

Wellsite Chemistry Services

Accurate, representative fluids data delivered at the well site for better-informed, rapid decision making

APPLICATIONS

- Field development planning
- Surface and subsurface sample analysis
- Time-sensitive analysis
- Well production monitoring
- Input for production facilities and process design
- Selection of completions materials
- Wastewater disposal strategies
- Environmental analysis

BENEFITS

- Reports high-quality data at the wellsite
- Enables real-time decision making
- Trends fluid properties' changes during well testing operations
- Enhances reliability of reservoir models
- Reduces uncertainty in design of hydrocarbon processing plants
- Optimizes capex
- Reduces HSE risks
- Minimizes use of chemicals and dangerous goods shipments

FEATURES

- Latest industry technologies
- Robust QA/QC process
- Dedicated workflows supported by reservoir fluids domain expertise
- Integrated approach to wellsite and laboratory analysis
- Staffed by sampling and analysis experts

Understanding reservoir fluid properties at the early stages of field development helps to safely and cost-efficiently meet many challenges that face today's oil industry, including optimizing reservoir models, selecting completion materials and strategies, and designing process and production facilities. Schlumberger wellsite chemistry services enable evaluating fluid properties during wireline sampling, well test operations, or production monitoring, offering valuable real-time fluids data for initial reservoir characterization at flowing conditions and early measurement of time-sensitive components, such as sulfur species. In many cases, chemical evaluation at the well site is the only possible way to obtain reliable information on trace components such as mercury content in gas.

Reservoir fluids may contain nonhydrocarbon components in varying quantities, including hydrogen sulfide (H₂S) and other sulfur species, and elements such as mercury and radon, exposure to which carries serious HSE and environmental risks. Many of these compounds are also highly reactive with tubing, facilities, and other materials, undergoing rapid and irreversible alterations. Transporting fluid samples obtained in such operations for offsite laboratory analyses can lead to unreliable results; therefore, immediately analyzing or preserving samples for future analyses, right at the well site, can be critical to operational success.

Wellsite chemistry services offered by Schlumberger focus on using standardized and industry-recognized procedures as well as applying the latest technologies and dedicated workflows to consistently deliver representative fluid data. Our teams of reservoir experts undergo intensive, custom-designed training in wellsite chemistry field operations that is based on years of experience and internal reliability tests. Field operations are supported by our global network of Schlumberger Reservoir Laboratories and unparalleled fluids domain expertise. Every effort focuses on obtaining representative, fit-for-purpose, and quality data that helps customers increase their confidence and deploy robust field development plans.



Automatic titration following ASTM International UOP 212 procedures allows for faster, more reliable analysis of sulfur compounds.

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The fully portable MicroGC with an integrated thermal conductivity detector enables quick and accurate measurement of C_1 - C_7 hydrocarbons, CO_2 , N_2 , and H_2S down to 50 ppm.



Field-proven, industry-standard Sir Galahad equipment is used to detect mercury content in gas down to 1-ng/m³ concentration levels.

Services

- Detection and analysis of H_2S and sulfur species in gas
 - Agilent® MicroGC: 200-nL sample volume to measure H_2S down to 50 ppm
 - Gas detection tubes—selected based on internal reliability and accuracy tests with a wide variety of measuring ranges:
 - hydrogen sulfide (H_2S) from 0.25 ppm to 40%
 - carbon dioxide (CO_2) from 100 ppm to 40%
 - mercaptans from 0.1–120 ppm
 - carbonyl sulfide (COS) from 2–200 ppm
 - ASTM International UOP212-05: potentiometric method of determining H_2S , mercaptans, and COS from less than 1 ppm to several thousand ppm sulfur; rapid and accurate titration performed using autotitrator
- Detection and analysis of sulfur species in liquid according to ASTM International UOP163-10: potentiometric method of determining H_2S , mercaptans, and COS with a lower quantitation limit of 0.2-ppm mercaptan and 1.0-ppm H_2S
- Detection and analysis of C_1 - C_7 hydrocarbon composition by MicroGC
- Detection and analysis of mercury in gas
 - PSA® 10.525 Sir Galahad™ for measuring mercury in gaseous samples with detection down to 0.1-ng absolute mass
 - PSA 10.537 Pressure Let Down System™ for sampling gases at high pressure to obtain a representative sample and prevent mercury loss
- Detection and analysis of mercury in liquid
 - PSA 10.515 Pre-Concentration Unit™ for field measurement of mercury in gas condensates with boiling point up to 482 degF [250 degC]
 - PSA 10.035 Millennium Merlin™ for laboratory analysis of mercury in heavier liquid hydrocarbons
- Detection and analysis of radon in gas
 - Pylon® AB6™ for measuring alpha particle activity originating from radon and its daughter products
- Detection and analysis of volatile arsenic species in gas trapped on tubes impregnated with silver nitrate ($AgNO_3$) and analyzed by inductively coupled plasma mass spectrometry (ICP-MS) with a detection limit below 0.1 ppm
- Detection and analysis of elemental sulfur by a phosphorus-mode gas-chromatography pulsed-flame photometric detector (GC-PFPD) suitable for low sulfur content



HACH portable laboratory analysis equipment contains rugged field instruments and premeasured reagents for determining key physical and chemical properties of water.

- Water analysis
 - pH, conductivity and resistivity, dissolved oxygen (DO), and oxidation reduction potential (ORP) evaluated using probes and HACH® HQ40D™ multiparameter meter
 - Turbidity determined by HACH 2100Q™ turbidity meter
 - Specific gravity determined by handheld Anton Parr® densitometer at specified temperature
 - API RP 45 analysis using HACH DR2800™ or 3900™ spectrophotometer, or HACH DR900™ colorimeter and HACH handheld digital titrator, to evaluate
 - chloride (Cl^-), sulfate (SO_4^{2-}), calcium (Ca^{2+}), magnesium (Mg^{2+}), dissolved iron (Fe), potassium (K^+), barium (Ba^{2+}), carbonate (CO_3^{2-}), bicarbonate (HCO_3^-), hydroxide (OH^-) and calculated sodium (Na^+)
 - total, ferrous (Fe^{2+}), and ferric (Fe^{3+}) iron
 - dissolved sulfide
 - Determination of sulfate-reducing iron-related bacteria, acid-producing bacteria, and aerobic bacteria using BART™ biological activity reaction tests
- Oil-in-water content measurement per modified ASTM International 3921
- Basic sediment and water (BS&W) analysis by centrifuge in accordance with ASTM D4007†

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†ASTM Manual of Petroleum Measurement Standards Chapter 10, Section 4, "Sediments and Water." Other company, product, and service names are the properties of the respective owners. Copyright © 2014 Schlumberger. All rights reserved. 14-TS-0089