

# CONCENTRATED CHAINBREAKER MICROBE BLEND

## HEATH FORMATION CASE HISTORY



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|-------------------------------------|------------------------|--|------------|--|----------------|--------|------------------------|
| LABORATORY ANALYTICAL REPORT        |                        |  |            |  |                |        |                        |
| Prepared by Casper, WY Branch       |                        |  |            |  |                |        |                        |
| <b>Client:</b>                      | Bioactive Services USA |  |            | <b>Report Date:</b>  | 01/27/25       |        |                        |
| <b>Project:</b>                     | Not Indicated          |  |            | <b>Collection Date:</b>  | 01/09/25 10:00 |        |                        |
| <b>Lab ID:</b>                      | C25010225-001          |  |            | <b>Date Received:</b>  | 01/10/25       |        |                        |
| <b>Client Sample ID:</b>            | Grebbe 1 Wellhead      |  |            | <b>Matrix:</b>   | Oil            |        |                        |
| Analyses                            | Result                 | Units  | Qualifiers | RL   | MCL/<br>QCL    | Method | Analysis Date / By     |
| <b>OIL ANALYSIS</b>                 |                        |  |            |  |                |        |                        |
| Sulfur, Total                       | 0.34                   | wt%  |            | 0.01   |                | D1552  | 01/24/25 09:40 / ell-h |
| <b>OIL CHARACTERISTICS</b>          |                        |  |            |  |                |        |                        |
| Bottom Sediment and Water           | 3.5                    | Vol %  |            | 0.05   |                | D1796  | 01/17/25 14:20 / ell-g |
| Density @ 60 °F                     | 0.856                  | g/cc   |            | 0.001  |                | D1298  | 01/17/25 13:00 / ell-g |
| Gravity, API @ 60 F                 | 33.7                   | degrees  |            | 0.1  |                | D1298  | 01/17/25 13:00 / ell-g |
| Specific Gravity @ 60 F             | 0.857                  | unitless   |            | 0.001  |                | D1298  | 01/17/25 13:00 / ell-g |
| <u>Pour Point</u>                   | <u>20</u>              | <u>°F</u>  |            |  |                | D97    | 01/20/25 13:20 / ell-g |
| <b>ABSOLUTE VISCOSITY</b>           |                        |  |            |  |                |        |                        |
| Absolute Viscosity @ 100 F          | 5.20                   | cP   |            | 0.10   |                | D445   | 01/17/25 13:30 / ell-g |
| Absolute Viscosity @ 120 F          | 4.02                   | cP   |            | 0.10   |                | D445   | 01/17/25 14:15 / ell-g |
| <b>KINEMATIC VISCOSITY</b>          |                        |  |            |  |                |        |                        |
| Kinematic Viscosity @ 100 F         | 6.18                   | cSt  |            | 0.10   |                | D445   | 01/17/25 13:30 / ell-g |
| Kinematic Viscosity @ 120 F         | 4.81                   | cSt  |            | 0.10   |                | D445   | 01/17/25 14:15 / ell-g |
| <b>SAYBOLT UNIVERSAL VISCOSITY</b>  |                        |  |            |  |                |        |                        |
| Saybolt Universal Viscosity @ 100 F | 46.2                   | s  |            | 1.0  |                | D2161  | 01/17/25 13:30 / ell-g |
| Saybolt Universal Viscosity @ 120 F | 41.8                   | s  |            | 1.0  |                | D2161  | 01/17/25 14:15 / ell-g |
| <b>HEMPEL DISTILLATION</b>          |                        |  |            |  |                |        |                        |
| Barometric Pressure                 | 25.48                  | in. Hg   |            | 0.01   |                | D285   | 01/19/25 14:30 / ell-g |
| Initial Boiling Point               | 63                     | °F   |            | 1  |                | D285   | 01/19/25 14:30 / ell-g |
| Gasoline (392 F), SG                | 0.755                  | unitless   |            | 0.001  |                | D285   | 01/19/25 14:30 / ell-g |
| Kerosene (500 F), SG                | 0.801                  | unitless   |            | 0.001  |                | D285   | 01/19/25 14:30 / ell-g |
| Reduced Crude, SG                   | 0.921                  | unitless   |            | 0.001  |                | D285   | 01/19/25 14:30 / ell-g |
| Gasoline (392 F), Volume            | 27.9                   | %  |            | 0.1  |                | D285   | 01/19/25 14:30 / ell-g |
| Kerosene (500 F), Volume            | 11.7                   | %  |            | 0.1  |                | D285   | 01/19/25 14:30 / ell-g |
| Reduced Crude, Volume               | 57.9                   | %  |            | 0.1  |                | D285   | 01/19/25 14:30 / ell-g |
| Loss, Volume                        | 2.5                    | %  |            | 0.1  |                | D285   | 01/19/25 14:30 / ell-g |

### BEFORE TREATMENT:

The Heath formation oil is very paraffinic in nature and it has a pour point of 120F. That means at room temperature this oil has the consistency of a candle stick; it will not pour. In order to truck this oil the producers have to heat up the oil to 160F so they can haul 2hrs to refinery. The heated oil will allow them to load haul and unload at refinery, which is a very costly process.

### AFTER TREATMENT:

The ChainBreaker microbes have changed the Heath oil from 120f down to 20F that's 100 degree difference. Not only has it changed the pour point and the viscosity but they have an increase production plus the producer doesn't have to heat the oil up to haul to refinery which is a major cost savings.