

## TESTING FORUM

### Committee D-18 News

#### Peat Testing Standardization by Peter M. Jarrett

When first introduced to the work of standards development in peats, I was given a pamphlet, *Standardization Basics*, to read. This excellent publication, which is available from ASTM, gives an introduction to standardization and its value. It is also honest as it states, "the making of standards is not a fundamentally entertaining subject." In fact, it is a rather long boring process; so I have certain trepidation about presenting a paper on it. However, in developing any technology the value of having a set of standard definitions, classifications, specifications, test methods, and recommended practices with which to work make the trouble of their development worthwhile. It is the only way that a framework can be developed in which we all talk the same technical language and use the same tools.

#### Present Standards

A number of standards concerning peat already exist. These were developed by a previous ASTM committee that was primarily concerned with standards dealing with the horticultural use of peat. These standards may be found in Part 19 of *The Annual Book of ASTM Standards, Soil and Rock; Building Stones*. A listing is given in Table 1. The first six standards listed are as applicable to work considering the use of peat as a fuel as they are to horticulture. The last three listed are peculiarly horticultural in nature.

D 2607, a Peat Classification, does not any longer represent a sufficient classification for peat. Rather, it represents a specification for horticultural products. Our present committee is trying to develop a more widely applicable peat classification. This is however a very difficult process when one is trying to satisfy interest groups as diverse as those who wish to burn peat, to grow things with it, to build roads on it, or to treat sewage with it. At present we have a draft, roughly based on a draft developed by the Interna-

tional Peat Society after many years of frustrating discussions. This draft considers the ash content, the degree of humification, the pH, the absorbency, and botanical origin.

D 2974 the test method for Moisture, Ash, and Organic Matter is being revised. In terms of moisture content, there are no significant technical problems other than the fact that some consider moisture percentage in terms of total weight and others in terms of dry weight. The revision should include both and a plea that the method used should be defined. In terms of ash content, there is the technical problem of the ashing temperature. The present standard is at 550°C. For coals a temperature of 750°C is common. From the geotechnical engineering literature dealing with organic soils that contain clay minerals a consensus would suggest temperatures of around 400°C. This lower temperature prevents inaccuracy caused by the disintegration of the clays at higher temperatures. This situation must be resolved.

D 2944 on Sampling Processed Peat Materials and D 2978 on Volume of Processed Peat Materials are standards for quality control of a peat production process and should be valid for fuel work.

D 2973 for Total Nitrogen in Peats and D 2976 for pH of Peats are still acceptable methods of analyzing peat. There are certainly other ways of doing these tests that may with time be included.

#### Standards Under Development

The previous standards are the legacy of the earlier committee that dissolved itself after creating them. Our present Committee D18.18 on Peats and Related Materials was formed in Nov. 1979 to consider standards for Peats, Organic Soils, and Related Products. It has three interest areas:

- (1) geotechnical engineering;
- (2) horticulture, silviculture, and agriculture; and
- (3) energy and chemical purposes.

The horticulture group was virtually stillborn. Interest was shown by the geotechnical community, but the major interest was in energy. There follows a listing and outline of the work now in progress on standards development particularly with respect to energy uses. I have not restated the work being carried out on classification and moisture and ash contents.

1. The coal standards for ultimate and proximate analysis and calorific values are being amended for work with peat. The major change will be a reduction of the ashing temperature. The results of a series of round-robin tests using these methods will be presented at the ASTM Symposium in June and will be used as a basis for the standards.

2. Three methods for obtaining the bulk density of natural peat samples or compressed peat products are at an advanced draft stage. In this case a problem of terminology exists between geotechnical engineers and peat scientists. What is termed bulk density by the peat workers has the more specific term of dry density in geotechnical engineering where bulk density usually infers the density at the field moisture condition and includes the mass of water.

TABLE 1—Peat standards in Part 19 of the 1982 ASTM Book of Standards.

Standard Number	Title of Standard
D 2607-69	Classification of Peats, Humus, and Related Products
D 2974-71	Test Methods for Moisture, Ash, and Organic Matter of Peat Materials
D 2944-71	Method of Sampling Processed Peat Materials
D 2978-71	Test Method for Volume of Processed Peat Materials
D 2973-71	Test Method for Total Nitrogen in Peat Materials
D 2976-71	Test Method for pH of Peat Materials
D 2975-71	Test Method for Sand Content of Peat Materials
D 2977-71	Test Method for Particle Size Range of Peat Materials for Horticultural Purposes
D 2980-71	Test Method for Volume Weights, Water-Holding Capacity, and Air Capacity of Water-Saturated Peat Materials

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3. A standard practice for resource inventory evaluation is being developed based on U.S., Canadian, and Finnish practices.

4. A draft standard is presently being balloted for a sampling method of a furnace feedstock and for measuring the fineness of that peat in a sieve analysis. Also under consideration is a standard for the grindability of fuel peat.

5. On the more geotechnical front, standards are being written to allow undisturbed sampling of in situ peats to provide samples for laboratory testing that resemble the field condition as closely as possible. Methods of measuring permeability are also being considered. This factor will control such design aspects as the speed of drainage and the necessary spacing of drains in a harvesting operation.

### *Future Development*

Standards do not grow on trees. They have to be written by people with knowledge and technical expertise in the subject area.

Until recently, the problem of standards writing for the fuel peat industry lay primarily in the lack of technical expertise and experience among North Americans researchers. This situation is changing rapidly because of the work fostered in recent years by the U.S. Department of Energy. Among those of you who have worked on peat projects, there must now exist far better expertise as to what standards are necessary in the industry than there was about three years ago. Might I suggest that it is virtually a duty for you to use that expertise constructively so that whatever direction the use of peat as an energy resource follows, it will do so within an established technical framework. One might say that we can always use Finnish standards or Irish standards but, without doubt, on the long-term North American standards and expertise will be needed to solve North American problems.

I would invite you all to assist in this work either by joining our ASTM committee or by sending in ideas and suggestions for standards to committee members. The following addresses may be useful in addition to my own:

- For general information or standards publications ASTM, 1916 Race Street, Philadelphia, PA 19103.
- Ray Rahko, Chairman of Task Group on Peat for Energy Purposes, United Power Association, Elk River, MN 55330.
- Peter M. Jarrett, Chairman of Committee D18.18, Royal Military College of Canada, Kingston, Ontario.

### **ASTM Symposium on Measurement of Rock Properties at Elevated Pressures and Temperatures**

New developments in the areas of geothermal energy, nuclear waste isolation facilities, and deep excavations for civil, military, and mining activities have recently indicated an increasing need for improved methods of measuring rock properties at elevated pressures and temperatures.

Recent developments in this field will be the focus of the Symposium on Measurement of Rock Properties at Elevated Pressures and Temperatures, to be held on 20 June 1983 at Texas A&M Uni-

versity, College Station, TX. The symposium is sponsored by Committee D-18 on Soil and Rock and its Subcommittee D18.12 on Rock Mechanics. This symposium is being held in conjunction with the 24th Annual U.S. Symposium on Rock Mechanics, 20-22 June 1983 at the same location. The subcommittee on Rock Mechanics will also hold a standards-development meeting during this time.

Eight invited speakers will present technical papers highlighting details of methods of measurement as well as data obtained. Topics include measurement of pore and bulk compressibility; thermal conductivity and expansion; permeability; creep of salt; dynamic properties of rock; and constitutive laws for salt, at elevated pressures and temperatures. Also scheduled is a paper on the development of a test series for heated block to determine in situ thermo-mechanical and transport properties.

According to Symposium Chairman, Dr. Howard Pincus, University of Wisconsin-Milwaukee, the development of improved measurement capabilities can also lead to better understanding of tectonic processes. Cochairing the symposium is Earl Hoskins of the Department of Geophysics at Texas A&M University.

For more information on the Symposium on Measurement of Rock Properties at Elevated Pressures and Temperatures contact Howard Pincus, Departments of Geological Sciences and Civil Engineering, University of Wisconsin-Milwaukee, Milwaukee, WI 53201, 414/963-4017; or Kenneth C. Pearson, ASTM Standards Development Division, 1916 Race St., Philadelphia, PA 19103, 215/299-5520.

### **Second International Conference on Geotextiles**

The Second International Conference on Geotextiles was held at the MGM Grand Hotel in Las Vegas, NV on 1 through 6 Aug. 1982. The Conference, which was attended by approximately 700 engineers, scientists, and industry representatives, was sponsored by Industrial Fabrics Association International (IFAI) in cooperation with American Society for Testing and Materials (ASTM), American Society of Civil Engineers (ASCE), Transportation Research Board (TRB), Canadian General Standards Board (CGSB), Ecole Nationale des Ponts et Chaussées (ENPC) and, International Union of Testing and Research Laboratories for Materials and Structures (RILEM). This conference was designed to reveal the progress made since the First Conference on Geotextiles held in Paris in 1977. Thirty countries and four continents were represented by about 700 attendees at this meeting. There were approximately 30 sessions. Wednesday was dedicated solely to the exhibitors, with about 50 exhibits available on geotextiles and related materials and services.

The Executive Committee of the Second International Conference was composed of Jean-Pierre Giroud (General Chairman), Woodward-Clyde Consultants, Chicago, IL; Steve M. Warner (Secretary General), IFAI; A. Ivan Johnson (ASTM D-18 Representative), Woodward-Clyde Consultants, Denver, CO; G. "Trudy" Raumann (ASTM D18.19/13.61 Representative), Monsanto, Decatur, AL; J. R. Bell (Technical Program Chairman and TRB Representative), Oregon State University, Corvallis, OR; Ara Arman

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(ASCE Representative), Louisiana State University, Baton Rouge, LA; Lee Murch (Technical Program Vice-Chairman), DuPont, Wilmington, DE; Joe E. Fluet (Exhibits Committee Chairman), J. E. F. Associates, Inc., Boca Raton, FL; and E. Leflaive (RILEM Representative), Laboratoire Central des Ponts et Chaussées, Paris, France. The Technical Program Committee consisted of J. R. Bell (Chairman), L. E. Murch, T. A. Haliburton, R. D. Holtz, A. I. Johnson, R. M. Koerner, G. Raumann, and E. Leflaive. It should be noted that nearly all members of the Executive and Technical Program Committees are members of ASTM Committee D-18.

During the technical sessions, 158 papers were presented on topics such as drainage, international standards, walls and foundations, paved and unpaved roads, slopes and embankments, dams, railroads, erosion control, and special applications. The Conference was successful in bringing together the world geotextile experts and practitioners from industry, academia, and private practice. Besides presentations made on many practical applications, papers were presented discussing the development of rational design methods with strong theoretical and research background useful for practical applications. Also discussed were the proper use of geotextiles, information on the properties and durability of geotextiles, and the interaction of geotextiles and soils or other materials in which geotextiles are being incorporated.

Papers amply demonstrated the rapid development since 1977 of knowledge in the production, properties, theoretical applications, and the use of geotextiles worldwide. Speakers pointed out that in 1980, 113 million square meters of geotextiles and geomembranes were produced, 45 million square meters of this production was in the U.S.A., 45 million in Europe, 11 million in Canada, and 12 million was in other countries. Of the woven and nonwoven geotextiles used in 1980, 26% were used for asphalt construction, 21% for work-site stabilization, 15% for commercial and forestry applications, 11% for sports and recreational applications, 6% for railroads, 5% for erosion control and embankments, and the

balance for agricultural, government, mining, oil, and gas exploration projects. The foreign community appeared to be advancing the technology in the geotextiles area at a faster pace than the U.S.A. One notable example of such technological advancement was covered in a series of papers presented on the use of geotextiles in the giant shore protection projects of Oosterschelde in the Netherlands. It was pointed out by some of the speakers that, because of the size of the proceedings volumes, this Conference will have the net effect of practically doubling the archival publications on the properties, analysis, and engineering applications of geotextiles.

Approximately 150 of the participants of the Conference met on Wednesday evening to discuss a proposal to form an International Geotextiles Society. After much discussion an International Interim Committee was formed to prepare bylaws and to organize the International Geotextiles Society, as well as to receive proposals from countries and organizations desirous of organizing the Third International Conference.

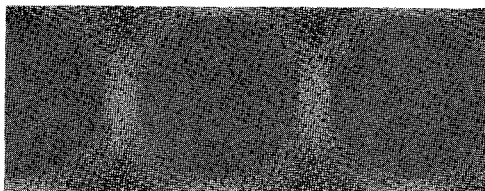
The Conference was highlighted by a reception and a banquet Thursday night where Mr. Robert Barrett, a pioneer in geotextile applications, was presented a special award by the Executive Committee in recognition and appreciation of his services in worldwide engineering applications of geotextiles. A special presentation was made to Dr. Jean-Pierre Giroud for his services throughout the last three years as Chairman of the Executive Committee of the Second International Conference on Geotextiles. Members left the Conference agreeing it was an outstanding success.

The papers presented at this Conference were preprinted in three volumes of the Proceedings. A fourth volume is being prepared, which will include the discussions held in all sessions and the presentations of the session reporters. The four volumes of approximately 1200 pages cost \$95.00 and are available from IFAI, 350 Endicott Building, St. Paul, MN 55101 (Phone: 612/222-2508; TWX: 910-563-3622; Cable: IFAI).

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# ASTM Committee D-18 on Soil and Rock

## Scope

The promotion of knowledge; stimulation of research; the development of specifications and methods for sampling and testing; and the development of nomenclature, definitions, and practices relating to the properties and behavior of soil, rock, and the fluids contained therein. Excluded are the uses of rock for building stone and for constituent materials in portland cement and bituminous paving and structures coming under the jurisdiction of other committees. Included are the properties and behavior of: (1) soil-like materials such as peats and related organic materials, (2) geotextiles, and (3) fluids occupying the pore spaces, fissures, and other voids in soil and rock insofar as such fluids may influence the properties, behavior, and uses of the soil and rock materials.

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