
11. CUSTOM LOOKUP (MOISTURE) TABLES

Standard Moisture Table

The Trase software incorporates 4 Standard Moisture Tables (CUN, CCT, BUN, and BCT) which are used to convert the measured apparent dielectric constant, K_a , to volumetric moisture content, as explained in Section 2, "Principles and Techniques of Operation".

The Standard Moisture Tables are located in a fixed place in memory and cannot be modified. The tables can be transferred, however, to an external terminal for review.

Custom Moisture Tables

When moisture measurements are required in materials or unusual soils, where the relationship of K_a to percent of moisture is radically different from conventional soils, a Custom Moisture Table can be prepared in WinTrase and entered into the MiniTrase software. The MiniTrase system provides a separate place in memory to store one (SUN OR SCT) Custom Moisture Table which is separate from the Standard Moisture Tables.


To make up a Custom Moisture Table it is necessary to prepare a series of samples of the material with known volumetric moisture contents to span the range of moisture content that is of interest. The samples must be of sufficient volume so that the dielectric constant, K_a , of the samples can be measured using Trase with standard waveguides inserted into the samples.


The development of the table relating the known volumetric moisture content to the dielectric constant, K_a , at a series of increasing moisture contents must be done carefully to maintain measurement accuracy in the field.

A Custom Moisture Table needs to consist of a series of volumetric moisture content values and the corresponding K_a values.

To enter a Custom Moisture Table you must first have WinTrase software installed on a computer to use as a terminal and the PC must be connected to the MiniTrase.

Steps:

1. From the WinTrase Main Menu, select the Remote -> Trase Control Panel from the Pull Down menu. A simulated keypad and Trase screen will appear.
2. Using your mouse pointer on the alphanumeric keypad on your screen, Key to the Setup Screen.
2. Press the  key.
3. The following prompt will appear on the terminal:

"Type each table entry as K_a , moisture. Press  after each entry.


Example: 15.3,.351<ENTER>. Press  again after last entry.

Begin!"




1 = T01

2 = T02

3 = T03

-
4. Type in the entries. After the last entry, press the  key again.
 5. The following prompt will appear on the terminal: “
XX entries.
Enter the table destination.
1 = T01
2 = T02
3 = T03
4 = T04 Selection (default = 1). (You will enter either 1, 2, 3, or 4 to select the destination for your new custom table).
 6. After you have entered the table number, you will be prompted as follows: “Enter table label (8 characters alphanumeric maximum): (You will now enter the name for your custom table).
 7. The following message will confirm that your custom table has been entered: “New table values stored in table TXX (the x’s designating the table number selected).

Steps:

1. Prepare the file. The file should contain one entry per line. Each entry is the Ka value, a comma, then the moisture value. The moisture value is expressed as a three place decimal. For example, 5.0% is written .050, and 27.5% is written as .275. Ka is carried to a one place decimal. The following example of the first four lines of our standard table are: (see Graphs at the end of Chapter 2)
2.0, 0.000
3.8, 0.050
6.0, 0.100
7.8, 0.150
2. As with entering a custom moisture table by hand, you must have a terminal, or a computer used as a terminal, connected to the DB-9 Port of the Trase unit with the baud rate set to match the Trase setup - the default is 9600. See “Setting the Data Transfer Parameters” in this section for further details.
3. Key to the Setup Screen.
4. Press the  key.
5. The following message will appear on the terminal:
“Type each table entry as Ka, moisture. Press  after each entry.
Example: 15.3,.351<ENTER>. Press  again after last entry.
Begin!”
6. Using the ASCII upload feature of your communication program, send the file to Trase.

-
7. After the file has been uploaded to your Trase unit the following message will appear on your terminal: “ XX entries.

Enter the table destination.

- 1 = T01
- 2 = T02
- 3 = T03
- 4 = T04


Selection (default = 1): (You will enter either 1, 2, 3, or 4 to select the destination for your new custom table).

8. After you have entered the table number, you will be prompted as follows: “Enter table label (8 characters alphanumeric maximum): (You will now enter the name for your custom table).
9. The following message will appear on the terminal confirming your custom table has been entered: “New table values stored in table TO# (the #'s designating the table number selected).

If you have problems transferring data, you may have to set your communication program upload to “line at a time”. The communication program will not send the next line until it has received the echo from the previous line.

To transfer a Moisture Table you must have the PC connected to the MiniTrase using the DB-9 Serial Port with the baud rate set to match the MiniTrase setup - the default is 9600. See “Setting the Data Transfer Parameters” in this section for further details.

Steps:

1. Key to the Setup Screen.
2. Select either one of the 4 Standard or one of the 4 Custom Tables in the “Moisture Table” field.
3. Press the  key.
4. The table will be displayed on the screen in the same format as used in entering a moisture table.

When Trase software calculates the moisture content it considers that there is a linear relationship of Ka to moisture content between two adjacent Ka values in the table.

If the Custom Moisture Table you are entering only covers a part of the full range of moisture, for example 0-40%, where, say, 40% corresponds to a Ka value of 26.0, then, if in the course of making measurements a Ka value of greater than 26.0 is encountered, MiniTrase will always report 40% moisture. If you want to know that a measurement exceeds the range of your moisture table, you can assign a Ka value of, for example, 26.5 just slightly above 26.0, and relate this to 99.9% moisture. Then when making a reading, if MiniTrase reports 99.9% moisture, you will know that the moisture value measured is beyond the range of your Custom Moisture Table.