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Standard Test Method for Preparation and Testing of Controlled Low Strength Material (CLSM) Cylindrical Test ~~Cylinders~~Specimens[1]

This standard is issued under the fixed designation ~~D4832;~~D4832/D4832M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

~~ε[1] NOTE—Editorially updated units of measurement statement in April 2018.~~

1. Scope*

1.1 This test method covers procedures for the preparation, curing, transporting and testing of cylindrical test specimens of controlled low strength material (CLSM) for the determination of compressive strength.

1.2 This test method covers CLSM materials that have a higher strength than the soil but less than 8400 kPa ~~(1200 psi).~~[1200 psi]. Typical strengths for most applications fall between 350 to 700 kPa ~~(50~~[50 to 100 ~~psi).~~psi].

1.3 The CLSM used to make the molded specimens shall be sampled after all on-site adjustments have been made to the mixture proportions, including the addition of mix water and any admixtures.

1.4 This test method may be used to prepare and test cylindrical specimens of other mixtures of soil and cementitious materials, such as self-cementing fly ashes.

1.5 CLSM is also known as flowable fill, controlled density fill, soil-cement slurry, soil-cement grout, unshrinkable fill, ~~K-Krete,~~ and other similar names.

1.6 *Units*—The values stated in SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with the standard.

1.6.1 The gravitational system of inch-pound units is used when dealing with inch-pound units. In the system, the pound (lbf) represents a unit of force (weight), while the units for mass is slugs. The slug unit is not given, unless dynamic (F = ma) calculations are involved.

1.7 All observed and calculated values shall conform to the guidelines for significant digits and rounding established in Practice D6026~~.~~, unless superseded by this standard.

1.7.1 For purposes of comparing, a measured or calculated value(s) with specified limits, the measured or calculated value(s) shall be rounded to the nearest decimal or significant digits in the specified limits.

[1] This test method is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.15 on Stabilization With Admixtures.

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***A Summary of Changes section appears at the end of this standard**

1.7.2 The procedures used to specify how data are collected/recorded and calculated in this standard are regarded as the industry standard. In addition, they are representative of the significant digits that should generally be retained. The procedures used do not consider material variation, purpose for obtaining the data, special purpose studies, or any considerations for the user's objectives; and it is common practice to increase or reduce significant digits of reported data to be commensurate with these considerations. It is beyond the scope of this standard to consider significant digits used in analysis methods for engineering design.

~~1.7 The values stated in SI units are to be regarded as standard. The values given in parentheses after SI units are provided for information only and are not considered standard.~~

~~1.7.1 The converted inch-pound units use the gravitational system of units. In this system, the pound (lbf) represents a unit of force (weight), while the unit for mass is slugs. The converted slug unit is not given, unless dynamic (F=ma) calculations are involved.~~

1.8 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.* See Section 7.

1.9 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

C31/C31M Practice for Making and Curing Concrete Test Specimens in the Field
C39/C39M Test Method for Compressive Strength of Cylindrical Concrete Specimens
C125 Terminology Relating to Concrete and Concrete Aggregates
C192/C192M Practice for Making and Curing Concrete Test Specimens in the Laboratory
C470/C470M Specification for Molds for Forming Concrete Test Cylinders Vertically
~~C617~~C617/C617M Practice for Capping Cylindrical Concrete Specimens
C1231/C1231M Practice for Use of Unbonded Caps in Determination of Compressive Strength of Hardened Cylindrical Concrete Specimens
D653 Terminology Relating to Soil, Rock, and Contained Fluids
D2166/D2166M Test Method for Unconfined Compressive Strength of Cohesive Soil
D3740 Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
~~D5971~~D5971/D5971M Practice for Sampling Freshly Mixed Controlled Low-Strength Material
D6023 Test Method for Density (Unit Weight), Yield, Cement Content, and Air Content (Gravimetric) of Controlled Low-Strength Material (CLSM)
~~D6024~~D6024/D6024M Test Method for Ball Drop on Controlled Low Strength Material (CLSM) to Determine Suitability for Load Application
D6026 Practice for Using Significant Digits and Data Records in Geotechnical Data
~~D6103~~D6103/D6103M Test Method for Flow Consistency of Controlled Low Strength Material (CLSM)

3. Terminology

3.1 *Definitions:*

3.1.1 For definitions of common technical terms in this standard, refer to Terminology C125 and D653.

3.2 ~~*Definitions:*~~*Definitions of Terms Specific to This Standard:*

~~3.1.1 For common definitions of terms in this standard, refer to Terminology C125 and D653.~~

3.2.1 *Controlled Low Strength Material (CLSM), n*—a mixture of soil, aggregates (sand, gravel, or both), cementitious materials, water, and sometimes admixtures, that hardens into a material with a higher strength than the soil but less than about 8400 kPa ~~(1200 psi).~~[1200 psi].

[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

3.2.1.1 *Discussion*—

~~Used as a replacement for compacted backfill,~~ CLSM can be placed as a slurry, a mortar, or a compacted material and typically has strengths of 350 to 700 kPa ~~(50~~[50 to 100 ~~psi)~~psi] for most applications.

4. Summary of Test Method

4.1 ~~Cylinders~~ CLSM cylindrical specimens are tested to determine the compressive ~~strength of the CLSM. The cylinders~~strength. The specimens are prepared by pouring a representative CLSM sample into molds, then depending on the strength development, either curing the ~~cylinders~~specimens then removing them from the molds or removing the molds prior to curing the ~~cylinders,~~specimens, and preparing the ~~cylinders~~specimens for compression testing. The ~~cylinders~~specimens are then tested to obtain compressive strengths. Duplicate ~~cylinders~~specimens are required for each test age specified.

5. Significance and Use

5.1 This test method provides standardized requirements for the preparation, curing, transporting and testing of test ~~cylinders~~specimens of CLSM under field conditions by replicating a "field cure" of the material.

5.1.1 If the ~~cylinders~~specimens are field cured, as stipulated herein, the resulting compressive strength test data may be used for the following purposes:

5.1.1.1 Acceptance testing for specified strength,

5.1.1.2 Checking the adequacy of mixture proportions for strength,

5.1.1.3 Quality control,

5.1.1.4 ~~Determination of whether the CLSM is capable of being~~ Determining if the material can be put in service,

5.1.1.5 Adequacy of curing.

5.2 ~~CLSM is typically used as a backfill material around structures, particularly in confined or limited spaces.~~ Compressive strength testing is performed to assist in the design of the mix and to serve as a quality control technique during construction. Mix design is typically based on 28-day strengths and construction control tests performed 7 days after placement. The compressive strength(s) and other test age(s) will vary according to the requirements for the end product. Additional information on the use and history of CLSM is contained in Appendix X1.

5.3 This test is one of a series of quality control tests that can be performed on CLSM during construction to monitor compliance with specification requirements. The other tests that can be used during construction control of CLSM are Practice ~~D5971~~D5971/D5971M and Test Methods D6023, ~~D6024~~D6024/D6024M, and ~~D6103~~D6103/D6103M.

5.4 There are many other combinations of soil, cement, fly ash (cementitious or not), admixtures, water ~~quality~~ or other materials that could be tested using this method. The mixtures will vary depending on the intended use, availability of materials, and placement requirements.

NOTE 1—The quality of the result produced by this standard is dependent on the competence of the personnel performing it, and the suitability of the equipment and facilities used. Agencies that meet the criteria of Practice D3740 are generally considered capable of competent and objective ~~testing/sampling/inspection/and the like.~~ testing/sampling/inspection/etc. Users of this standard are cautioned that compliance with Practice D3740 does not in itself assure reliable results. Reliable results depend on many factors; Practice D3740 provides a means of evaluating some of those factors.

6. Apparatus

6.1 *Single-Use Cylindrical Molds*—Plastic single-use 150 × 300 mm ~~(6~~[6 × 12 ~~in.)~~in.] or 100 × 200 mm ~~(4~~[4 × 8 ~~in.) cylinder~~in.] cylindrical molds with tight-fitting lids (see ~~9.2.2.1~~Note 4 regarding cautionary statement for "air-tight" lids), conforming to Specification C470/C470M. Other sizes and types of molds may be used as long as the length to diameter ratio is ~~2 to 1.~~ at least 2.0 to 1.0 and no greater than 2.5 to 1.0. The 150 × 300 mm ~~(6~~[6 × 12 ~~in.)~~in.] molds are ~~preferred for use in concrete compression apparatus (Section~~ sometimes preferred ~~6.5)~~ because of the low strength of the material and the larger surface area of the ends of the ~~cylinders.~~specimens.

6.1.1 Mold removal can be accomplished ~~with the use of low air pressure. The pressure shall be low enough so the sample is undamaged.~~using one or a combination of the following procedures. Select a procedure that avoids disturbance and damage to the specific mix being tested.

6.1.1.1 Apply air pressure to the bottom of the specimen through a small hole in the bottom of the mold. The pressure shall be low enough to avoid damage to the test specimen. Drilling the hole in the mold shall be accomplished in a manner that avoids damage to the specimen.

6.1.1.2 Heat the specimen and mold in an oven at no greater than 95°C [200°F] for no more than 15 minutes. Upon removal from the oven invert the mold and remove it from the specimen.

6.2 *Sampling and Mixing Receptacle*—The receptacle shall be a suitable non-absorbent material (heavy-gauge metal or heavy duty plastic container, wheelbarrow, ~~etc.)~~ and the like) of sufficient capacity to allow easy sampling and remixing with a shovel or ~~scoop and to allow preparation of~~ scoop, and to hold enough material to prepare at least two ~~cylinders and for other tests such as described in Test Methods~~ molded test specimens.~~D5971, D6023, and D6103~~.

6.3 *Storage Container*—A tightly constructed, insulated, firmly braced wooden box with a cover or other suitable container for storage of the CLSM ~~cylinders~~specimens at the construction site. The container shall be equipped, as necessary, to maintain the temperature immediately adjacent to the ~~cylinders~~specimens in the range of 16 to 27°C ~~(60 to 80°F).~~[60 to 80°F]. The location of the storage container shall be away from direct sunlight and protected from freezing temperatures for extended lengths of time (for additional guidance see Section on Curing in Practice C31/C31M). The container shall be marked for identification and shall be a bright color to avoid disturbance.

6.4 *Transportation Container*—A sturdy wooden box or other suitable container constructed with adequate padding to ~~minimize~~ reduce the potential for shock, vibration, or damage to the CLSM ~~cylinders~~specimens when transported to the laboratory.

6.5 *Compression Testing Machine*—The testing machine shall meet the requirements as described in Test Method C39/C39M with the following exceptions.

6.5.1 The readability shall be a minimum of two significant digits with interpolation of the second digit not more than 0.11 kN ~~(25 lbf)~~[25 lbf] for strengths less than about 350 kPa ~~(50 psi).~~[50 psi]. For strengths greater than about 350 kPa ~~(50 psi),~~[50 psi], the minimum readability ~~should~~shall be two significant digits with interpolation of the second digit not more than 0.55 kN ~~(100 lbf).~~[100 lbf].

6.5.2 Since the compressive strength of CLSM ~~cylinders will typically be~~specimens can range from 100 to 8400 kPa ~~(about~~[about 15 to 1200 ~~lbf/in.~~psi],[2] ~~),~~ the testing machine must have a loading range such that valid values of compressive strength can be obtained.

6.5.3 Alternatively, a compression device meeting the requirements described in Test Method D2166/D2166M can be used as long as the upper platen is spherically seated and has a diameter larger than the capping material on the test specimen.

6.6 *Curing Environment*—A curing environment (water bath, damp sand, fog room) that meets the requirements of Practice C192/C192M. The ~~cylinders~~specimens may be cured in the same curing environment used for concrete ~~cylinders~~specimens at the laboratory performing the testing.

6.7 *Measuring Device*—A measuring device suitable for measuring the heights and diameters of test specimens to the nearest 0.25 mm [0.01 in.].

6.8 *Mallet*—A mallet with a rubber or rawhide head weighing 0.6 kg ± 0.2 kg [1.25 lb ± 0.5 lb].

6.9 *Small Tools*—Tools and items that may be required such as shovels, pails, trowels, tamping rod and scoops.

7. Hazards

7.1 *Technical Precaution*—The procedure for the preparation of CLSM test ~~cylinders~~specimens has many similarities to preparing

concrete test ~~cylinders~~specimens (Practice C31/C31M and Practice C192/C192M). However, the ~~cylinders~~specimens are much more fragile than concrete ~~cylinders,~~specimens, and special care should be taken in their preparation, storage, and handling.

7.2 *Safety Hazards:*

7.2.1 Strictly observe the safety precautions stated in Practice ~~C617~~C617/C617M.

7.2.2 ~~If the cylinders are capped with molten sulfur mortar (which is not advised for CLSM cylinders, see~~ Fresh hydraulic cementitious mixtures are caustic and may cause chemical burns to skin and tissue upon prolonged exposure.~~Section~~[3] ~~10 on Capping the Cylinders), wear proper personnel protective equipment, including gloves with cuffs at least 15 cm (6-in.) long. (**Warning—Fresh hydraulic cementitious mixtures are caustic and may cause chemical burns to skin and tissue upon prolonged exposure.**[3])~~

8. CLSM Sampling and Test Specimens

8.1 Take samples of the CLSM for each test ~~cylinder~~specimen in accordance with ~~D5971~~D5971/D5971M. Record the identity of the CLSM represented and the date and time of casting.

8.2 The sample from the batch ~~should~~shall be a minimum of 0.03 m^3 ~~(1~~[1 ft^3~~)~~] for each two ~~cylinders~~ test specimens to be prepared. Prepare a minimum of two compressive strength ~~cylinders~~ test specimens for each test age to represent each sampled batch. Additional material may be required if other testing is to be performed, such as in Test Methods ~~D5971~~, D6023~~,~~ and ~~D6103~~D6103/D6103M.

NOTE 2—In the initial stage of CLSM usage, preparation of three ~~cylinders~~ or more specimens is recommended to obtain reliable compressive strength data for each test age. Subsequently, two ~~cylinders~~specimens may be used to maintain testing records and to ascertain an overall quality of the mix. However, since the ~~cylinders~~specimens are fragile and may be damaged during transportation, mold removal, and capping, preparation of an extra ~~cylinder~~specimen may be necessary to provide the minimum number of test ~~cylinders~~specimens (see ~~Note 4~~10.3 and ~~10.2~~Note 6). In addition, it may be useful to determine the density of the test ~~cylinders~~specimens to help evaluate the uniformity of the compressive strength values.

9. CLSM ~~Cylinder~~ Test Specimen Molding and Curing

9.1 *Place of Molding*—Mold ~~cylinders~~specimens promptly on a level, rigid, horizontal surface free from vibration and other disturbances. The ~~cylinders~~specimens should be prepared at a place as near as practicable to the location where they are to be stored during the first four days.

9.2 *Placing the CLSM:*

9.2.1 Thoroughly mix the CLSM in the sampling and mixing receptacle to avoid segregation and to maintain homogeneity. Because CLSM mixtures can bleed easily (the appearance of free water at the surface), the sample must be routinely mixed during ~~cylinder~~specimen production to ~~ensure~~provide homogeneity, avoid ~~segregation and ensure that the cylinder~~segregation, and to make sure the specimen produced represents the material placed in the trench.

9.2.2 With a scoop or pail, scoop through the center portion of the receptacle and pour the CLSM into the mold. Repeat until the mold is full. Tap the outsides of the ~~cylinder~~ mold lightly no more than ten times with ~~a tamping rod~~ the mallet or open face of the hand to close holes that remain and to release entrapped air voids, ~~assuring complete filling of the mold.~~so the mold is completely filled. If necessary, level off the top layer with the trowel or straight-edge so it remains even and relatively smooth. Place a lid or plastic bag loosely on the mold.

NOTE 3—The placement of CLSM into the ~~cylinder~~specimen molds generally does not follow Practices C31/C31M or C192/C192M as the placement is not done in layers and does not require rodding or vibrating. However if the CLSM mixture contains high gravel contents, Practice C31/C31M ~~should~~can be followed with the applicable layering, rodding and/or vibration pertaining to the ~~cylinder~~specimen mold size.

~~9.2.2.1 Use of an airtight lid has been known to cause low strength materials to crack, possibly due to the creation of a vacuum inside the mold. If an airtight lid is contemplated, its use should be evaluated before doing routine testing. A pin-sized hole in the lid has been used successfully in many cases.~~

[3] ~~Section on Safety Precautions,~~ ASTM R0030, Manual of Aggregate and Concrete Testing, ~~Annual Book of ASTM Standards, Vol. 04.02.~~Section on Safety Precautions.

NOTE 4—Use of an airtight lid has been known to cause low strength materials to crack, possibly due to the creation of a vacuum inside the mold. If an airtight lid is contemplated, its use should be evaluated before doing routine testing. A pin-sized hole in the lid has been used successfully in many cases.

9.2.2.1 Some mixtures will bleed rapidly, that is, free water will appear in the sample while in the mixing receptacle and also while in the mold. Obtaining the material to fill the ~~cylinder~~mold must be done quickly after mixing. Mounding of the material placed in the mold can be necessary for some mixtures (see X1.4.2). A few minutes after filling the mold, thoroughly mix the CLSM in the sampling and mixing receptacle and place a scoopful in the top of the mold, displacing the water. This refilling may be required again after about 15 min. Smooth the top and cover after all refilling is finished.

9.3 *Curing:*

9.3.1 Store the ~~cylinders~~ molded specimens at the construction site in the storage container until the fourth day after preparation. ~~Refer to 9.2 for curing requirements.~~

9.3.2 The ~~cylinders~~ molded specimens shall be stored under conditions that maintain the temperature immediately adjacent to the ~~cylinders~~specimens in the range of 16 to 27°C ~~(60 to 80°F). The cylinders~~ [60 to 80°F]. The molded specimens must always be protected from freezing. After the first day, provide a high humidity environment by surrounding the ~~cylinders~~ molded specimens with wet burlap or other highly adsorbent material.

9.3.3 On the fourth day, carefully transport the ~~cylinders~~ molded specimens to the site of the curing environment in the transportation container and place in a curing environment (see 6.6).

9.3.4 The ~~cylinders~~ molded specimens are typically left at the ~~contruction~~construction site for four days and then transported to a curing environment. If ~~extremely~~ low strength CLSM (below 350 ~~kPa)~~ kPa [50 psi]) would be damaged by moving on the fourth day, then the ~~cylinders~~ molded specimens are to be placed in a water storage tank with a temperature between 16° and 27°C ~~(60° and 80°F)~~[60° and 80°F] at the construction site until they are able to be moved without damage.

10. Measuring and Capping the ~~Cylinders~~ Test Specimens

10.1 On the day of testing, carefully remove the molds from the specimens and allow the specimens to air-dry for 4 to 8 h before capping. If the upper surface of the specimen is not a horizontal plane, use a wire brush to flatten the surface. Brush off all loose particles.

10.2 Measure and record the diameter and length of the test specimen to the nearest 1 mm [0.05 in.]. Take a minimum of three height measurements (approximately 120 degrees apart), and at least two diameter measurements at approximately the third points of height.

10.3 ~~On the day of testing, carefully remove the molds from the cylinders and allow the cylinders to air-dry for 4 to 8 h before capping. If the upper surface of the cylinder is not a horizontal plane, use a wire brush to flatten the surface. Brush off all loose particles.~~ Provide a cap for the ~~cylinders~~ test specimens using one ~~the following methods:~~of the following methods (sulfur capping shall not be used):

10.3.1 ~~Cap the cylinder using gypsum plaster~~Apply bonded end caps to the specimen using high strength gypsum cement in accordance with Practice ~~C617~~C617/C617M.

10.3.2 ~~Use~~ Apply unbonded elastomeric pads in accordance with Practice C1231/C1231M. The results of the qualification tests in Practice C1231/C1231M for acceptance of the caps must not indicate a reduction of strength of more than 20 %, rather than 2 % as stated in Practice C1231/C1231M. The larger difference is acceptable because of the less critical uses of CLSM and 20 % is estimated to be the inherent variation in compressive strength results because of the lower strength values, for example 350 kPa ~~(50 psi).~~[50 psi]. Although compressive strengths below 10 MPa ~~(1500psi)~~ [1500 psi] are not within the scope of Practice C1231/C1231M, acceptable results have been found in many laboratories. Qualification testing shall be performed prior to using unbonded capping systems for acceptance testing of CLSM mixtures.

~~NOTE 4—Sulfur mortars are not recommended for capping CLSM cylinders because the strength of the cap is generally significantly greater than the CLSM cylinder strength, which may lead to erroneous results. For cylinder strengths below about 4000 kPa (600 psi), it is recommended to use other capping methods. However if sulfur mortar is used, oil should be placed on the capping plate to ensure release of the capping material from the capping~~

~~plate. More oil may be required on the capping plate when capping CLSM cylinders than is normally used when capping concrete cylinders, capped CLSM cylinders will normally contain more air voids between the cap and the cylinder than capped concrete cylinders, and this should be considered if the caps are tapped to check for voids.~~

10.4 Use the same capping method throughout each project to avoid any variation in the test results from using different capping systems.

10.5 CLSM ~~cylinders~~specimens are more fragile than concrete ~~cylinders~~specimens and must be handled carefully during the mold removal and during capping.

11. Compressive Strength Testing

11.1 *Placement of Capped ~~Cylinder~~—Specimen*—~~Place the lower bearing block, with its hardened face up, on the table or platen of the testing machine directly under the spherically seated (upper) bearing block.~~ Wipe clean the bearing faces of the upper and lower bearing blocks and of the test ~~cylinder,~~specimen, and place the test ~~cylinder~~specimen on the lower bearing ~~block.~~ block or platen. Carefully align the axis of the ~~cylinder~~ test specimen with the center of thrust of the spherically seated upper block. As the spherically seated block is brought to bear on the top of the ~~cylinder,~~ test specimen, rotate its movable portion gently by hand so that uniform seating is obtained.

11.2 *Rate of Loading*—Apply the load continuously and without shock. Apply the load at a constant rate such that the ~~cylinder~~specimen will fail in not less than 2 min. Make no adjustment in the controls of the testing machine while a specimen is yielding rapidly immediately before failure.

NOTE 5—For a load-controlled testing machine, such as typically used with Test Method C39/C39M, the load can be applied corresponding to a stress rate on the specimen of one-fourth or less of the anticipated strength per minute to achieve failure in not less than 2 minutes (for example, 350 KPa/4 min [50 psi/4 min].

NOTE 6—For a screw-driven or displacement-controlled testing machine, such as typically used with Test Method D2166/D2166M, preliminary testing could be necessary to establish the required rate of platen displacement to achieve failure in not less than 2 minutes.

11.3 Apply the load until the ~~cylinder fails, and record~~ load values decrease with increasing strain. Record the maximum load, to ~~either~~ two or ~~three~~more significant digits, carried by the ~~cylinder~~ test specimen during the test. For about one out of every ten ~~cylinders,~~specimens, continue the loading until the ~~cylinder~~specimen breaks enough to examine the appearance of the interior of the specimen. Note any apparent segregation, lenses, pockets, and the like in the specimen.

12. Calculation

12.1 Calculate and record the compressive strength of the test ~~cylinder~~specimen to ~~either~~ two ~~or three~~ significant digits as follows:

$$C = \frac{L}{\pi(D^2)/4} \quad (1)$$

where:

~~*C* = compressive strength, kPa (lbf/in.^{2}),~~
~~*D* = nominal diameter of cylinder (normally 150 mm or 6 in.), and~~
~~*L* = maximum load, kN (lbf).~~

C = compressive strength, kPa [psi],
D = average diameter of the test specimen, mm [in.], and
L = maximum load, kN [lbf].

13. Report: Test Data Sheet(s)/Form(s)

13.1 The methodology used to specify how data are recorded on the test data sheet(s)/form(s), as given below, is covered in ~~1.6~~1.7 and in Practice D6026.

13.2 Record as a minimum the following general information (data):