

A field kit for the determination of chloride ion content in concrete, fresh cement, masonry, most other construction materials, and water.



Chlorimeter Complete System with Optional pack of 12 Extraction Liquids and Calibration Liquids

Consumables:

- **C-CL-2012** Pack of 12 jars extraction liquid and calibration liquid
- **C-CL-2096** Pack of 100 jars extraction liquid and 20 jars of calibration liquid

- Service life prediction
- Corrosion analysis

- Fast - Results within minutes at the site.
- Economical - Low cost per sample compared to laboratory testing.
- Accurate - Results are comparable to laboratory testing.
- Covers wide range from 0.002% to 2% chloride by weight
- Internal Memory to store readings for later upload to a PC via USB .

- Digital display for direct reading of percentage of chloride by weight.
- Menu in English and Spanish.

The **Chlorimeter** produces results on-site, within minutes that are accurate and comparable to expensive laboratory tests. It measures the electrochemical reaction of a weighted sample placed in an extraction liquid. It automatically shows a temperature compensated reading of

percent of chlorides on its digital display. A wide range - from 0.002 to 2% chloride by weight - is covered.



Chlorimeter Extraction Liquids

Technical

The determination of the chloride ion concentration in concrete is essential in assessing the need for maintenance on, for example, bridge decks and parking structures. The test can also be used to ensure that materials used in new construction are free from potentially harmful chloride ion levels.

With this method, the concentration of acid soluble chlorides is measured. In most cases, this is equivalent to total chloride concentration.

A sample of powder is obtained by drilling and careful quartering. Then an accurately weighed 3 gr. (0.1 oz) sample is dissolved in 20 ml (0.67 fl. oz.) of extraction liquid which consists of a precise, measured concentration of acid. For sampling wet concrete a 3 gr. (0.1 oz.) sample of mortar (i.e. without coarse aggregate) is used. Typically for concrete, samples that are to be analyzed for chloride are obtained at various depths, thereby supplying the engineer with a chloride ion profile.



The chloride ions react with the acid of the extraction liquid in an electrochemical reaction. An electrode, with integral temperature sensor, is inserted into the liquid and the electrochemical reaction measured.

A uniquely designed instrument converts the voltage generated by the chloride concentration and sensor into a reading for the user. The instrument automatically applies the temperature

correction and it shows the chloride concentration on a LCD display percentage by weight. The unit uses 4 'AA' batteries for power. The Chlorimeter can also store test results and upload them to PC via USB.

Once the sample is obtained, test results can be determined and read in less than five minutes. These initial values give a valuable indicator of the current chloride concentration values. Accurate results are typically obtained after the sample has been in the extraction liquid for 24 hours.

To avoid contamination, the electrode should be thoroughly washed with de-ionized water after each test.

Replacement packs, containing twelve bottles of extraction liquid, each for one time use, are available. Five calibration liquids each with known concentrations are supplied with each pack. Bulk packs of one hundred extraction liquids are also available for larger testing jobs.

The calibration liquids are used to establish the calibration curve, and to check that the system is functioning correctly. Calibration is not required for each use. The calibration liquids are colored to avoid confusion between them and with the extraction liquid.

All equipment necessary to complete the chloride test is supplied in a standard size carrying case.

Components

C-CL 3700	Chloride combination electrode with externally mounted temperature sensor, cable, and connectors.
C-CL 3020	Battery powered, high impedance, electronic meter, with temperature compensation circuits and microprocessor for direct conversion to percentage of chloride. Uses four 'AA' size batteries.
C-CL 2012	Optional pack of 12 jars each with 20 ml (0.67 fl. oz.) of extraction liquid and 5 jars of colored calibration liquid.
C-CL 1030	Bottle of electrode wetting agent.
C-CL 2096	Optional bulk pack of 100 jars extraction liquid and 20 jars of colored calibration liquid.