



Designation: C1930 – 24

Standard Test Method for Determination of Slurry Flow Rate of Fresh Glass Fiber Reinforced Concrete¹

This standard is issued under the fixed designation C1930; 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.

1. Scope

1.1 This test method covers determination of the rate at which fresh concrete is pumped when casting glass fiber reinforced concrete (GFRC) by the spray-up process in a manufacturing plant.

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.3 The text of this standard refers to notes and footnotes that provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the standard.

1.4 *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.* (Warning—Fresh hydraulic cementitious mixtures are caustic and may cause chemical burns to skin and tissue upon prolonged exposure.)

1.5 *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

C1229 Test Method for Determination of Glass Fiber Content in Glass Fiber Reinforced Concrete (GFRC) (Wash-Out Test)

¹ This test method is under the jurisdiction of ASTM Committee C27 on Precast Concrete Products and is the direct responsibility of Subcommittee C27.40 on Glass Fiber Reinforced Concrete.

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

3. Terminology

3.1 *slurry flow rate*—the volume per unit time at which fresh concrete (without fiber) is pumped when casting glass fiber reinforced concrete in a manufacturing plant.

4. Summary of Test Method

4.1 This test method covers determination of the rate at which fresh concrete is pumped by measuring the mass of a sample collected from the end of the pump line over a specified time interval.

5. Significance and Use

5.1 *Slurry Flow Rates*, determined by this test method, are useful for quality control of GFRC products to ensure that manufacturing equipment has been set up to deliver the correct proportions of concrete and glass fiber reinforcement for producing a GFRC composite. This test method is typically conducted along with a test for measuring the fiber output rate to assure that the correct proportions of the two inputs are being incorporated into the final product. These results are also compared to those determined by Test Method C1229 as part of the overall quality control process.

6. Apparatus

6.1 *Balance*—A balance or scale accurate to 0.1 lb (45 g) or to within 0.3 % of the test load, whichever is greater, at any point within the range of use. The range of use shall be considered to extend from the mass of the measure empty to the mass of the measure plus its contents at 160 lb/ft³ (2600 kg/m³).

6.2 *Measure*—A cylindrical container made of plastic or other suitable material. The minimum capacity of the measure shall be 2 gallons (0.00757 m³).

6.3 *Stopwatch*—A timing device, readable to 0.1 ± 0.05 seconds.

7. Hazards

7.1 **Warning**—Fresh concrete mixtures contain irritants, especially to the skin, eyes, and respiratory system. Persons handling these materials shall use appropriate protective clothing, including rubber or plastic gloves. Additionally,

concrete pumps can operate at high pressures. All hazards associated with collecting fresh concrete from the end of the pump line should be evaluated so that procedures can be developed to safely collect the samples required for this test.

8. Procedure

8.1 Record the weight of the empty measuring bucket as (W1).

8.2 The slurry pump shall be started and the slurry to be evaluated shall be discharged into a container other than the measuring bucket until the pump line has been cleared and steady flow obtained.

8.3 When steady flow of the slurry stream is obtained, the slurry stream shall be redirected into the measuring bucket. When the slurry from the spray nozzle is directed into the measuring bucket and collection of the slurry begins, the stopwatch shall be started to measure time.

8.4 The slurry shall be collected in the measuring bucket for a minimum of fifteen seconds. Record the duration of the collection as (t) to the nearest 0.1 second.

8.5 At the completion of slurry collection, the Measuring Bucket and its contents shall be weighed and recorded as (W2).

8.6 A minimum of one flow rate measurement shall be made and the Slurry Flow Rate, (SF), calculated in accordance with Eq 1.

8.7 The slurry shall be permitted to be returned to the pump hopper to be used in production.

9. Calculation or Interpretation of Results

9.1 The Slurry Flow Rate, SF, shall be calculated in accordance with Eq 1.

$$SF = (W2 - W1) \times 60/t \quad (1)$$

where:

SF = slurry flow rate, lb/min,

W2 = weight of weighing bucket with slurry sample,

W1 = weight of measuring bucket without slurry sample, and

t = time of collection, s.

10. Report

10.1 Report the following information:

10.1.1 Identification number,

10.1.2 Date of test,

10.1.3 Time of test,

10.1.4 Mix identification,

10.1.5 Lot number (label Unknown if not known), and

10.1.6 Slurry Flow Rate

11. Precision and Bias

11.1 *Precision*—The precision of this test method is being determined and is expected to be available on or before December 31, 2028.

11.2 *Bias*—Since there is no accepted reference material, the bias of this test method cannot be determined.

12. Keywords

12.1 alkali resistant glass fiber; glass fiber reinforced concrete (GFRC); slurry flow rate, bucket test

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