

Standard
Laboratories, Inc.





Standard Laboratories, Inc.

matrices. Testing capabilities are comprehensive, ranging from routine mine control work to large washability studies or complex research programs. This national network of testing laboratories is headquartered in Charleston, West Virginia, and its current customer list includes over 2000 utilities, producers, manufacturers, consultants, industrial electrical generators, brokers, and exporters.

The firm was founded in 1950 by Gladys B. (Stallard) Berchtold. The establishment of this initial laboratory was in response to a perceived need for high quality coal analyses in the Eastern Kentucky and Virginia coalfields. After incorporation in 1954, the business began a long and successful history of consistent growth in reputation and sales.

In 1975, a strong management team was developed which provided for the establishment of a network of laboratories to satisfy an identified national market for quality laboratory services.

In 1976, Standard Instrumentation, Inc. (SI) was chartered as a subsidiary of Standard Laboratories to provide the market with speciality instruments in carbonization testing. Today, SI sells a wide range of analytical lab instruments throughout six continents of the world.

Another subsidiary, Precision Samplers, Inc. (PSI), was founded in 1979 and has since manufactured and sold more than twenty-five auger sampling systems, both fixed and mobile, to utilities and producers across the United States.

In 1985, the company formed Coalscan Sales, Inc. to act as North American sales representatives for the on-line monitoring products developed by Minerals Consultants, Inc. of Australia. This new firm is expected to position Standard Laboratories in the nuclear market for on-line coal analyses.

Standard Laboratories' Coal Testing Conference Division (CTC) manages the International Coal Testing Conference. The CTC provides a technical forum for coal analysis specialists throughout the world and attracts hundreds of coal quality people annually. The **Journal of Coal Quality** was founded by the CTC and is known worldwide for its content.

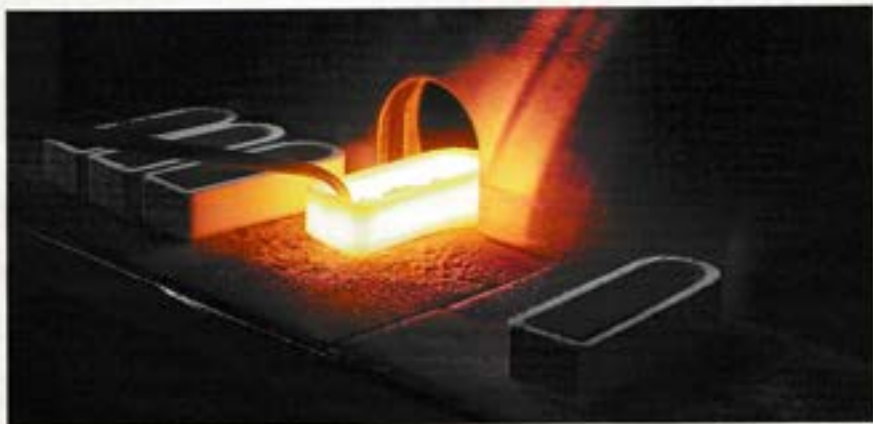
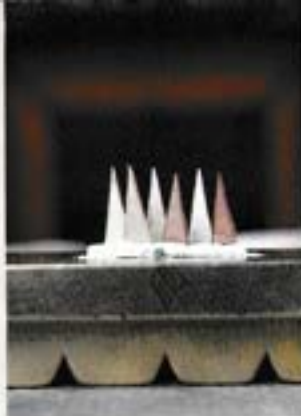
Standard Laboratories' Technical Services Division provides round robin testing and standard samples to over 100 coal laboratories throughout the U.S. The Technical Services Division has also offered consultation on four continents in other areas including mechanical sampling, lab design, lab critique, and preparation plant performance testing and evaluation.

Since 1950, Standard Laboratories has grown from a small local laboratory serving a few clients in routine coal analysis to a national firm with comprehensive capabilities in testing, equipment design, manufacture and sales, technical services and professional consulting. Standard Laboratories is proud to be an important contributing part in the progress and evolution of the U.S. coal industry.

Standard Laboratories, Inc. is an independent testing firm offering extensive sampling and analytical services in coal, water and soil. It is a closely held corporation operated on a for profit basis and is one of the largest coal testing firms in America. Standard Laboratories' remarkable growth and continued existence is based on its reputation for accurate and timely technical information and its close attention to the needs of its clients.

Standard Laboratories, Inc. currently operates a number of laboratories in the U.S. specializing in coal sampling and analysis with additional analytical capability in soil, water, and geochemical

Coal Analysis



Standard Laboratories is competent to perform virtually all routine and speciality procedures required by the United States coal industry and its markets. The Standard Methods employed are those established by ASTM. These methods have been subjected to rigorous validation studies and interlaboratory collaborative testing and can thus be considered reliable.

Routine coal samples are received by personal delivery, mail, common carrier, or picked-up by Standard Laboratories' pick-up and sampling service personnel. Each sample received is logged into a branch lab computer and, as the sample proceeds through the laboratory, raw data generated by the analysts are entered into the computer. When all analyses are completed and verified, the computer generates a printed report to be reviewed and approved

by the Lab Manager before release to the client.

Standard Laboratories recognizes that one of the most important aspects of the services offered is "turnaround time," i.e., the time which elapses between the receipt of a sample at the laboratory and the report of the final results. For this reason Standard Laboratories, in many locations, often operates on a three-shift, around-the-clock basis.

Clients who have need of fast turnaround and who submit samples on a regular basis should investigate our computerized Client Access System. Under this system, a client can access our computer system by telephone and receive a report in their own office. The only equipment required at the client's location is a telecommunications computer terminal and inexpensive telephone modem. Complete security is assured.



Coal Sampling



Trained and experienced crews are immediately available to obtain coal samples under all types of coal sampling situations from a few railroad cars to export shipments involving thousands of tons. A fleet of sampling trucks, manned by these samplers, can satisfy any customer's specified sampling needs.

Comprehensive sampling capabilities enable Standard Laboratories to handle complex jobs such as preparation plant-performance testing on any size plant at any geographic location. Auger sampling is also available in many geographic areas.

Consulting on special sampling problems or large, involved jobs is provided upon request.



Quality Assurance



Standard Laboratories, Inc.			Sample No.
AMT TBY	0.1	3088.8	100000
TBY & SWP.	0.2	3088.8	100
BY T. + E.	0.3	1078.4	100000
BY T.	0.4	1.000	100000
BY C. + E.	0.5	2.407	100000
BY C.	0.6	2.388	100000
BY C. + E.	0.7	2.177	100000
BY C.	0.8	8.1073	100000
BY C. + E.	0.9	1.0077	100000
BY C.	1.0	1.2210	100000
BY C. + E.	1.1	1.00	100000
BY C.	1.2	1.000	100000
BY C. + E.	1.3	1.000	100000
BY C.	1.4	1.000	100000
BY C. + E.	1.5	1.000	100000
BY C.	1.6	1.000	100000
BY C. + E.	1.7	1.000	100000
BY C.	1.8	1.000	100000
BY C. + E.	1.9	1.000	100000
BY C.	2.0	1.000	100000
BY C. + E.	2.1	1.000	100000
BY C.	2.2	1.000	100000
BY C. + E.	2.3	1.000	100000
BY C.	2.4	1.000	100000
BY C. + E.	2.5	1.000	100000
BY C.	2.6	1.000	100000
BY C. + E.	2.7	1.000	100000
BY C.	2.8	1.000	100000
BY C. + E.	2.9	1.000	100000
BY C.	3.0	1.000	100000
BY C. + E.	3.1	1.000	100000
BY C.	3.2	1.000	100000
BY C. + E.	3.3	1.000	100000
BY C.	3.4	1.000	100000
BY C. + E.	3.5	1.000	100000
BY C.	3.6	1.000	100000
BY C. + E.	3.7	1.000	100000
BY C.	3.8	1.000	100000
BY C. + E.	3.9	1.000	100000
BY C.	4.0	1.000	100000
BY C. + E.	4.1	1.000	100000
BY C.	4.2	1.000	100000
BY C. + E.	4.3	1.000	100000
BY C.	4.4	1.000	100000
BY C. + E.	4.5	1.000	100000
BY C.	4.6	1.000	100000
BY C. + E.	4.7	1.000	100000
BY C.	4.8	1.000	100000
BY C. + E.	4.9	1.000	100000
BY C.	5.0	1.000	100000

Through rigorous quality control programs, Standard Laboratories is assured of accurate analyses. Continuous programs, both in-house and with other testing laboratories, provide timely knowledge of the laboratory's reproducibility and repeatability at any given time.

Internal round robin testing programs are performed daily among the laboratories. The Technical Director and Manager of Technical Services have daily computer-generated data on the status of each laboratory.

Standard Laboratories also participates in periodical round robin testing programs with over 100 other laboratories nationwide. This data insures that Standard Laboratories compares well with other reputable, independent and captive testing firms.

Detailed training manuals, controlled hands-on experience, and proficiency testing assure competent performance from qualified technicians. These programs provide the organization with well-trained technicians before they are assigned to routine work.

Standard Laboratories has established procedures for comprehensive technical audits at least once a year for each lab within its system. This audit covers equipment maintenance and calibration, information systems and accuracy, traceability of sample data, direct observation of practices, and proficiency testing of personnel.

It is Standard Laboratories' aim to be the highest quality coal testing firm in the world. Clients can be assured that every reasonable effort is made to produce accurate results. Standard Laboratories' quality assurance programs make its motto "Where Quality Is Standard" a reality.



Environmental Testing

Standard Laboratories maintains well-equipped environmental laboratories at a number of its branch facilities. These laboratories routinely provide for the analyses of over 75 water and soil test parameters. This work is primarily in support of the coal industry, although considerable work is also performed for industrial, governmental, and other organizations.

A dedicated staff of competent professionals provides for accurate analyses utilizing appropriate standards and procedures. With personal attention to client requirements, this staff produces high quality chemical analyses and microbiological testing services.

An equity position in Mountain States Analytical, Inc. in Salt Lake City, Utah, provides Standard Laboratories with the capability for testing for organic as well as inorganic materials. Gas chromatography, GC Mass Spectrophotometry, liquid chromatography, infrared spectrophotometry, atomic absorption spectrophotometry, and microbiological testing are available through this branch facility. Special expertise is available on pesticides, organic pollutants, industrial wastes, inorganic contaminants, priority pollutants, hazardous waste, EP toxicity, industrial hygiene, and ion chromatography.



Standard Laboratories offers a contract laboratory package. For a negotiated monthly fee, the proper equipment will be identified and purchased, personnel will be selected and trained, and a testing laboratory will be installed and operated for a client.

This special service for coal producers, brokers, and end-users has the advantage of quick installation, managerial relief from administrative problems, available technical expertise, equipment back-up and repair capabilities, third-party objectivity and Standard Laboratories' own reputation and quality control programs. To satisfy a client's desire for



a turn-key approach, complete contract laboratory services are offered, including the layout, design and construction of the laboratory and preparation buildings.

The contract lab staff at Standard Laboratories can perform this service at a cost level that in most cases would be equal to or less than the cost a client would incur by operating the laboratory in-house.

On-Site Laboratories

Precision Samplers, Inc.



Precision Samplers, Inc., a subsidiary of Standard Laboratories, Inc., is a leading manufacturer of state-of-the-art auger sampling systems (for stationary coals) with over 25 systems in operation across the United States.

From portable to complete fixed turnkey installations, PSI designs, builds, operates, maintains, and leases systems to sample rail cars, trucks, barges, stockpiles, and moving belts. Each system is custom engineered to meet client specific requirements.

The PSI Auger System has been demonstrated to be "bias free" with full scale bias tests having been performed on both washed and unwashed coals. With a PSI system, there is increased confidence based on a truly representative sample increment.

In addition the PSI system's proven trouble-free design and minimum maintenance requirements assure high availability and cost effective operation.

- automatic processing of the entire sample.
- crushing the entire auger increment prior to splitting eliminates one area of possible bias.
- reject material recovery on demand.
- variable laboratory sub sample size.
- minimal operator training.
- simple on-site installation requirements.





Precision Samplers, Inc.



- processing capacity of up to 500 trucks or railroad cars per day.

- acceptable bias testing.

PSI offers lease, lease/purchase, and purchase options, each with or without operational support.

A recent addition to the PSI product line is the time-saving MSS-G1 Mechanical Sub Sampler for the preparation of laboratory samples. Designed to meet ASTM requirements, the MSS-G1 is for splitting of coal received either by manual insertion or directly from a crusher. The sub sampler is designed for laboratory applications or as a final stage cutter for a mechanical sampling system.

- variable speed and dwell time.
- variable cutter opening.
- customized for minimal reject handling.
- completely enclosed for moisture retention.



Standard Instrumentation



Standard Instrumentation, Inc. (SI), a subsidiary of Standard Laboratories, Inc., is involved in the manufacturing, sales, service, exporting and importing of high quality laboratory instrumentation for customers worldwide.

Founded in 1976, the company began when the parent organization realized an internal need for a single, specialized instrument. From there, sales and exposure have grown consistently over these years, resulting in a wide range of analytical lab instruments sold throughout six continents of the world.

In 1983, SI received the first "Governor's Outstanding Industrial Exporter Award" from John D. Rockefeller IV, Governor of the State of West Virginia. In 1984, "The President's 'E' Award for Exports" for outstanding contribution to the export expansion program of the United States was presented to SI by Secretary of Commerce Malcolm Baldrige, as authorized by President Ronald Reagan.





Standard Instrumentation

SI provides the following products:

- Analyzers for organic and inorganic materials (Carbon, Sulfur, Simultaneous Carbon & Sulfur, Oxygen, Nitrogen, Simultaneous Oxygen and Nitrogen, Hydrogen);
- Furnaces (Laboratory, Ashing, Volatile Matter, Combustion Tube, Muffle);
- Thermal Analysis (Thermogravimetric Analyzers, Differential Thermal Analyzers, Simultaneous Thermal Analyzers, Thermal Mechanical Analyzers, TA Data Acquisition, Flammability Test Equipment, Smoke Density Test Equipment);
- Calorific Value Determination (Waterless Isothermal Calorimeter, Automatic Waterless Isothermal Calorimeter, and Calorific Value Microprocessor);
- Computerization (Laboratory Computers, Computerized Laboratory Systems, Instrument Interfaces, Balance Interfaces, Printer Interfaces);
- Coal Speciality Instrumentation (Plastometer, Dilatometer, Sole Heated Oven, Ash Fusion Systems, Sulfur Analyzer, Moving Wall Coke Oven, Coke Test Oven, Coke Reactivity Apparatus);
- Environmental Analysis Instrumentation (Dust Measurement, Dust Sampling, Gas Emission, Surface Area, Gas Analyzers, Water Analyzers, Stack Gas Emission Monitor);
- Supplies (Full range of laboratory supplies, consumables, chemicals, and miscellaneous materials, including balances, preparation equipment and standards).



Technical Services Division



Bias Testing

Standard Laboratories and its Technical Services Division is qualified to perform Bias Testing of mechanical coal sampling systems. Over the years Standard Laboratories has completed a large number of such tests on all types of mechanical samplers in a variety of situations. This extensive experience level is well recognized in the industry.

Round Robin Testing

The Technical Services Division of Standard Laboratories conducts a commercial round robin coal testing program (SLRR) for over 100 laboratory organizations. Samples are

submitted on a monthly basis to independent, industrial and special-service coal testing laboratories. An extensive computer analysis of the data is made and reports are generated detailing each participant's performance as well as the group performance.

This program allows those laboratories performing routine and ultimate analysis of coal and major elements of coal ash to evaluate results of those tests. A separate program (SIRR) permits the evaluation of plasticity and dilation results.

Standard Samples

The Technical Services Division also offers a rather wide range of coal samples for reference purposes. TSD develops and markets Standard Samples (SLSS) to the entire industry. Each sample consists of 75 to 100 grams of pulverized coal that has been analyzed in duplicate by as many as 100 participants in the SLRR program. The parameter values for each sample represent the statistically calculated results of the duplicate determinations. As such, these standards are exceptionally well-suited for routine quality control checks and instrument calibration. Standard Laboratories utilizes the standard samples extensively.

Sampling and Analytical Consulting

The office of the Technical Director provides a central resource for internal and external technical consulting in field sampling, preparation, and analytical problems. Such consulting is available in the areas of mechanical and manual sampling situation evaluation, laboratory design and evaluation, data analysis, expert witness, technical training seminars, equipment specifications, procurement and installation.





Sampling Associates International

Sampling Associates International (SAI) is a joint venture formed by Hampton Roads Testing Laboratories, Inc., Norfolk Testing Laboratories, a division of McCreath & Sons of Hampton Roads, Inc., Standard Laboratories, Inc., and Tidewater Coal Inspection Bureau, Inc.

This partnership currently holds exclusive long term sampling contracts for the Chesapeake & Ohio Railroad at its Pier 14 loading facility in Newport News, Virginia; Massey Coal Terminal Corporation at its facility in Newport News, Virginia; Norfolk and Southern Railroad at its Lambert's Point

facility in Norfolk, Virginia; Consolidation Coal Sales Company at its Baltimore, Maryland, facility; Conrail at its Pier 124 in Philadelphia, Pennsylvania; and Chevron at its Pascagoula, Mississippi, facility. SAI provides sampling services for over half of the total U.S. coal export tonnage each year.

In 1984, SAI opened a laboratory in New Orleans, Louisiana, to perform coal, coke, and petroleum coke sampling and testing. This lab services the Gulf areas from Mobile, Alabama, to Houston, Texas.

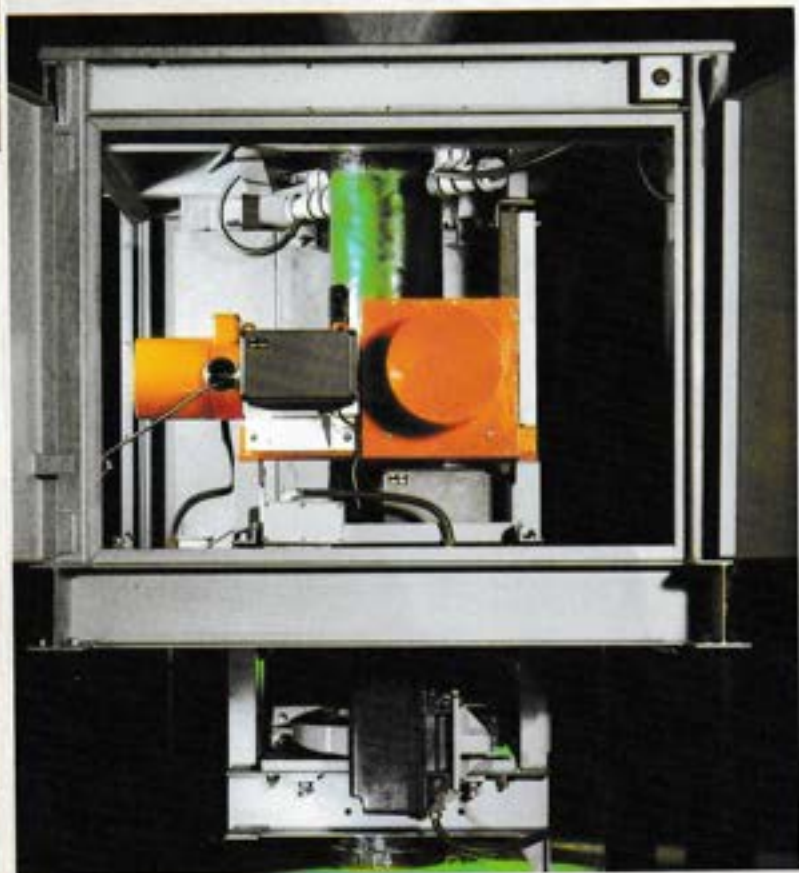


International Coal Testing Conference

The International Coal Testing Conference, sponsored by Standard Laboratories, is a symposium and exhibition that is geared to individuals with special interests in the coal testing world. The conference is tailored to the informational need of all personnel whose jobs are related to the quality control of coal production, utilization, or research. Specific areas of interest include sampling,

carbonization, synfuels testing, minerals in coal, laboratory quality control, computerization, on-line monitoring and washability studies. An exhibition of state-of-the-art equipment is included as an integral part of this conference. In the past five conferences, more than 2000 participants from 17 countries have heard over 200 technical papers.

Coalscan
Sales, Inc.



In 1985, Standard Laboratories became the North American sales representative for Coalscan, Inc. of York, Pennsylvania. Coalscan, Inc. manufactures, under license from MCI of Adelaide, Australia, a series of on-line coal sampling and analysis systems. These products provide the most sophisticated and most precise on-line ash and moisture measuring system ever offered to the mining industry. With over 35 installations worldwide, the Coalscan technology is well demonstrated on varying coals in a variety of situations.

The Coalscan Model 4500 is the most precise on-line ash measuring system available. Ash is measured by a totally new technology (pair production) using gamma rays which impinge on the coal and form electron-positron pairs at a rate proportional to ash content. The system is self-correcting for bulk density and moisture content. It provides total analysis of ash content, moisture content, and bulk density. The Coalscan Model 4500 permits close monitoring and programming of the wash plant operation for maximum efficiency relative to output requirements.

The Coalscan Model 3500 system is precise and reliable for measurement of ash in run-of-mine or washed coal streams. This system is specifically designed to be used on coal that has a relatively consistent iron content. It provides continuous readings independent of changes in coal size or bulk density. The Coalscan Model 3500 is relatively easy to install as it fits over a belt and does not interfere with the conveyor operation.

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