



E 380

E 380 SELECTED CONVERSION FACTORS

To convert from	to	multiply by
atmosphere (760 mm Hg)	pascal (Pa)	1.013 25 x 10 ⁵
board foot	cubic metre (m ³)	2.359 737 x 10 ⁻³
Btu (International Table)	joule (J)	1.055 056 x 10 ³
Btu (International Table)/h	watt (W)	2.930 711 x 10 ⁻¹
Btu (International Table)•in./s•ft ² •°F (<i>k</i> , thermal conductivity)	watt per metre kelvin [W/(m•K)]	5.192 204 x 10 ²
calorie (International Table)	joule (J)	4.186 800*
centipose	pascal second (Pa•s)	1.000 000* x 10 ⁻³
centistokes	square metre per second (m ² /s)	1.000 000* 10 ⁻⁶
circular mil	square metre (m ²)	5.067 075 x 10 ⁻¹⁰
degree Fahrenheit	degree Celsius	$t^{\circ}\text{C} = (t^{\circ}\text{F} - 32)/1.8$
foot	metre (m)	3.048 000* x 10 ⁻¹
ft ²	square metre (m ²)	9.290 304* 10 ⁻²
ft ³	cubic metre (m ³)	2.831 685 x 10 ⁻²
ft•lbf	joule (J)	1.355 818
ft•lbf/min	watt (W)	2.259 697 x 10 ⁻²
ft/s ²	metre per second squared (m/s ²)	3.048 000* x 10 ⁻¹
gallon (U.S. liquid)	cubic metre (m ³)	3.785 412 x 10 ⁻³
horsepower (electric)	watt (W)	7.460 000* x 10 ⁻²
inch	metre (m)	2.540 000* x 10 ⁻²
in. ²	square metre (m ²)	6.451 600* x 10 ⁻⁴
in. ³	cubic metre (m ³)	1.683 706 x 10 ⁻⁵
inch of mercury (60°F)	pascal (Pa)	3.376 85 x 10 ³
inch of water (60°F)	pascal (Pa)	2.488 4 x 10 ²
kgf/cm ²	pascal (Pa)	9.806 650* x 10 ⁴
kip (1000 lbf)	newton (N)	4.448 222 x 10 ³
kip/in. ² (ksi)	pascal (Pa)	6.894 757 x 10 ⁶
ounce (U.S. fluid)	cubic metre (m ³)	2.957 353 x 10 ⁻⁵
ounce-force	newton (N)	2.780 139 x 10 ⁻¹
ounce (avoirdupois)	kilogram (kg)	2.834 952 x 10 ⁻²
oz (avoirdupois)/ft ²	kilogram per square metre (kg/m ²)	3.051 517 x 10 ⁻¹
oz (avoirdupois)/yd ²	kilogram per square metre (kg/m ²)	3.390 575 x 10 ⁻²
oz (avoirdupois)/gal (U.S. liquid)	kilogram per cubic metre (kg/m ³)	7.489 152
pint (U.S. liquid)	cubic metre (m ³)	4.731 765 x 10 ⁻⁴
pound-force (lbf)	newton (N)	4.448 222
pound (lb avoirdupois)	kilogram (kg)	4.535 924 x 10 ⁻¹
lbf/in ² (psi)	pascal (Pa)	6.894 757 x 10 ³
lb/in ³	kilogram per cubic metre (kg/m ³)	2.767 990 x 10 ⁴
lb/ft ³	kilogram per cubic metre (kg/m ³)	1.601 846 x 10
quart (U.S. liquid)	cubic metre (m ³)	9.463 529 x 10 ⁻⁴
ton (short, 2000lb)	kilogram (kg)	9.071 847 x 10 ²
torr (mm Hg, 0°C)	pascal (Pa)	1.333 22 x 10 ²
W•h	joule (J)	3.600 000* x 10 ³
yard	metre (m)	9.144 000* x 10 ⁻¹
yd ²	square metre (m ²)	8.361 274 x 10 ⁻¹
yd ³	cubic metre (m ³)	7.645 549 x 10 ⁻¹

*Exact

QUESTIONNAIRE ON SUBJECT AREAS OF AUTHORS AND REVIEWERS

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To facilitate timely and fair reviews of papers submitted to GTJ, (a) authors of manuscripts submitted for publication are asked to circle the subject areas most applicable to their respective manuscripts, and (b) prospective reviewers are asked to circle the subject areas in which they have the greatest current competence to provide informed technical evaluations of manuscripts submitted to GTJ for publication. Thank you.

The Technical Editors

1. FIELD EXPLORATION

- 1.1 Reconnaissance
- 1.2 Mapping and GIS
- 1.3 Remote Sensing
- 1.4 Geophysical Methods
- 1.5 Geochemical Methods
- 1.6 Geobotanical Methods
- 1.7 Borehole Logging
- 1.8 Drilling Operations
- 1.9 Sampling Soil
- 1.10 Sampling Rock
- 1.11 Sample Transport and Storage
- 1.12 Ground Water Monitoring
- 1.13 Surface Water Monitoring
- 1.14 Other _____

2. FIELD (IN SITU) TESTING

- 2.1 Calcareous Soils
- 2.2 Marine and Lacustrine Sediments
- 2.3 Admixtures
- 2.4 Hydrocarbon-Bearing Soils
- 2.5 Hazardous Materials
- 2.6 Pollutants
- 2.7 Jointed Rock
- 2.8 Tailings, Backfill, Talus
- 2.9 Penetration Testing
- 2.10 Moisture, Density
- 2.11 In Situ Stresses
- 2.12 Transmissivity, Storativity
- 2.13 Physicochemical Testing
- 2.14 Stress-Strain, Strength

- 2.15 Load-Deformation
- 2.16 Seismic Methods, Acoustic Emission
- 2.17 Other _____

3. TESTING AND MONITORING SOIL AND ROCK STRUCTURES

- 3.1 Embankments
- 3.2 Rock for Erosion Control
- 3.3 Dams
- 3.4 Tunnels and Shafts
- 3.5 Marine Structures
- 3.6 Waste Impoundments
- 3.7 Pavement Systems
- 3.8 Drainage Aids
- 3.9 Natural Slopes
- 3.10 Fills
- 3.11 Retaining Structures
- 3.12 Liners
- 3.13 Geotextile Structures
- 3.14 Mechanically Modified Soil and Rock
- 3.15 Chemically Modified Soil and Rock
- 3.16 Biologically Modified Soil and Rock
- 3.17 Admixtures
- 3.18 Erosion Tests
- 3.19 Subsidence and Collapse
- 3.20 Piles and Foundations
- 3.21 Other _____

4. LABORATORY TESTING—SOIL

- 4.1 Classification, Identification, Nomenclature
- 4.2 Sampling and Specimen Preparation, Transportation, and Storage

- 4.3 Grain Size, Specific Gravity, Density
- 4.4 Physicochemical Properties
- 4.5 Permeability, Void Ratio, Water Content
- 4.6 Consolidation, Swelling, Collapse
- 4.7 Shrinkage, Creep
- 4.8 Compaction Tests
- 4.9 Stress-Strain, Strength
- 4.10 Liquefaction Tests
- 4.11 Cyclic and Dynamic Tests
- 4.12 Thermal Property Tests
- 4.13 Microscopic Analysis
- 4.14 Other _____

5. LABORATORY TESTING—ROCK AND DIMENSION STONE

- 5.1 Classification, Identification, Nomenclature
- 5.2 Specimen Preparation
- 5.3 Texture, Fabric, Specific Gravity, Density
- 5.4 Permeability, Void Ratio, Pore-Size Distribution, Water Content
- 5.5 Stress-Strain, Strength
- 5.6 Creep
- 5.7 Fracture-toughness
- 5.8 Shear Strength, Sliding Friction
- 5.9 Seismic and Acoustic Tests
- 5.10 Cyclic and Dynamic Tests
- 5.11 Electrical and Magnetic Properties
- 5.12 Thermal Properties
- 5.13 Microscopic Analysis
- 5.14 Other _____

6. LABORATORY TESTING—GEOSYNTHETICS

- 6.1 Classification, Identification, Nomenclature
- 6.2 Specimen Preparation
- 6.3 Mechanical Properties
- 6.4 Chemical Properties
- 6.5 Endurance Properties
- 6.6 Permeability and Filtration
- 6.7 Other _____

7. LABORATORY TESTING—ROAD AND PAVING MATERIALS

- 7.1 Classification, Identification, Nomenclature
- 7.2 Specimen Preparation
- 7.3 Mechanical Properties, Rheology
- 7.4 Chemical Properties
- 7.5 Durability Properties
- 7.6 Specific Gravity and Density
- 7.7 Analyses of Mixtures
- 7.8 Other _____

8. LABORATORY-MODEL TESTING

- 8.1 Soil-Rock-Structure Interaction
- 8.2 Soil and Rock Reinforcement
- 8.3 Grouts and Admixtures
- 8.4 Geotextiles
- 8.5 Fluid Flow through Soil and Rock
- 8.6 Simulated Soil and Rock
- 8.7 Centrifuge Tests
- 8.8 Other _____

9. MISCELLANEOUS

- 9.1 Quality Control, Quality Assurance
- 9.2 Equipment Calibration and Traceability
- 9.3 Proficiency Testing
- 9.4 Ruggedness in Testing
- 9.5 Interlaboratory Testing; Repeatability and Reproducibility
- 9.6 Error Propagation
- 9.7 Automated Control of Testing
- 9.8 Data Acquisition, Reduction and Management
- 9.9 Probabilistic Methods
- 9.10 Numerical Modelling
- 9.11 Laboratory Accreditation
- 9.12 Education and Training
- 9.13 Terminology, Definitions, and Notation
- 9.14 Other _____
- 9.15 Other _____

SUMMARY OF NUMBERS CHECKED: _____

COMMENTS:

Please send completed form to:

*Ms. Kathy G. Dernoga, Manager, Acquisitions and Review
ASTM Publications
100 Barr Harbor Drive
West Conshohocken, PA 19428-2959
or FAX 1 610 832-9635*

ASTM Task Group on Data Automation Questionnaire for Geotechnical Laboratories

1. Name _____ Position _____
 Company _____ Address _____
 Type of Organization: University _____ Government _____ Consulting _____ Industry _____
 List testing or standards organizations in which you participate _____
2. With regard to the general laboratory: Number of staff devoted to lab _____ Floor area in sq. ft. _____
 Which do you have on staff? _____ Machinist _____ Mechanical engineer _____ Electronic specialist _____ Instrumentation Specialist _____ Software engineer
 Which of the following do you have? _____ Temperature Control _____ Dust Control _____ Emergency Power _____

3a. Please complete the following table for soil tests performed in your facility:

Soil Tests	Gradation (D422)	Limits (D4318)	Consolidation (D2435)	UC (D2166)	UU (Q) (D2850)	CU (R) (D4785)	CD (S) (D4178)	Direct Shear (D3080, D3321)	Permeability (D2434, D5086)	Other*
Number of tests per year										
Check if you automatically record data										
Check if you use computer for data reduction										
Check if you use computer for graphs or tables										
Estimated cost savings per test from automation										

* describe other test _____

4. Please complete the following table for rock tests performed in your facility:

Rock Tests	Strength (D2664, D2936, D2938, D3967)	Elastic Modulus (D2845, D3148, D407)	Permeability (D4525)	Creep (D4341, D4405, D4406)	Sonic (D2845)	Thermal (D4535, D4611, D4612, D5334, D5335)	Other*
Number of tests per year							
Check if you automatically record data							
Check if you use computer for data reduction							
Check if you use computer for graphs or tables							
Estimated cost savings per test from automation							

* describe other test _____

ASTM Task Group on Data Automation Questionnaire for Geotechnical Laboratories

5. If you have a data acquisition system, please answer the following questions (use a separate copy for each system)
 - Type _____ Number of Input Channels _____ Number of tests you monitor at once _____
 - Maximum Number of Readings per second you use _____ Total Cost of hardware, excluding sensors _____
 - Total cost of sensors _____ How are data stored? _____ printed _____ tape _____ floppy disk _____ hard disk _____ other _____
 - Describe what you use the system for _____
 - Does the system control the test _____ Describe how _____
 - How much time required to train a new user _____ Frequency of breakdown _____ Describe reliability _____
 - Did supplier offer service contract _____ Did you take it _____ Cost of service contract as percent of original system purchase price _____
 - Describe experience with service _____
 - Is system rugged _____ Give examples _____
 - Has system been cost effective? _____ Give example _____
 - Are you considering additional equipment _____ If yes please answer #7.
 - How do you charge your clients for use of the system _____
 - Would you buy the same system again _____ Why _____

6. If your data acquisition system uses software to collect and reduce data, please answer the following:
 - Function of software: _____ collect data _____ sort data for test from master data file _____ reduce data _____ plot results _____ show real-time graphs of test _____ control test _____ place data in master data base _____ perform statistical and/or engineering evaluations of data _____
 - Programming language used _____ Operating system used _____
 - How much time to train new user _____ Who corrects deficiencies _____
 - Can you modify software _____ Is software flexible enough for your needs _____
 - Describe software problems you have had _____
 - Would you buy same system again _____ Why _____
 - Is your software available to others _____

7. If you have no data acquisition equipment or are considering expansion of your present system
 - Do you plan further automation in the near future? _____ Why _____
 - Which tests do you plan to automate? _____
 - Which parts will you automate? _____ collect data _____ reduce data after test _____ plot results for report _____ provide real-time graph as test runs _____ control test _____ other _____
 - Will you _____ purchase software _____ develop software in-house _____
 - What information is most helpful in selecting a new system (please rank by importance with 1 as highest) _____ manufacturer's literature _____ specs _____ example results _____ reliability of system _____ experience of another with system _____ other (specify _____)

8. Does your company use data acquisition equipment in field applications? _____ Describe _____
9. What standards would be helpful to you in regard to using your data acquisition equipment? _____
10. Please comment on your experiences with data acquisition systems, positive and negative. _____

Thank you for your time and help. Please mail the completed questionnaire to: D18.95 Data Automation Survey, c/o Bob Morgan, ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959. Phone any questions to Dr. Marr at (508) 635-0012.

Additional Information for Authors

The *Geotechnical Testing Journal* (GTJ) is a quarterly publication sponsored by ASTM technical committee D-18 on Soil and Rock, with support from D-35 on Geosynthetics, D-4 on Road and Paving Materials, and D-34 on Waste Management. Each published paper and technical note has been peer-reviewed. Papers and technical notes are open to brief written comments in the Discussion section of the Journal, which also includes authors' written responses.

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