

Example 5 – Analysis of Direct Shear Lab Data

This tutorial will examine the fitting of two strength models:

- **Mohr-Coulomb**
- **Power Curve**

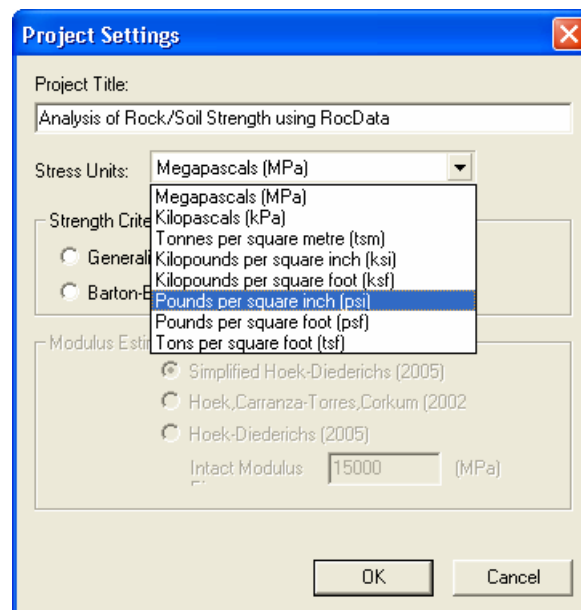
to direct shear stress data (measured in psi units) for a soil.



Start up *RocData* and a new analysis file will be automatically opened. If you are already in the program select the **New** option from the **File** menu or from the toolbar.



Select the **Project Settings** option (from the Analysis menu or the toolbar) and set the measurement unit to **psi**. Change the strength model from **Generalized Hoek-Brown** to **Mohr-Coulomb**.



Project Settings for RocData example 5



Next select the **Use Lab Data** option from the **Analysis** menu or toolbar. This opens up the Mohr-Coulomb lab data analysis dialog.

There are two radio buttons near the top of the dialog that enable you to select the type of data to be analyzed: **Triaxial** or **Direct Shear**. Select the **Direct Shear** radio button. Set the number of data points to be analyzed to 8, and enter the values shown in the figure below.

Calculate Mohr-Coulomb parameters c and phi from Test Data

Lab Data

Curve-Fitting Method: Levenberg-Marquardt

Data Type

Triaxial Direct Shear

Number of Tests: 8

#	sigN (psi)	sigT (psi)
1	1	8.2
2	2	7.6
3	3	8.4
4	4	10.1
5	5	9.5
6	6	11.2
7	7	12.3
8	8	12.2

Input data for the tutorial. Notice the radio buttons for selecting the type of data to be analyzed (triaxial or direct shear).

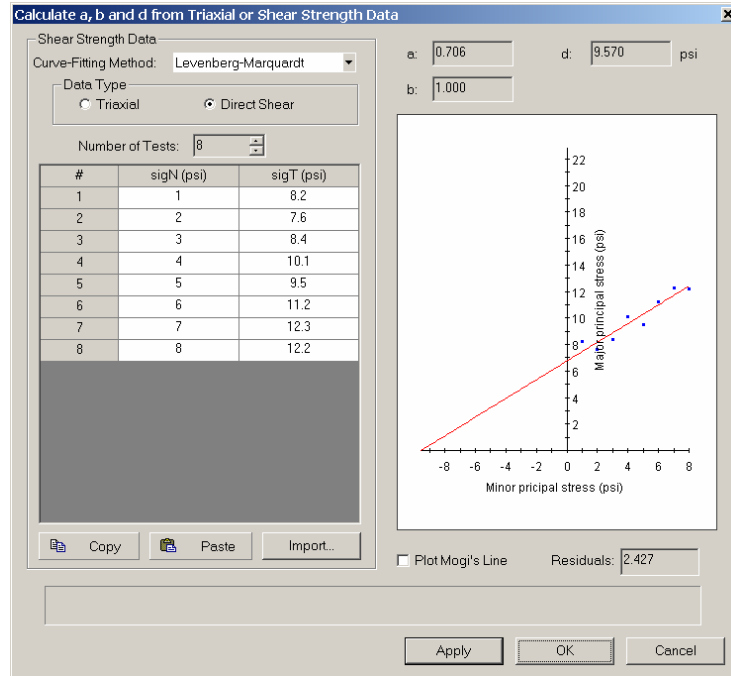
Select the **Linear Regression** curve fitting method and view the resulting parameters.

NOTE: for Mohr-Coulomb data the Linear Regression and Levenberg-Marquardt methods give the same answers for practically all cases.

Click the OK button. This action applies the analysis results to the main view of *RocData* and exits the dialog.



Go to the **Project Settings** dialog, select the **Power Curve** criterion, and click OK. Immediately the data analysis dialog for the criterion is activated. The dialog contains the intact rock data previously analyzed with the Mohr-Coulomb lab data option.



Power Curve fit of the sample direct shear data

This concludes the tutorial on fitting the **Mohr-Coulomb** and **Power Curve** strength models to a direct shear dataset.