



TEX-115-E, PART 1

Measuring In-place Density and Moisture Content of Soils and Base Materials



Why

To determine the in-place density is to determine the degree of compaction or percentage of the density and moisture obtained by Tex-113-E and Tex-114-E.



When

- Item 132
- Item 247
- Item 251
- Item 260
- Item 263
- Item 265
- Item 275
- Item 276
- Special Spec. 3088
- Special Spec. 3089
- Special Spec. 3095



How

Equipment

- Nuclear testing gauge, capable of making density and moisture determinations
- Portable reference standard
- Calibration curves, for nuclear gauge
- Gauge log book
- Scraper plate and drill rod guide



- Drill rod
- Hammer or driver
- Shovel
- Sieve
- Trowel
- Straightedge
- Miscellaneous hand tools



Standardizing Equipment

- Standardize the gauge each day it is used.
- Use a clean and dry reference standard block.
- While standardizing the gauge, it must be 5 ft. from any object and 25 ft. from any other nuclear gauge.
- Standardize the nuclear testing gauge for density and moisture standard counts according to the manufacturer's recommendations for the gauge..
- Record the counts in the gauge logbook or field form.
- When density and moisture meet standards, gauge is acceptable to operate.
- If density or moisture counts aren't acceptable, let gauge stabilize, clear interference, then re-standardize.
- If the second standardization is within limits, the gauge may be used.
- If the second standardization is not within limits, the gauge must be calibrated or repaired as recommended by the manufacturer.

QUICK FACTS: SB 102 DRAFT

Procedure

- Scrape to level test area, extending 6 in. beyond gauge, about 2 ft. square.
 - Fill in minor voids with sand or native fines.
 - Do **NOT** use material with moisture.
 - Proper test site preparation is closely related to testing accuracy.
 - Position the scraper plate on a flat surface, then insert the drill rod through the extraction tool.
 - Step on the scraper plate and hammer the pin through one of the guides on the scraper plate. Make a hole 2 in. deeper than the testing depth.
 - Extract the pin by pulling it directly upward.
 - Do **NOT** tap the pin sideways with a hammer, as it could distort the hole or introduce loose material.
 - Use the pin to outline the scraper plate before removing it.
 - Place the gauge on the prepared test surface ensure full contact with the soil or base material.
 - Insert rod into the hole at the predetermined depth.
 - Adjust the gauge to where the rod is firmly against the side of the hole that is nearest to the source or detector tube.
 - Measure and record the number of readings required.
 - When the initial test result does not meet specifications, rotate the gauge 90° and take another reading
 - Rotate another 90° and take an additional reading.
 - Rotate another 90° and take an additional reading.
 - Average the four measurements to determine the density and moisture content of the location tested.
 - If moisture content is suspect or testing materials containing hydrocarbons like asphalt or emulsion, use Tex-103-E to determine accurate moisture content. Then, use the data to establish a correction factor.
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Action

- Report dry density to the nearest 0.1lb./ft.³ and moisture to the nearest 0.1%.