

# OIL WELL CEMENTING

PERFORMANCE . QUALITY . SAFETY

# CONSISTOMETERS

**HIGH PRESSURE HIGH TEMPERATURE (HPHT) CONSISTOMETERS** test cement performance under a wide range of downhole conditions. Available in single and dual-cell configurations, these instruments support testing at temperatures up to 600°F (315°C) and pressures up to 40,000 psi (275 MPa). Each unit features advanced cooling systems, modular hydraulics, and magnetic coupling drives to reduce downtime and simplify maintenance. They can also prepare slurries for evaluating free water, fluid loss, viscosity, and rheological properties.

**BENCHTOP CONSISTOMETERS** are designed for mobile and remote laboratories where space is limited but reliable cement testing is essential. The units support testing at temperatures up to 400°F (204°C) and pressures up to 20,000 psi (138 MPa), making them ideal for a wide range of downhole simulation needs.

**ATMOSPHERIC CONSISTOMETERS** are designed to provide a simple, accurate, and efficient way to condition cement slurries for testing in accordance with API 10A/B standards. These compact, dual-cup systems support temperatures up to 200°F (93°C) at atmospheric pressure, making them ideal for preparing samples for rheological, fluid loss, and other property evaluations. With all controls conveniently located on the front panel, these units are easy to operate and feature automatic slurry cup rotation at 150 rpm, precise temperature control via a programmable controller and a motor-driven water bath stirrer to eliminate hot spots.



# COMPRESSIVE STRENGTH

**ULTRASONIC CEMENT ANALYZERS (UCA)** are designed to monitor the real-time development of compressive strength in cement slurries while curing under simulated downhole conditions. These instruments support testing at temperatures up to 600°F (315°C) and pressures up to 20,000 psi (137 MPa), with options available in both single and dual-cell configurations. By measuring the change in ultrasonic signal velocity through the cement as it hardens, UCAs provide continuous, accurate strength data critical for optimizing wait-on-cement (WOC) times and ensuring well integrity.



**CEMENT EXPANSION/SHRINKAGE CELLS** provide continuous, real-time measurement of cement volume changes under HPHT conditions for evaluating the sealing integrity of cement formulations in oil and gas wells. The systems operate at temperatures up to 400°F (204°C) and pressures up to 10,000 psi (68 MPa), and are designed for use with Chandler's Ultrasonic Cement Analyzers and Static Gel Strength Analyzers. Expansion testing uses a radial pressure transducer to monitor changes during curing, while shrinkage testing employs a diaphragm and displacement piston system with precision LVDT feedback. The shrinkage configuration requires a Quizix pulse-free precision pump for accurate pressure control.

**CEMENT CUBE TESTING** Cement Curing Chambers provide a complete solution for preparing and evaluating the compressive strength of standard two-inch cement cubes in accordance with API standards. This includes a range of pressurized curing chambers capable of conditioning up to 16 cubes at temperatures up to 700°F (370°C) and pressures up to 25,000 psi (172 MPa). These chambers accommodate various testing needs, including dual-cell configurations and compatibility with BP settling tube tests.



# GEL STRENGTH & GAS MIGRATION

**STATIC GEL STRENGTH ANALYZERS (SGSA)** offer simultaneous measurement of a cement slurry's static gel strength development and its compressive strength development while it is curing under downhole temperature and pressure conditions.

**MECHANICAL GEL STRENGTH ANALYZERS** allow operators to study the development and resulting gel strength throughout the gel phase of cement slurries. This tool equips the operator with the knowledge required to improve slurry designs to meet the critical requirements of well placement. Available as an upgrade to your existing single cell UCA, as 5265MG, or a standalone instrument with Quizix Precision Pump as 5265 MGSA.

**CEMENT HYDRATION ANALYZER** is a precision instrument designed to simulate real-world gas migration scenarios and evaluate key cement properties during hydration. It measures susceptibility of gas migration degree of hydration, shrinkage and gas permeability in a closed system using nitrogen injection. With automated controls, real-time data acquisition, and a user-friendly interface, the Model 7200 enables unattended operation and easy cleanup. Built for accuracy and repeatability, it supports testing up to 325°F (163°C) and 1000 psi (6.9 MPa), making it essential for assessing cement integrity in wellbore environments.



# MECHANICAL PROPERTIES

**MECHANICAL PROPERTIES ANALYZER (MPRO)** continuously measures the elastic mechanical properties (Poisson's ratio, Young's modulus, Bulk modulus) and the compressive strength of API cement as it cures under high-temperature and high-pressure conditions.



# FLUID LOSS

**FLUID LOSS CELLS** measure the fluid loss properties of cement slurries or drilling fluids in accordance with API standards. Once the cement slurry or mud is placed into the test cell, a programmable temperature controller increases the temperature at the desired rate. The slurry is conditioned by stirring at 150 rpm, similar to a consistometer.



# CEMENT VISCOSITY

**3530 VISCOMETER** is a versatile concentric cylinder instrument offering manual or fully automated operation for field or lab use. It meets API and ISO standards and operates from 0.01 to 600 rpm, with shear rates from 0.17 to 1021  $\text{sec}^{-1}$ . Supplied with Rheo 3000 Software, it ensures consistent, reliable viscosity measurements with or without computer control.



# SLURRY PREPARATION

**CONSTANT SPEED MIXERS** blend cement slurry at an automatically maintained, constant shear rate in accordance with API standards. Available are 1 qt/1 liter or 4 qt/4 liter volume and delivered preset to run the API Spec10A and RP10B2 mixing speeds of 4,000 and 12,000 rpm or fully variable speed selection from 1,000 to 18,000 rpm.



**ATMOSPHERIC CONSISTOMETERS** provide a reliable and efficient method for conditioning cement slurries in strict compliance with API 10A/B standards. Models 1200 and 1250 are designed to simultaneously prepare two slurry samples, improving lab productivity and saving technician time. With intuitive front-panel controls, automatic slurry cup rotation is at 150 rpm, and precise temperature regulation via a stainless-steel water bath. These instruments ensure consistent and repeatable results. The Model 1250 includes a built-in chart recorder for permanent data tracking, while internal cooling coils allow for rapid temperature reduction, enhancing safety and workflow in cement testing environments.



**WETTABILITY TESTERS** are two instruments in one: a constant speed mixer and an instrument for the evaluation of the oil/water phase transition of oil-based drilling fluids as they interact with spacer and/or pre-flush systems. This is essential for evaluating the wettability of spacers and pre-flushes that are intended to water wet the surfaces to which cement is expected to bond.

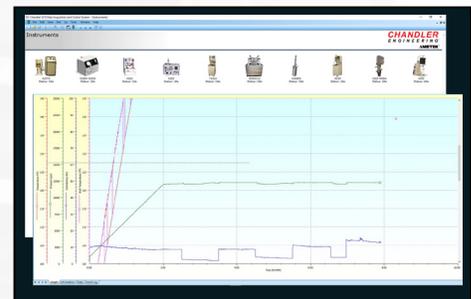


# HISTORY

Since 1949, Chandler Engineering has been a trusted leader in delivering high-quality measurement instruments for the Oil & Gas Industry. As the industry's largest instrument supplier, Chandler Engineering continues to drive innovation, helping customers enhance the efficiency and productivity of their drilling and production operations.

## DATA ACQUISITION AND CONTROL SYSTEMS

5270 provides complete control over the temperature and pressure schedules of oilfield laboratory instruments from a personal computer. The software simplifies the sharing of test information, reports and graphs between laboratories around the world. The 5270 is designed to work seamlessly with Chandler Engineering instruments and is versatile so that it can be configured with other instruments.



At Chandler Engineering, we are united by our commitment to each other and the shared values that define our work. We promote unity, honor, and belonging within our company and extend that care to the communities we serve. Our dedication to innovation and excellence in energy solutions is driven by our desire to leave the world a better place for our families and future generations.



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