

# MILLER SOIL BOXES



Large Soil Box (Cat #37008)  
1.5"W, 8.75"L, 1.25"D



Small Soil Box (Cat #37006)  
1.2"W, 4.4"L, 1"D

## ACCESSORIES:

Test Leads for Miller Soil Boxes (Cat # 37010)  
Set of 4 Leads (2 Red / 2 Black)  
w/banana plugs on one end and  
pointed plugs on the other end.



## FEATURES AND BENEFITS:

- Plexiglass body with rounded corners for easy cleaning
- Stainless steel current distribution plates and removable brass pins can be used with any 4-Terminal Resistance Meter, including Miller 400A, Miller 400D and Nilsson 400
- Can also be used with any M.C. Miller multimeter (or separate volts and amps meters) together with an external battery
- Can be used to satisfy the ASTM (G57 and G187) standards as well as the AASHTO (T-288) Standard





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## MILLER SOIL BOX MULTIPLICATION FACTORS

Miller Soil Boxes can be used to satisfy either the 4-electrode method (ASTM G57 Standard) or the 2-electrode methods (ASTM G187 or AASHTO T-288 Standards). For the 2-electrode method, the two interior pins are removed which changes the multiplication factor from 1cm (for the 4-electrode method) to either 0.67cm for the small box or to 0.57cm for the large box.

### CRITICAL DIMENSIONS FOR 4-ELECTRODE METHOD:

The soil boxes are designed such that the cross-sectional area of the soil (or liquid) sample (A), with the box filled level, divided by the separation between the pins (L) is equal to 1cm.

#### SMALL SOIL BOX (Cat #37006):

Cross-sectional area =  $3\text{cm} \times 2.4\text{cm} = 7.2\text{cm}^2$   
Pin separation = 7.2cm  
A/L = 1cm

#### LARGE SOIL BOX (Cat #37008):

Cross-sectional area =  $4\text{cm} \times 3.2\text{cm} = 12.8\text{cm}^2$   
Pin separation = 12.8cm  
A/L = 1cm

### CRITICAL DIMENSIONS FOR 2-ELECTRODE METHOD:

The cross-sectional area of the end plates (and therefore the soil sample) would be the same as in the above case, however, in this case the electrode separation (L) would correspond to the end plate separation, which is the inside length of the box.

For the 2-electrode method (interior pins removed) the multipliers would be calculated as follows:

Small Soil Box:  $A/L = 7.2\text{cm}^2 / 10.8\text{cm} = 0.67\text{cm}$

Large Soil Box:  $A/L = 12.8\text{cm}^2 / 22.2\text{cm} = 0.57\text{cm}$

### SOIL BOX EXAMPLE: M.C. MILLER FACTORY TAP WATER:



Measured Resistance = 1.97 kΩ  
Resistivity Value =  $1.97\text{ k}\Omega \times 1\text{cm}$   
= 1,970 Ω.cm (4-Electrode Method)

(Hence, MCM Water Conductivity = 507 μS/cm)

[ Tap water resistance value  
measured using the Miller 400D Resistance Meter  
(Cat.# 44550) together with the Large Soil Box ]

