QUICK FACTS: SB 101 **DRAFT**

TEX-107-E

Linear Bar Shrinkage of Soils and Base Materials

Why

To determine the shrinkage of soil in a linear dimension with water content equal to or more than the liquid limit (LL) of the designated soil.

When

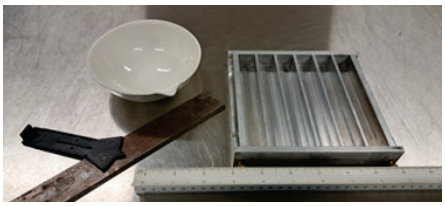
When specification requires or liquid limit (Tex-104-E) is not able to be obtained.

- Specification 132
- Specification 247
- Special Spec. 3076
- Special Spec. 3077
- Special Spec. 3080
- Special Spec. 3081
- Special Spec. 3082

How

Equipment

- Porcelain mixing dish
- Straight edge
- Scale
- Oven maintaining 230 ± 9°F
- Grooving tool
- Bar linear shrinkage mold; (0.75x0.75x5.0 in.)
- Number 20 scale

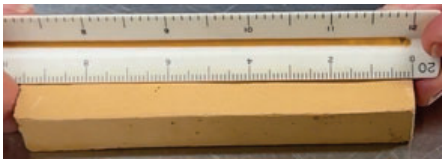


Preparing Sample

- Sample embankment soils or flexible base per Tex-100-E, use Tex-221-F or Tex-400-A for fine aggregates.
- Prepare a minimum of 200 g sample according to Tex-101-E, Part I.
- f the groove does not close within 20 blows during the liquid limit test (Tex-104-E), use the remaining wet sample for the test.

Procedure

- Get enough material into the mixing dish to fill the mold.
- Mix in water uniformly.
- Check the sample is properly mixed by:
  - Smoothing the material in the bottom of the dish at a depth of 0.5 in.
  - Strike a groove in the material if the material immediately closes on its own accord at the bottom of the dish.
- Grease with petroleum jelly the slots of shrinkage mold that are going to be used for testing.
- Pour in a small portion of prepared material and gently tap the mold on the table/counter to remove the entrapped air, repeat until mold is full.
- Remove the excess material from the top of the mold using the straightedge.
- Let the sample air dry in the mold until a slight color change.



QUICK FACTS: SB 101 DRAFT

Procedure (continued)

- Place in an oven at 230 ± 9°F and dry to constant mass.
- Remove from oven let cool to room temperature and measure using the 20 scale or measuring device.

Action

- Calculations
  - If measured in inches:
    - LS = 100X (LW – LD) ÷ LW
    - LW = length of the wet soil bar, (5 in.)
    - LD = length of the dry soil bar, (in.)
  - If measured in percent:
    - LS = LW – LD
    - LW = length of the wet soil bar, 100%
    - LD = length of the dry soil bar, %.
- Report to the nearest whole number

