

**STATE OF OHIO  
DEPARTMENT OF TRANSPORTATION**

**SUPPLEMENT 1006  
METHOD OF TEST FOR PLASTIC LIMIT  
DETERMINATION OF SOIL - AGGREGATE  
MATERIALS FOR USE IN ITEMS 304, 411 AND 617  
April 15, 2005**

**1006.01**      **Scope**            This method of test covers the determination of whether or not the minus 425 mm (No. 40) material obtained from samples of the above items is plastic.

**1006.02**      **Apparatus** The apparatus shall consist of the following:

1.    Evaporating Dish. - A porcelain evaporating dish about 4 ½ inches (115 mm) in diameter.
2.    Spatula. - A spatula or pill knife having a blade about 3 inches (75 mm) in length and about ¾ inch (20 mm) in width.
3.    Surface for Rolling. - A ground glass plate or piece of smooth, unglazed paper on which to roll the sample.

**1006.03**      **Sample**

1. Obtain material for this test from the fraction passing the No. 4( 4.75 mm) sieve. Thoroughly grind the material passing the No. 4 (4.75 mm) sieve in a mortar with a rubber-covered pestle to insure that all of the soil fines are broken loose. Dry sieve the material through the No. 40 (425 µm) sieve and use the material passing the No. 40 (425 µm) sieve for the plastic limit test. Approximately 120 grams are required.
2. Weigh about 20 g from the thoroughly mixed material passing the No. 40 (425 µm) sieve, place it in an evaporating dish and thoroughly mix with distilled water until the mass becomes plastic enough to be easily shaped into a ball. Take a portion of this ball weighing about 8 g for the test sample.

**1006.04**      **Procedure**

1. Squeeze and form the 8 g test sample into an ellipsoidal-shape mass. Roll the mass between the fingers and the ground-glass plate or a piece of paper lying on a smooth horizontal surface with just sufficient pressure to roll the mass into a thread of uniform diameter throughout its length. The rate of

rolling shall be between 80 and 90 strokes per minute, counting a stroke as one complete motion of the hand forward and back to the starting position again.

**1006.05      Analysis of Test Results**

1. If the material is so sandy that it cannot be rolled into a 1/8 inch (3 mm) diameter thread, report the plasticity index as non-plastic or NP and further tests for plasticity are not required.
2. However, if the material can be rolled into a 1/8 inch (3 mm) diameter thread, place the remaining 100 grams of the material passing the No. 40 (425  $\mu\text{m}$ ) sieve in a pint (0.5L) can, properly identified, and send it to the Laboratory in Columbus for determination of the liquid limit, plastic limit and plasticity index. The results of these tests will be furnished the Division Laboratory for incorporation in the test report.