The method for testing compressed density of green roof media is an open source tool that you can use in the field. You'll need a specific set of equipment to accurately test for compressed density, and you'll need to follow procedures for a set of green roof media samples.

EQUIPMENT

- Cylindrical mold with an inside diameter of 150 mm and a height of 22.90 cm
- Steel plate, 5 mm thick, diameter 148 mm (plus magnet for removal from mold)
- Proctor hammer: 4.5 kg weight, 450 mm drop height
- Three small pails (5 Quart)
- Hand trowel and brush for cleaning
- Metric ruler
- Ruler or paint stick
- Digital scale with at least 15 kg (30 lb) capacity and 2 g readability

PROCEDURE

- Measure weight of empty mold in grams
- Measure inner height and diameter of mold and determine its volume in cubic centimeter
- Take 3 representative samples of the green roof media (5 Quarts each)

For each sample take the following steps:

1. Fill the sample gently into the mold going over the top
2. Scrape off surplus material with the ruler
3. Measure the weight of the sample including the weight of the mold in grams and subtract weight of the mold
4. Carefully place steel disc on top of sample
5. Use proctor hammer to compact sample with 3 strikes
6. Remove steel plate with magnet
7. Measure average distance between surface of compressed media and the rim of the mold in centimeters
8. Empty mold

CALCULATIONS

Density (D_{loose}) of sample before compaction:

$$D_{loose} = \frac{m_{loose}}{V} \text{ g/cm}^3$$

m_{loose} = mass (weight) of samples in g
V= volume of mold in cm³

Density (D_{comp}) compressed with 3 strikes of proctor hammer:

$$D_{comp} = D_{loose} \times CF \text{ (\%)}$$

$$CF = \frac{100}{100 - C}$$

CF = compensation factor
C = compaction (loss of volume) in %

To convert test result from g/cm³ to lb/ft³ multiply by 62.43

Express test results as the mean from the three replications.