Standard Method of Test for

Determining Chloride Ions in Concrete and Concrete Materials by Specific Ion Probe

AASHTO Designation: T 332-07 (2020)[1]

Technical Subcommittee: 3c, Hardened Concrete

Release: Group 1 (April)

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1. SCOPE

1.1. This method covers the procedures for determining acid-soluble chloride ions in concrete and concrete mix ingredients.

1.2. The age of concrete, mortar, or hydrated portland cement at the time of sampling will have an effect on the acid-soluble chloride ion content. Therefore, unless early age studies are desired, it is recommended that the material be well cured and at least 28 days of age before sampling.

1.3. *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety concerns associated with its use. It is the responsibility of the user of this procedure to establish appropriate safety and health practices and to determine the applicability of regulatory limitations prior to use.*

2. REFERENCED DOCUMENTS

2.1. *AASHTO Standards*:

- M 231, Weighing Devices Used in the Testing of Materials
- T 260, Sampling and Testing for Chloride Ion in Concrete and Concrete Raw Materials

2.2. *ASTM Standards*:

- D1193, Standard Specification for Reagent Water
- E1, Standard Specification for ASTM Liquid-in-Glass Thermometers
- E11, Standard Specification for Woven Wire Test Sieve Cloth and Test Sieves

3. SUMMARY OF TEST METHOD

3.1. A 3.0-g drilled concrete powder sample is digested in 20 mL of an acid digestion solution and stabilized by the addition of 80 mL of a stabilizing solution. Millivolt readings, taken for the sample solution using a specific chloride ion probe, are converted mathematically into equivalent total percent chloride content or chloride content in kg/m^3 (lb/yd^3) of concrete.

4. INTERFERENCES

4.1. The operational response of the specific ion electrode is subject to interference by the presence of OH^-, S^{2-}, Br^-, I^-, and CN^- in the measured solution and is based on the electrode manufacturer's allowable chloride interference ratio.

4.2. Sulfides are known to interfere with the determination of chloride in solution. This test procedure is, therefore, unsuitable for determining the chloride content of concrete containing mineral aggregates containing significant quantities of pyrite.

5. SIGNIFICANCE AND USE

5.1. This method provides a rapid means of sampling and testing for total chloride ions in concrete in the field.

6. APPARATUS

6.1. *Impact Hammer*—A heavy-duty rotary impact hammer with a drilling stop gauge is used. See Figures 1 through 3.

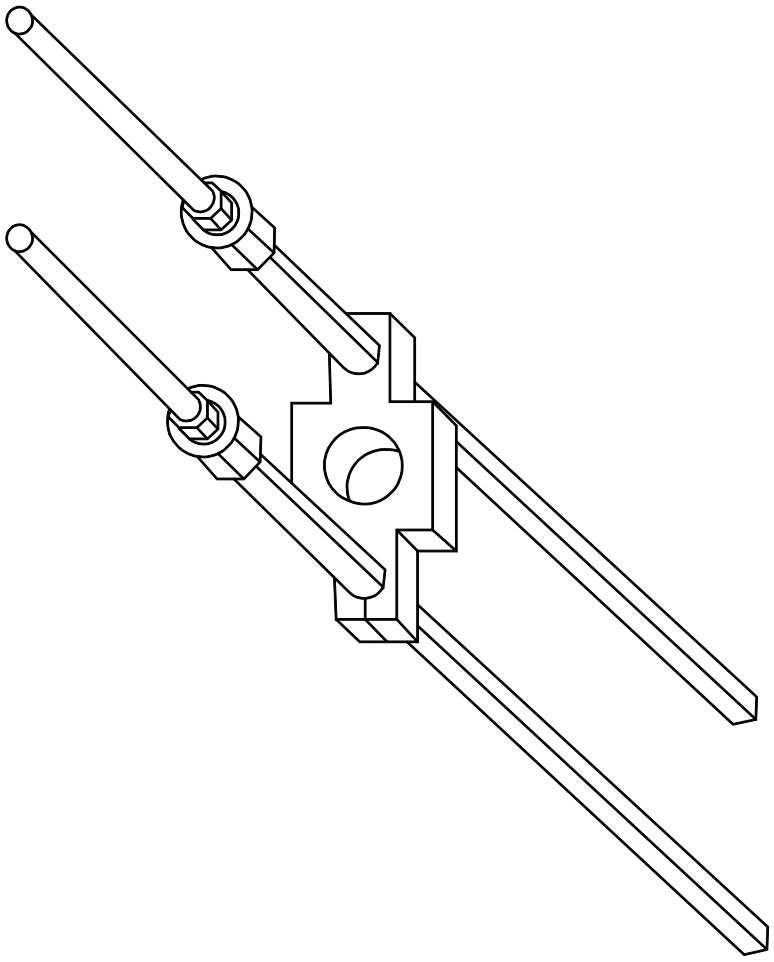

Figure 1—Overall View of the Drilling Stop Gauge to Be Mounted on the Impact Hammer