWOC – P-HTR400 (High-Temperature Retarder)

RHEOLOGICAL RESULTS @ 2.25% (BWOC)

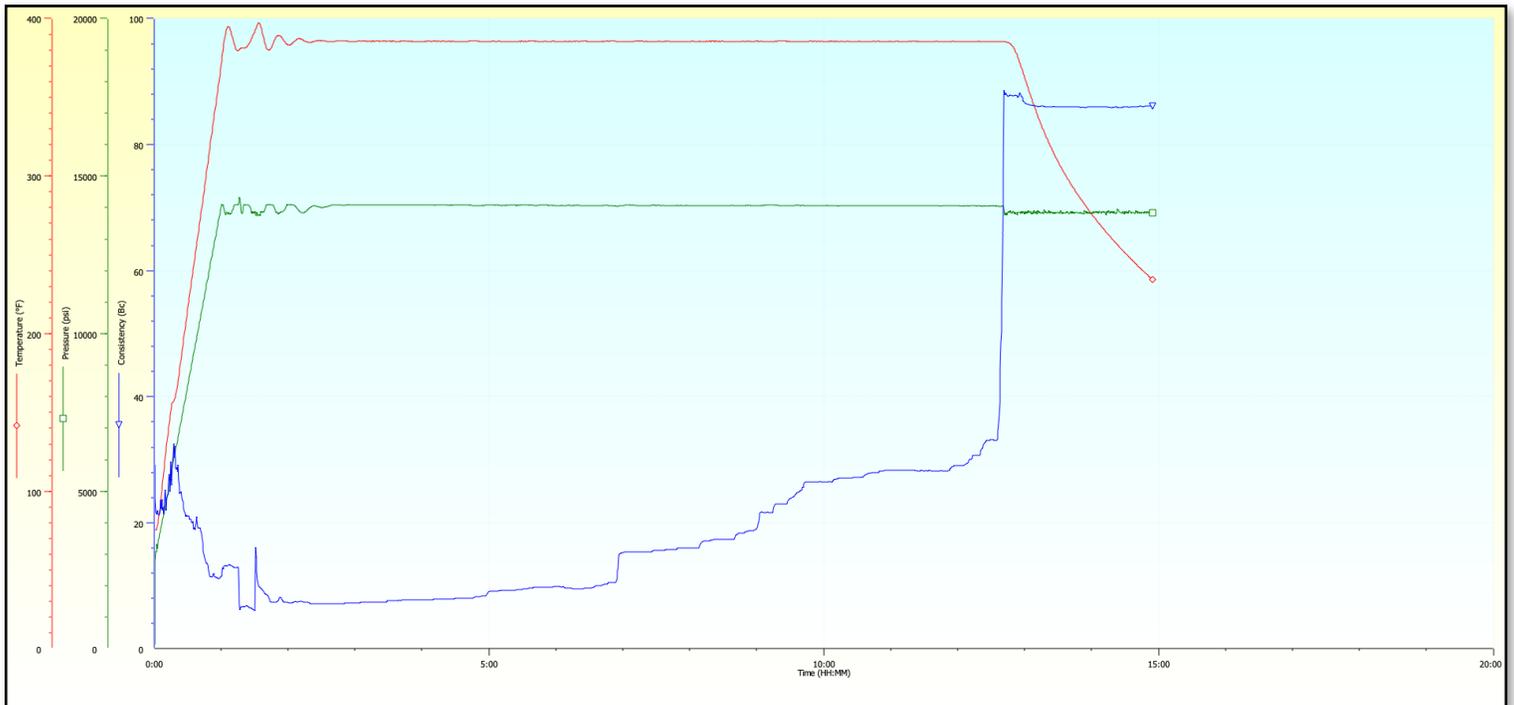
- 1-Min Gel Strength: 20 @ 80 °F | 17 @ 190 °F
- 10-Min Gel Strength: 29 @ 80 °F | 25 @ 190 °F
- Mix Time (T): 25 seconds
- Free Water: None observed after 2 hours @ 1 atm, 190 °F, 45° angle



THICKENING TIME RESULTS @ 2.25% (BWOC)

BHCT/BHST: 385 °F (196 °C) | **BHP:** 13,806 psi

- 70 Bc Thickening Time: 12:41 (HH:MM)



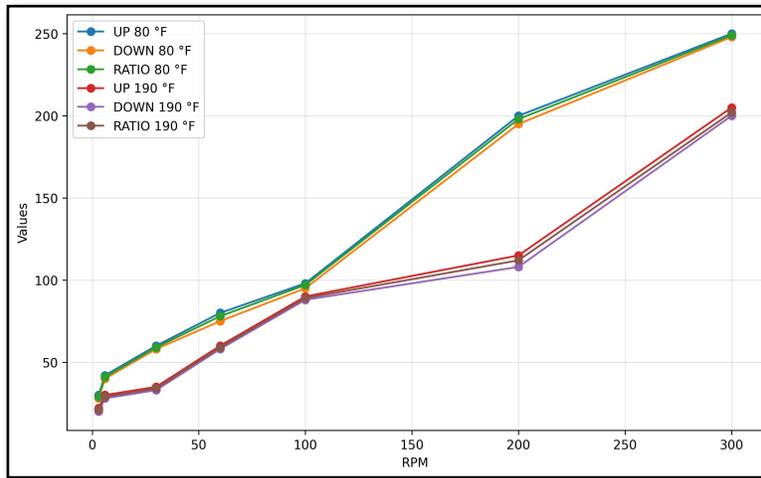
TEST BLEND #3 – COMPOSITION & SLURRY PERFORMANCE

P-HTR400 Concentration: 2.00% BWOC | **BHST:** 385 °F | **Density:** 16.4 ppg | **BHP:** 13,804 psi | **Cement:** API Class H

- 100% – API Class H Cement
- 30% – 325 Mesh Silica Flour
- 5% – Micro-Silica
- 0.3% – Dispersant
- 0.3% – Fluid Loss
- 0.20% – Tri-Functional Additive
- 0.02 gal/sk – Anti-Foam
- 2.00% BWOC – P-HTR400 (High-Temperature Retarder)

RHEOLOGICAL RESULTS @ 2.00% (BWOC)

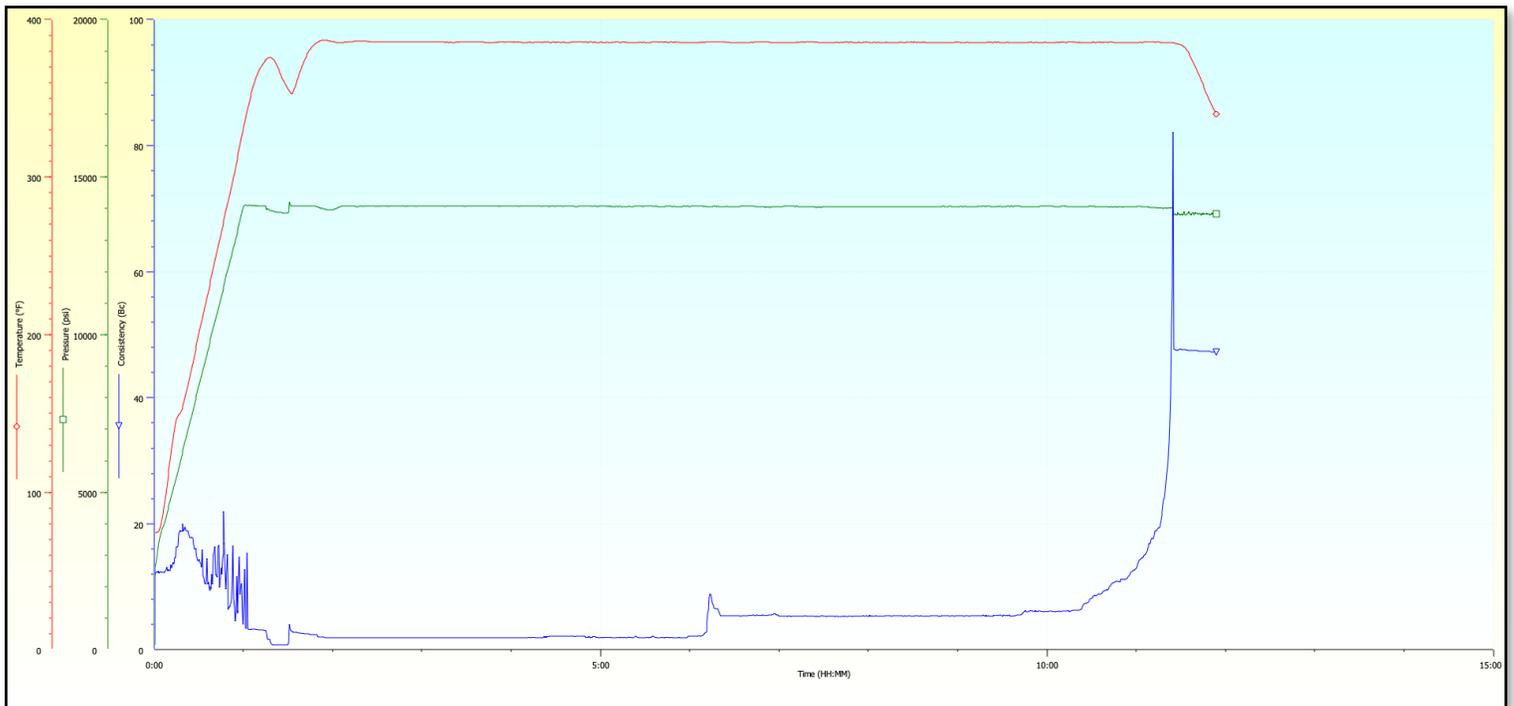
- 1-Min Gel Strength: 16 @ 80 °F | 19 @ 190 °F
- 10-Min Gel Strength: 28 @ 80 °F | 29 @ 190 °F
- Mix Time (T): 25 seconds
- Free Water: None observed after 2 hours @ 1 atm, 190 °F, 45° angle



THICKENING TIME RESULTS @ 2.00% (BWOC)

BHCT/BHST: 385 °F (196 °C) | **BHP:** 13,804 psi

- 70 Bc Thickening Time: 11:53 (HH:MM)



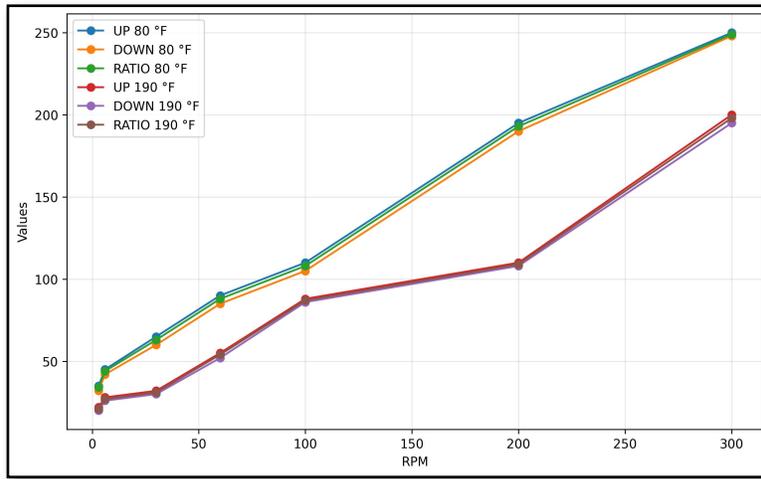
TEST BLEND #4 – COMPOSITION & SLURRY PERFORMANCE

P-HTR400 Concentration: 1.80% BWOC | **BHST:** 385 °F | **Density:** 16.4 ppg | **BHP:** 13,807 psi | **Cement:** API Class H

- **100%** – API Class H Cement
- **30%** – 325 Mesh Silica Flour
- **5%** – Micro-Silica
- **0.3%** – Dispersant
- **0.3%** – Fluid Loss
- **0.10%** – Tri-Functional Additive
- **0.02 gal/sk** – Anti-Foam
- **1.80% BWOC** – P-HTR400 (High-Temperature Retarder)

RHEOLOGICAL RESULTS @ 1.80% (BWOC)

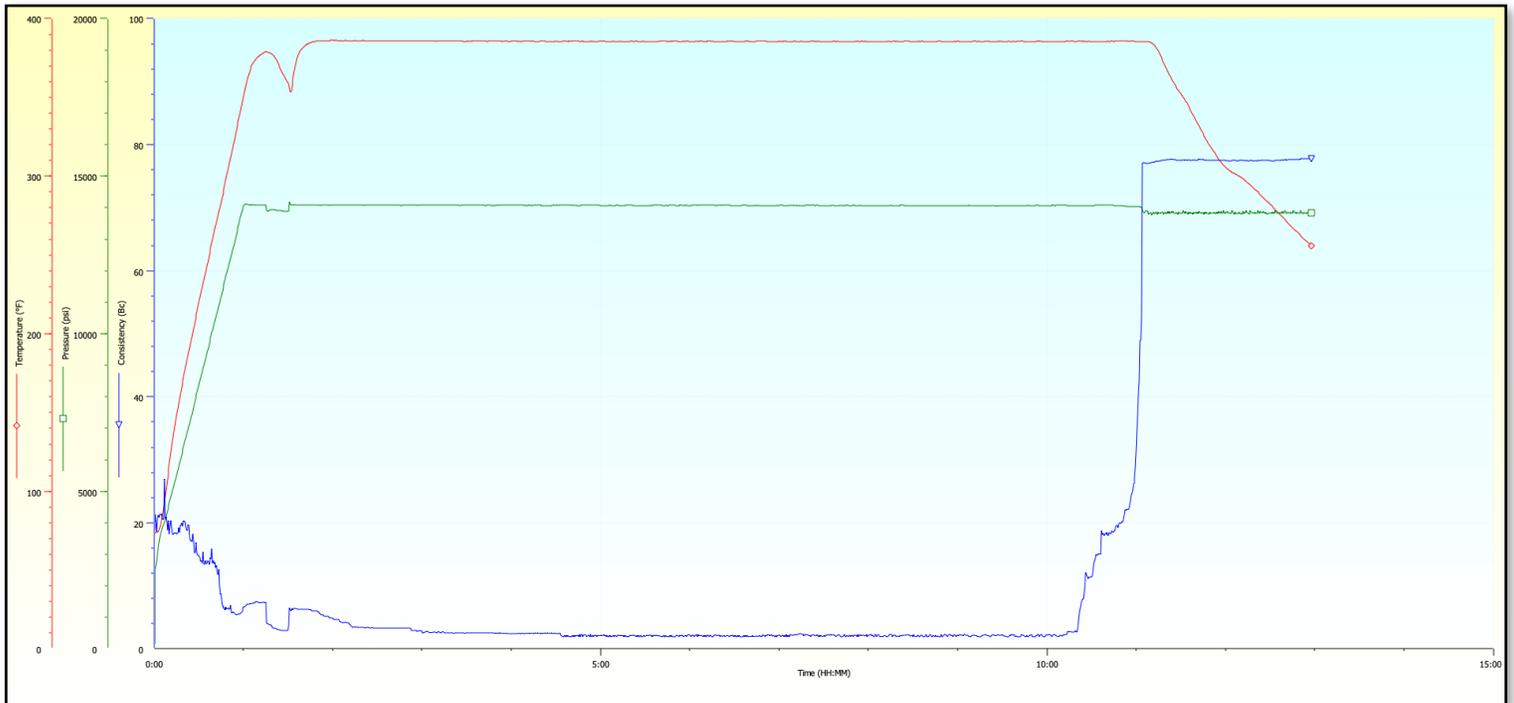
- **1-Min Gel Strength:** 20 @ 80 °F | 16 @ 190 °F
- **10-Min Gel Strength:** 30 @ 80 °F | 24 @ 190 °F
- **Mix Time (T):** 27 seconds
- **Free Water:** None observed after 2 hours @ 1 atm, 190 °F, 45° angle



THICKENING TIME RESULTS @ 1.80% (BWOC)

BHCT/BHST: 385 °F (196 °C) | **BHP:** 13,807 psi

- **70 Bc Thickening Time:** 11:04 (HH:MM)



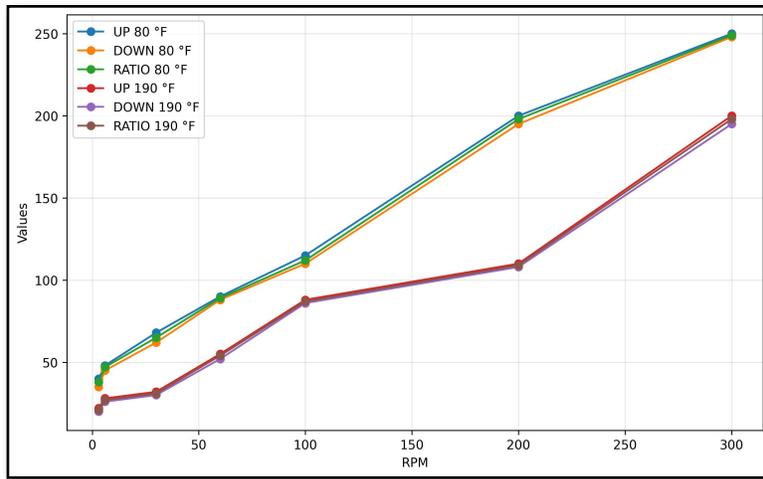
TEST BLEND #5 – COMPOSITION & SLURRY PERFORMANCE

P-HTR400 Concentration: 1.40% BWOC | **BHST:** 385 °F | **Density:** 16.4 ppg | **BHP:** 13,912 psi | **Cement:** API Class H

- **100%** – API Class H Cement
- **30%** – 325 Mesh Silica Flour
- **5%** – Micro-Silica
- **0.3%** – Dispersant
- **0.3%** – Fluid Loss
- **0.20%** – Tri-Functional Additive
- **0.02 gal/sk** – Anti-Foam
- **1.40% BWOC** – P-HTR400 (High-Temperature Retarder)

RHEOLOGICAL RESULTS @ 1.40% (BWOC)

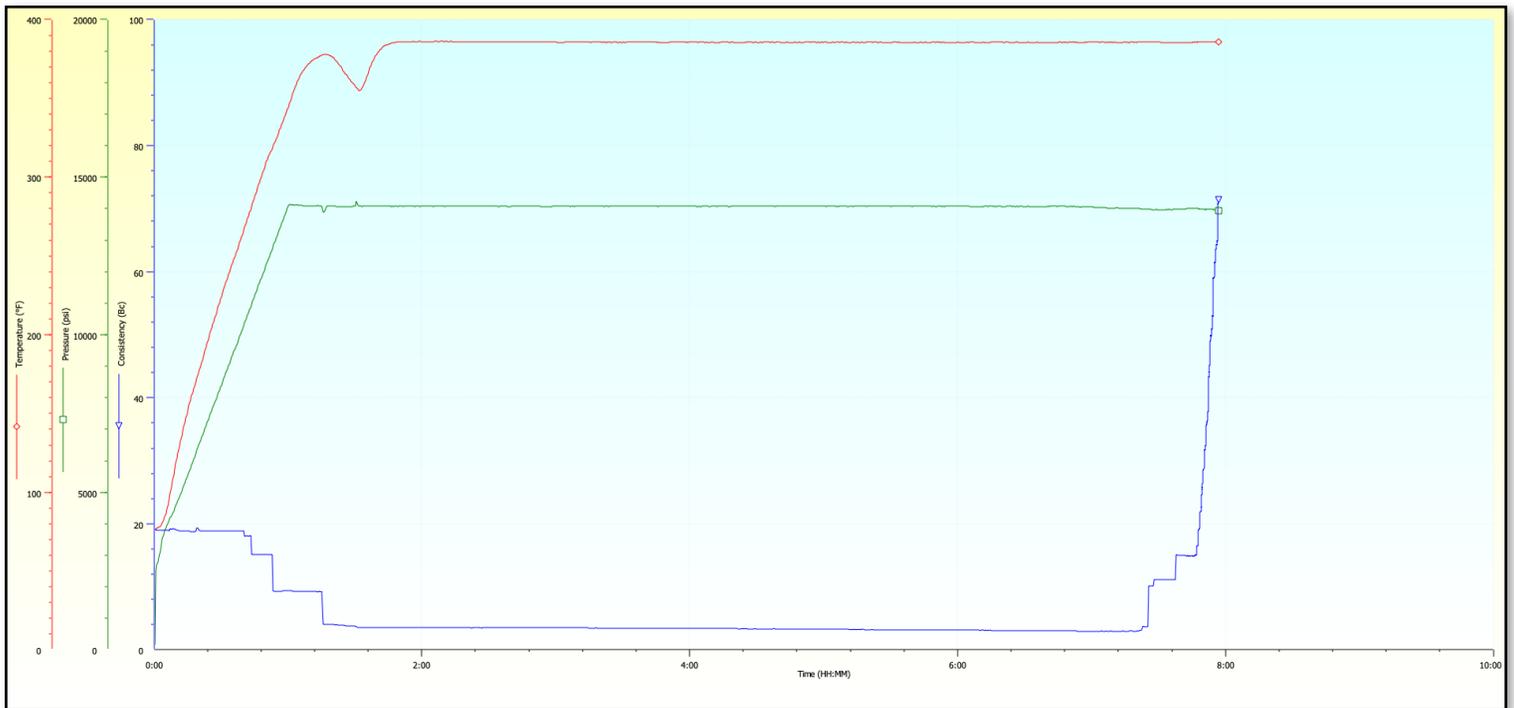
- **1-Min Gel Strength:** 19 @ 80 °F | 13 @ 190 °F
- **10-Min Gel Strength:** 27 @ 80 °F | 22 @ 190 °F
- **Mix Time (T):** 25 seconds
- **Free Water:** None observed after 2 hours @ 1 atm, 190 °F, 45° angle



THICKENING TIME RESULTS @ 1.40% (BWOC)

BHCT/BHST: 385 °F (196 °C) | **BHP:** 13,912 psi

- **70 Bc Thickening Time:** 07:56 (HH:MM)





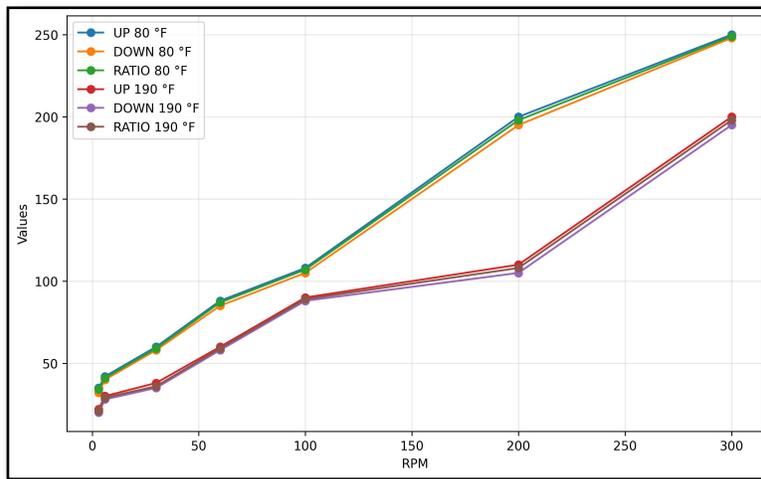
TEST BLEND #6 – COMPOSITION & SLURRY PERFORMANCE

P-HTR400 Concentration: 1.20% BWOC | **BHST:** 385 °F | **Density:** 16.4 ppg | **BHP:** 13,841 psi | **Cement:** API Class H

- **100%** – API Class H Cement
- **30%** – 325 Mesh Silica Flour
- **5%** – Micro-Silica
- **0.3%** – Dispersant
- **0.3%** – Fluid Loss
- **0.10%** – Tri-Functional Additive
- **0.02 gal/sk** – Anti-Foam
- **1.20% BWOC** – P-HTR400 (High-Temperature Retarder)

RHEOLOGICAL RESULTS @ 1.20% (BWOC)

- **1-Min Gel Strength:** 20 @ 80 °F | 18 @ 190 °F
- **10-Min Gel Strength:** 29 @ 80 °F | 29 @ 190 °F
- **Mix Time (T):** 27 seconds
- **Free Water:** None observed after 2 hours @ 1 atm, 190 °F, 45° angle



THICKENING TIME RESULTS @ 1.20% (BWOC)

BHCT/BHST: 385 °F (196 °C) | **BHP:** 13,841 psi

- **70 Bc Thickening Time:** 05:24 (HH:MM)

