

## HUMIDITY CELL TESTING

Humidity cell tests are designed to model the geological processes of weathering at the laboratory scale. The purpose of the test is to determine the rate of acid generation and variation over time in leachate water quality. They are often performed to confirm or reduce the uncertainty in the results of static prediction tests and to provide a preliminary assessment of acid rock drainage (ARD) control options.

### TESTING PROTOCOL

The standard test is conducted at the bench scale on a sample size of approximately 1 kilogram. Typically the samples particle size is less than 6 mm. The material is then subjected to alternating cycles of dry and moist air. The cell is soaked for a specific period with deionized water, and the leachate is analyzed for a number of parameters including pH, sulphate, acidity, alkalinity, conductivity and metals (including Ca and Mg). The test design can be customized at your request to better account for sample matrix effects which may include increasing or reducing particle size, or possibly altering the shape of the cell to vary the flow rate.



### LARGE SCALE PROJECTS

Larger scale cells, including columns and rectangular cells are to test the larger particle sizes expected in waste rock materials and to test cover design options and the effectiveness of cover systems in reducing ARD. Other options in humidity cell design include the addition of bacteria, flooding of the sample, temperature cycling, variation of the humid-dry air cycle, and variable duration of the air/leach cycle.

### DATA INTERVENTION

The test results are reviewed on a monthly basis, to check on their progress and determine the need for extended tests. In the early stages of humidity cell tests, results can be erratic if the sample contains previously generated oxidation products. Tests typically run from 16 to 24 weeks, while longer duration tests are typical for the evaluation of control options as these are designed to dampen the effects of ARD production. Because of the complexity of ARD reactions, SGS can help you with the interpretation and presentation of the results of humidity cell tests.

### CONTACT INFORMATION

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