

# Soils Field Testing Technician

## KT 10 Plasticity Tests (LL)

Revised July 2024

**Two attempts may be made by the applicant. The applicant may stop themselves once and not have that count as one of the two attempts. If the applicant stops voluntarily, draw a line at that point and note that the applicant stopped themselves then restart at the top of the next attempt.**

**Applicant:** \_\_\_\_\_

**CIT #:** \_\_\_\_\_

**Employer:** \_\_\_\_\_

|    |   | 1st Test |      | Stopped Test |      | Re-Test |      |
|----|---|----------|------|--------------|------|---------|------|
|    | Test Procedure  |          |      |              |      |         |      |
| 1. | Place a piece of masking tape across the outside bottom of the cup parallel with the axis of the cup hanger pivot. Place the tape between the wear spot and the pivot so that the edge of the tape away from the cup hanger bisects the spot on the cup that contacts the base. Slide the height gauge under the cup to the device and turn the crank until the cup is raised to its maximum height. If the adjustment is correct, a slight ringing sound will be heard when the cam strikes the cam follower. Remove the tape after adjustment. (4.3.1.1.) | PASS     | FAIL | PASS         | FAIL | PASS    | FAIL |
| 2. | Inspect the liquid limit device to be sure that it is in good working order and that there are no worn or “out of alignment” parts that will affect the test results. (4.3.2.)  | PASS     | FAIL | PASS         | FAIL | PASS    | FAIL |
| 3. | Take a sample weighing approximately 100 g and place in the mixing dish. The sample shall be thoroughly mixed with 15 to 20 mL of distilled or demineralized water by alternately and repeatedly stirring, kneading, and chopping with a spatula. (4.3.3.)  | PASS     | FAIL | PASS         | FAIL | PASS    | FAIL |
| 4. | Additions of water shall be made in 1 to 3 mL increments. Each increment of water shall be thoroughly mixed with the soil before another increment is added. Once testing has begun no additional dry soil is to be added to the moistened soil. (4.3.3.)   | PASS     | FAIL | PASS         | FAIL | PASS    | FAIL |

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|-----|---|-----------------|------|---------------------|------|----------------|------|
| 5.  | The liquid limit device shall not be used for mixing the soil and water. If too much moisture has been added to the sample, the sample shall either be discarded, or mixed and kneaded until the natural evaporation lowers the closure point into acceptable range. (4.3.3.)   | PASS            | FAIL | PASS                | FAIL | PASS           | FAIL |
| 9.  | A sufficient quantity of this mixture shall be placed in the cup above the spot where the cup rests on the base and shall be squeezed and spread with the spatula to level and at the same time trimmed to a depth of 10 mm at the point of maximum thickness. (4.3.4.)   | PASS            | FAIL | PASS                | FAIL | PASS           | FAIL |
| 10. | The soil in the cup shall be divided by a maximum of six firm strokes of the grooving tool. The depth of the groove should be increased with each stroke and only the last stroke should scrape the bottom of the cup. (4.3.4.)   | PASS            | FAIL | PASS                | FAIL | PASS           | FAIL |
| 11. | The cup containing the sample shall be lifted and dropped by turning the crank at the rate of approximately two revolutions per second until the two sides of the sample come in contact at the bottom of the groove along a distance of about 0.5 in. (13 mm). DO NOT hold the base with the free hand while crank is turned. (4.3.5.) | PASS            | FAIL | PASS                | FAIL | PASS           | FAIL |
| 12. | Record the number of shocks. (4.3.5.)   | PASS            | FAIL | PASS                | FAIL | PASS           | FAIL |
| 13. | Remove a slice of the soil approximately the width of the spatula, extending from edge to edge of the soil cake at right angles to the groove and including that portion of the groove in which the soil flowed together, and place in a suitable container. (4.3.6.)   | PASS            | FAIL | PASS                | FAIL | PASS           | FAIL |
| 14. | Record the sample mass to the nearest 0.01 g. The soil in the container (with lid) shall be dried in accordance with KT-11 to determine the moisture content. Record the results. (4.3.6.)  | PASS            | FAIL | PASS                | FAIL | PASS           | FAIL |

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| 15. | Transfer the soil remaining in the cup to the mixing dish. (4.3.7.)  | PASS     | FAIL | PASS         | FAIL | PASS    | FAIL |
|     |  |          |      |              |      |         |      |
| 16. | Wash and dry the grooving tool and cup. (4.3.7.)   | PASS     | FAIL | PASS         | FAIL | PASS    | FAIL |
|     |  |          |      |              |      |         |      |
| 17. | Add water to the sample in the mixing dish to bring the soil to a more fluid condition. (4.3.8.)   | PASS     | FAIL | PASS         | FAIL | PASS    | FAIL |
|     |  |          |      |              |      |         |      |
| 18. | <u>The object of this procedure is to obtain samples of such consistency that at least one determination will be made in each of the following ranges of shocks: 25-35, 20-30, 15-25. The range of the three determinations shall be at least 10 shocks. (4.3.8)</u> | PASS     | FAIL | PASS         | FAIL | PASS    | FAIL |
|     |  |          |      |              |      |         |      |
| 19. | <u>Calculate the moisture content. (5.1)</u>   | PASS     | FAIL | PASS         | FAIL | PASS    | FAIL |
|     |  |          |      |              |      |         |      |

### Overall Score

Circle One

**1st Test**

PASS

FAIL

**Stopped Test**

PASS

FAIL

**Re-Test**

PASS

FAIL

**Witness Examiner:**

(First Try)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

**Witness Examiner:**

(Stopped Try)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

**Witness Examiner:**

(Re-Test)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date