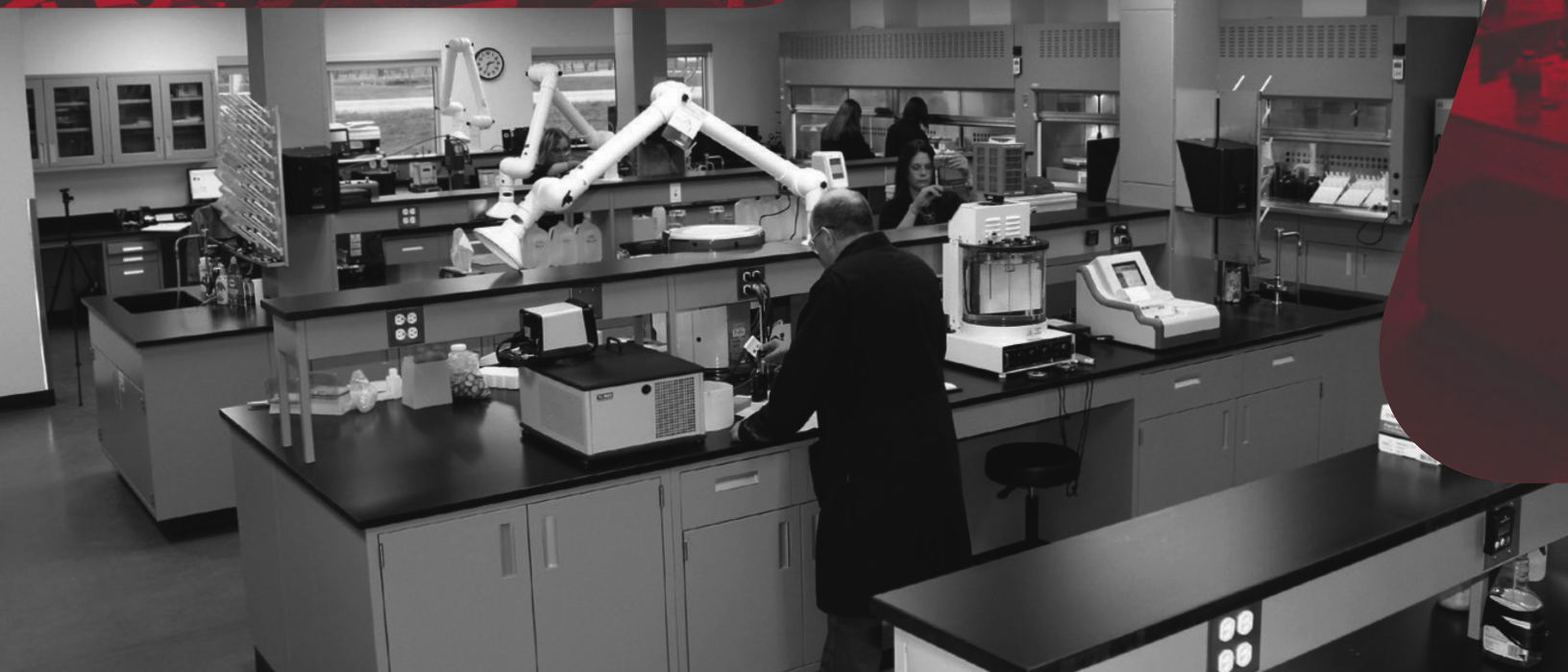


## CES CARLYLE LAB

CARLYLE, SASKATCHEWAN



## OUR LAB IS FULLY EQUIPPED

- MiniFlex-600 Powder X-Ray Diffraction
- Includes all Incoming Raw Materials and all Lots of Blended Products
- Quality Control Samples Retained For One Year
- Product Stability/Cold Temperature Testing
- Full Oil Analysis (Sulfur, Density, Kinematic and Dynamic Viscosity, Pour Point, Vapour Pressure)
- Full Water Analysis
- Millipore Analyses
- Solids/Scale/Deposit/Hydrocarbon Analyses
- XRD Analysis
- Residuals Monitoring
- Fe, Mn, Na and Ca Testing and Trending
- Corrosion Failure Analyses
- Emulsion Tendency Evaluation
- Evaluation of Water/Oil Phase Partitioning and Compatibility
- Viscosity-temperature Analysis
- Molecular Composition by GC-FID
- Evaluation of Wax Dispersants and Solvents
- Hot Flask Testing
- Designing Acidizing Packages
- Acid Compatibility Testing
- SRB, APB Bacteria Bottles
- ATP (LuminUltra)
- Fluid Design, Testing, Trouble-shooting
- Design and Selection of Frac Fluid Additives
- Bottle Testing For Product Evaluation, Trouble-Shooting and Product Development
- Water Treating
- Water Compatibility
- Scaling Tendency Calculation Software

A full-service lab embedded right in the heart of Carlyle, Saskatchewan.

The 2,000sq ft lab was built in 2016, to service the drilling fluids, production and stimulation chemicals needs of Saskatchewan and Western Manitoba.

The lab is staffed by locally based technicians, scientists and PhDs that have significant industry experience and area specific expertise.

Combined with the latest instrumentation, the lab is capable of performing an array of analysis aimed at product selection, troubleshooting, and detailed scientific analysis; servicing. All testing is in accordance with ISO 9001 quality standards and ASTM testing methods.

This includes rigorous maintenance and calibration programs along with random spot checks on sample analysis which must be verified by third-party laboratories.

ISO 9001:2015 certified laboratory.

26,422 tests were performed in 2019.



## MINIFLEX-600

### POWDER X-RAY DIFFRACTION

New sixth generation MiniFlex benchtop X-ray diffractometer is a multipurpose powder diffraction analytical instrument that can determine: crystalline phase identification (phase ID) and quantification, percent (%) crystallinity, crystallite size and strain, lattice parameter refinement, Rietveld refinement, and molecular structure.

#### The MiniFlex-600 XRD:

- Direct photon counting detector enables high-speed, low-noise data collection and may be operated in 0D and 1D modes for conventional XRD analysis and 2D mode for samples with coarse grain size and/or preferred orientation.
- Phase identification
- Phase quantification (phase ID)
- Percent (%) crystallinity
- Crystallite size and strain
- Lattice parameter refinement
- Rietveld refinement
- Molecular structure