CALUMET





# OILFIELD

Calumet offers a wide array of fluids developed specifically and used extensively in the exploration of oil and gas. Areas of application include every aspect of upstream energy production, midstream transportation, and downstream refining operations. Our highly refined products offer consistent quality, low environmental impact, high worker safety and in some cases, circular carbon options.

## OILFIELD INDUSTRY APPLICATIONS

- Drilling Fluids
- Fracturing Fluids
- Production Fluids
- Equipment Lubricants, Greases and Fluids

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## DRILLING APPLICATION

Drilling for oil and gas involves chemistry, whether the system is Oil or Water based.

Calumet fluids are specially developed for drilling applications, delivering improved performance and efficiency. With consistent viscosities, densities and chemical compositions, these fluids can be used interchangeably in all climate conditions.

Calumet CALSIA™ Drilling Fluids are normal/isoalkane, that begin with a severe hydrocracking and hydroisomerization process. They have several unique properties for use in invert mud systems but are primarily identified by their pour points for use in extreme weather conditions. Calsia Drilling Fluids meet OGP Group III non-aqueous fluids.

All Calumet products are produced to the highest technical standards. These products are also compliant with the EPA Maximum Contaminant Levels (MCLs) for BTEX (benzene, toluene, ethylbenzene, and xylenes) compounds in drinking water.

Our products offer many advantages:

- Low toxicity to humans and aquatic life
- Provides superior low-temperature fluidity in ultra-deepwater drilling applications
- No long-term environmental impact
- Effectively used as:
  Viscosity Modifier • Heat String Fluid • Diluent for Liquid Mud Additives (LMA)
  Base Gel Fluid • Differential Fluid • Rate of Penetration (ROP) Enhancer

### PRODUCT RECOMMENDATIONS

- CALSIA 62
- CALSIA 70
- CALSIA 80
- CALSIA 96
- CALSIA 100
- CONOSOL C-170
- CONOSOL C-200

## FRACTURING APPLICATION

Fracturing involves the use of non-compressible liquids to hydraulically crack the formation open to improve porosity and increase the flow of hydrocarbons to the wellbore. These liquids are typically water-based due to the large volumes required in current multi-stage fracturing operations. To achieve instant dispersion of the polymer when added to water and avoid fisheyes, an oil-based dispersion or emulsion of the polymer is created.

Calumet supplies fluids to slurry the friction reducing polymer, and provides a perfect mix of normal and iso-paraffinic hydrocarbons used to emulsify water-based polymers. These fluids are hydrotreated, BTEX non-detectable, and safe for water-based systems.

### PRODUCT RECOMMENDATIONS

- CALSIA 62
- CALSIA 70
- CONOSOL C-170

## PRODUCTION APPLICATION

Wax and asphaltene deposits are the top issues facing producers. CALWAXSOL™ is a blend of alcohols, polyesters and light hydrocarbons designed to specifically break up wax deposits and turn them into small discrete particles that flow in crude oil. Formulated to work under static conditions, CALWAXSOL will also tackle hard-to-access wax deposits from oil batteries and refining equipment.

Production chemistry typically involves the use of formulated ingredients to achieve the correct concentration for the specific application. Calumet can provide fluids used as a base in these chemical applications.

Our Hydrocal™ naphthenic oils are produced using a multi-stage hydrotreating process and offer high-quality, stable base stocks for production applications.

### PRODUCT RECOMMENDATIONS

- CALWAXSOL
- CALSIA 62
- HYDROCAL 38
- HYDROCAL 40
- MINERAL SPIRITS <1%

## CALUMET SOLVENTS TYPICAL PROPERTIES

| PROPERTIES | METHOD | CALSIA 62 | CALSIA 70 | CALSIA 80 | CALSIA 96 | CALSIA 100 | CONOSOL C-170 | CONOSOL C-200 | MINERAL SPIRITS <1% |
|---|---|---|---|---|---|---|---|---|---|
| Viscosity @ 40 °C (cSt) | ASTM D445 | 2.00 | 2.00 | 2.26 | 2.18 | 2.31 | 2.08 | 2.30 | - |
| Density @ 60 °F (15°C), kg/L | ASTM D4052 | 0.7935 | 0.823 | 0.8101 | 0.8090 | 0.8109 | 0.8132 | 0.8199 | 0.7702 |
| Flash Point (°C), PMCC (P) TCC (T) | ASTM D93/ D56 | 70 (P) | 80 (P) | 96 (P) | 98 (P) | 102 (P) | 81 (P) | 96 (P) | 46 (T) |
| Pour Point (°F) | ASTM D97 | -60 | -38 | -46 | -28 | -50 | <-80 | -40 | <-60 |
| Aromatics (wt.%) | ASTM D5186 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.5 | <0.5 | <1.0 |
| BTEX (Detection Limits per EPA Drinking Water MCLs) | | | | | | | | | |
| Benzene (5 ppb) | EPA 8260B | ND | ND | ND | ND | ND | ND | ND | |
| Toluene (700 ppb) | EPA 8260B | ND | ND | ND | ND | ND | ND | ND | |
| Ethylbenzene (1 ppm) | EPA 8260B | ND | ND | ND | ND | ND | ND | ND | |
| Xylene (10 ppm) | EPA 8260B | ND | ND | ND | ND | ND | ND | ND | |
| PROCESSES | | | | | | | | | |
| Drilling | | √ | √ | √ | √ | √ | √ | √ | |
| Fracking | | √ | √ | | | | √ | | |
| Production Chemistry | | √ | | | | | | | √ |

| PROPERTIES | METHOD | CALWAXSOL |
|---|---|---|
| Density @ 60 °F (Pounds per gallon) | ASTM D1250 | 6.3 |
| Flash Point TCC | ASTM D56 | 37 °F |
| Aromatics (Vol. %) | ASTM D1319 | 10-15% |
| Distillation, IBP (°F) | ASTM D86 | 145 |
| Distillation, Dry Point (°F) | ASTM D86 | 310 |
| Specific Gravity @ 60/60 °F | ASTM D1250 | 0.753 |
| Pour Point (°F) | ASTM D97 | <-70 |
| PROCESSES | | |
| Drilling | | |
| Fracking | | |
| Production Chemistry | | √ |

## CALUMET BASE OILS TYPICAL PROPERTIES

| PROPERTIES | METHOD | HYDROCAL 38 | HYDROCAL 40 |
|---|---|---|---|
| Viscosity@ 100 °F (SUS) | D2161 | 37.50 | 41.30 |
| Viscosity @ 210 °F (SUS) | D2161 | 30.30 | 31.20 |
| Viscosity @ 40 °C (cSt) | D445 | 3.30 | 3.97 |
| Viscosity @ 100 °C (cSt) | D445 | 1.30 | 1.51 |
| Viscosity Index | D2270 | 85 | 74 |
| API Gravity @ 60 °F | D4052 | 29.80 | 28.70 |
| Flash Point, COC (°F) | D92 | 219 | 243 |
| Pour Point (°F) | D97 | -81 | -80 |
| PROCESSES | | | |
| Drilling | | | |
| Fracking | | | |
| Production Chemistry | | √ | √ |

## PERFORMANCE BRANDS - Oil Field Surface Equipment Lubrication, Oils and Greases

**Bel-Ray® Specialty Lubricants**

For more than 75 years, Calumet Branded Products have proven their value, setting the highest standard of quality and performance. A leader in lubrication technology, our company has engineered products to protect, while delivering superior business value for applications in the oil and gas industry. We've been helping customers realize an optimized total cost of ownership through:

- **Reduced maintenance and down time**
  Extremely high film strength and consistent film thickness that minimize metal to metal contact between moving surfaces resulting less contact, wear and damage.
- **Increased production**
  Maximized drain intervals and usable lubricant life provide optimal operational availability and readiness.
- **Extended equipment life**
  Lubricant formulations focused on proactively managing moisture, heat and contaminants.
- **Improved asset reliability**
  Maximized component mean time between failures and planned maintenance interval.
- **Sustainable product options**
  Maintaining environmental stewardship utilizing the latest in environmentally responsible lubricant technology while providing equal or greater asset protection.
- **Training, lubrication and reliability support programs available**
  Value added training and services offered, supporting lubrication and reliability program development, implementation and sustainability for all departments: operations, maintenance, reliability and management.

Visit www.belray.com to learn more about our solutions or to contact us for additional information.

## ONE CALUMET - INVESTING IN EVERYONE'S FUTURE

Calumet is investing in research and product technology with an enhanced focus on environmental sustainability for the Oil & Gas Industry.

# CALUMET SPECIALTY PRODUCTS & SOLUTIONS

Calumet manufactures, formulates, and markets a diversified slate of specialty branded products to customers in various consumer-facing and industrial markets. We are headquartered in Indianapolis, Indiana, with approximately 1,400 employees and 12 facilities across North America, and we serve over 2,700 global customers in 90 countries.



**BASE OILS**



**SPECIALTY OILS**



**SOLVENTS**



**ESTERS**



**WAXES**



**FUELS**



**ASPHALT**



**PERFORMANCE BRANDS**

## TECHNICAL ASSISTANCE

For product or technical questions, contact your Sales Representative or Calumet Product Support at (800) 437-3188 or email technical@calumet.com.

To the best of our knowledge, the information contained herein is accurate, but is given without warranty or guarantee. We assume no liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of the suitability of any information or material for the use contemplated, the name of use and whether there is any infringement of patents is the sole responsibility of the user.

Calumet's sampling and testing procedures in effect at the time of production will be used for certification testing. Results may be based on tank certification, manufacturing data, periodic testing and/or most recent product restock. Typical values only represent the values one would expect if the property were tested in our laboratories with our test methods on the specified date. Some product properties are not frequently measured, and accordingly typical values are not based on a statistically relevant number of tests.
The information in this document relates only to the named product. The user is solely responsible for all determination regarding any use and any process.

CALUMET

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