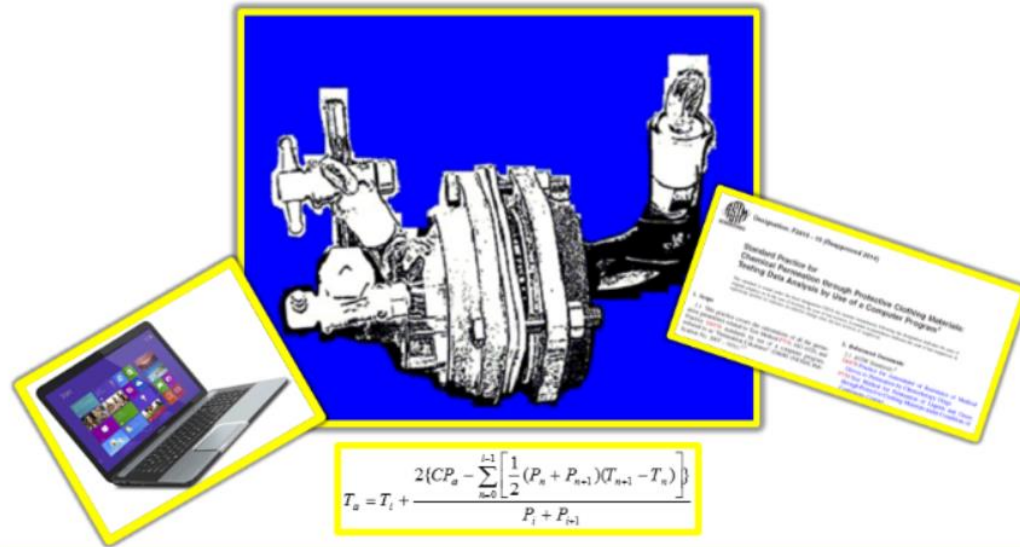
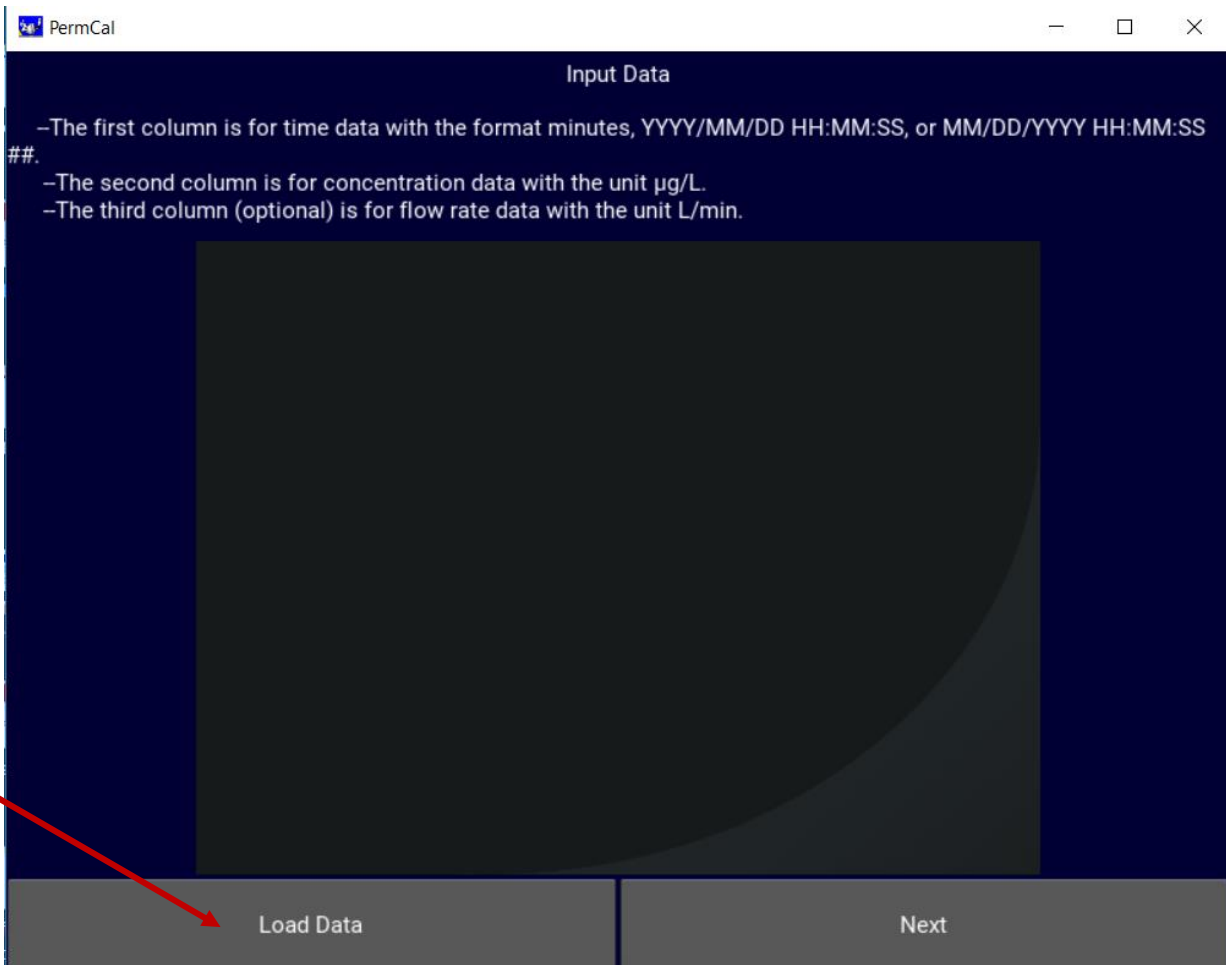


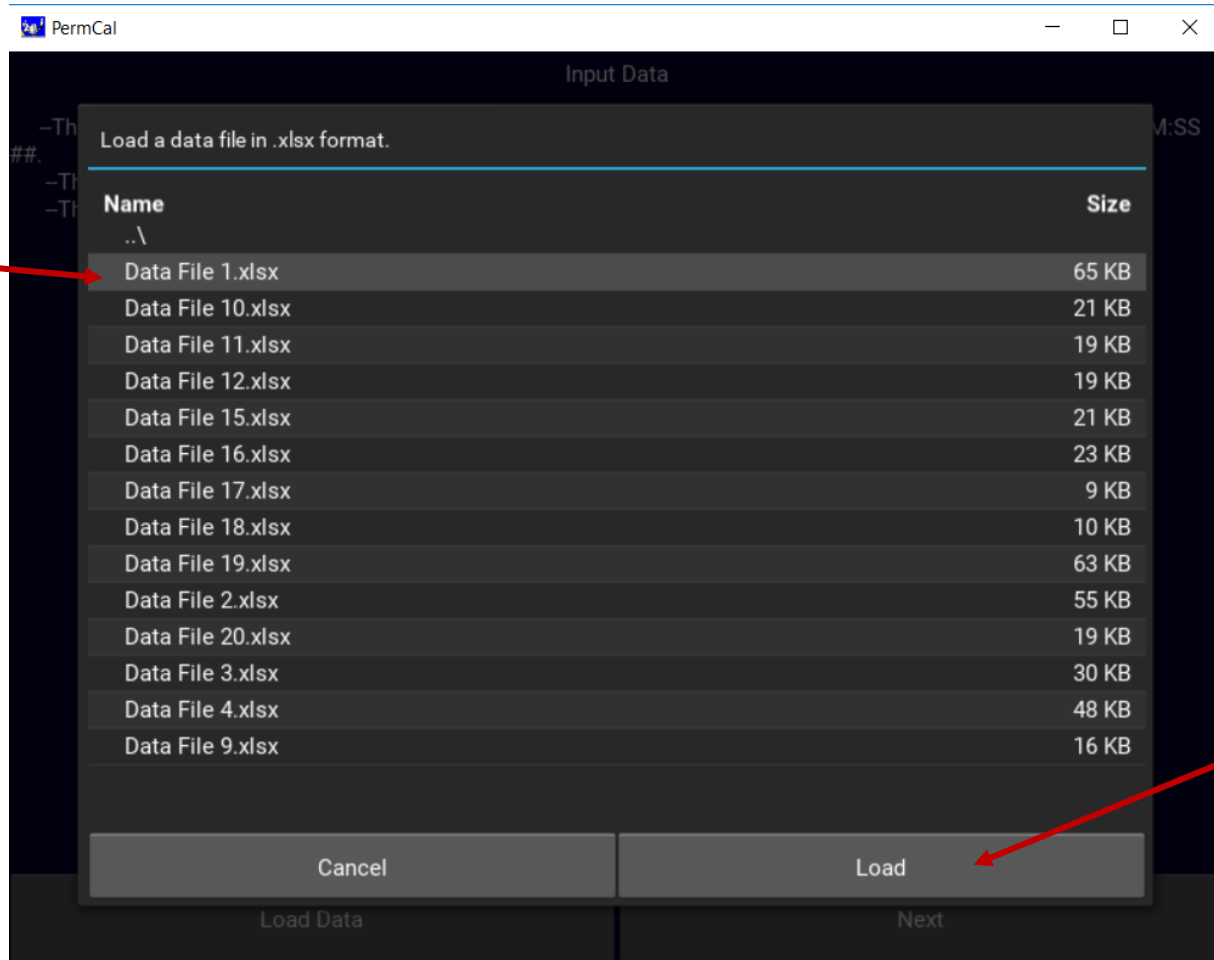
Permeation Calculator V.3.0.0



$$T_e = T_i + \frac{2\{CP_a - \sum_{n=1}^{i-1} \left[\frac{1}{2} (P_n + P_{n+1})(T_{n+1} - T_n) \right]\}}{P_i + P_{i+1}}$$

An Example for a Closed-loop System with Continuous Sampling





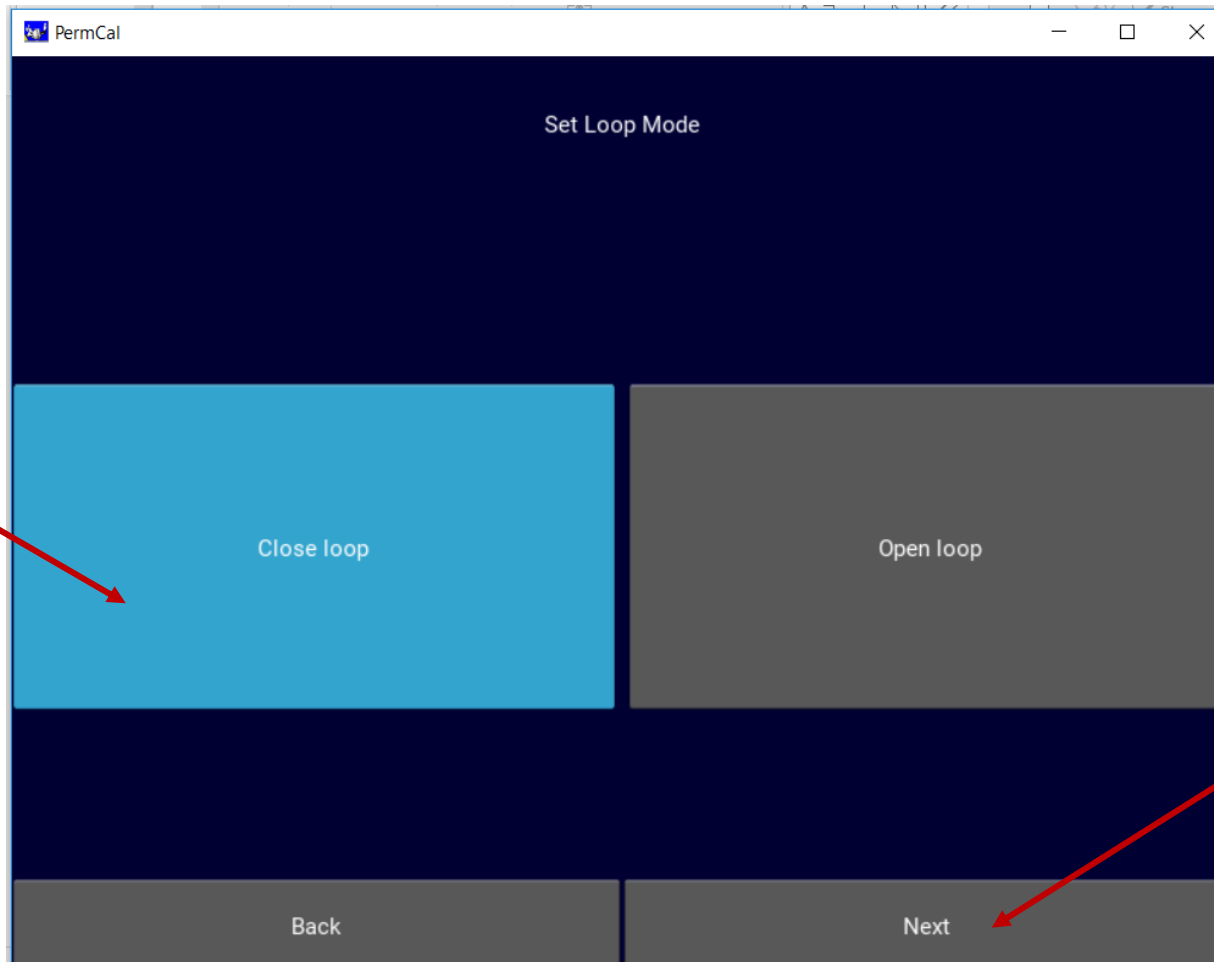
PermCal

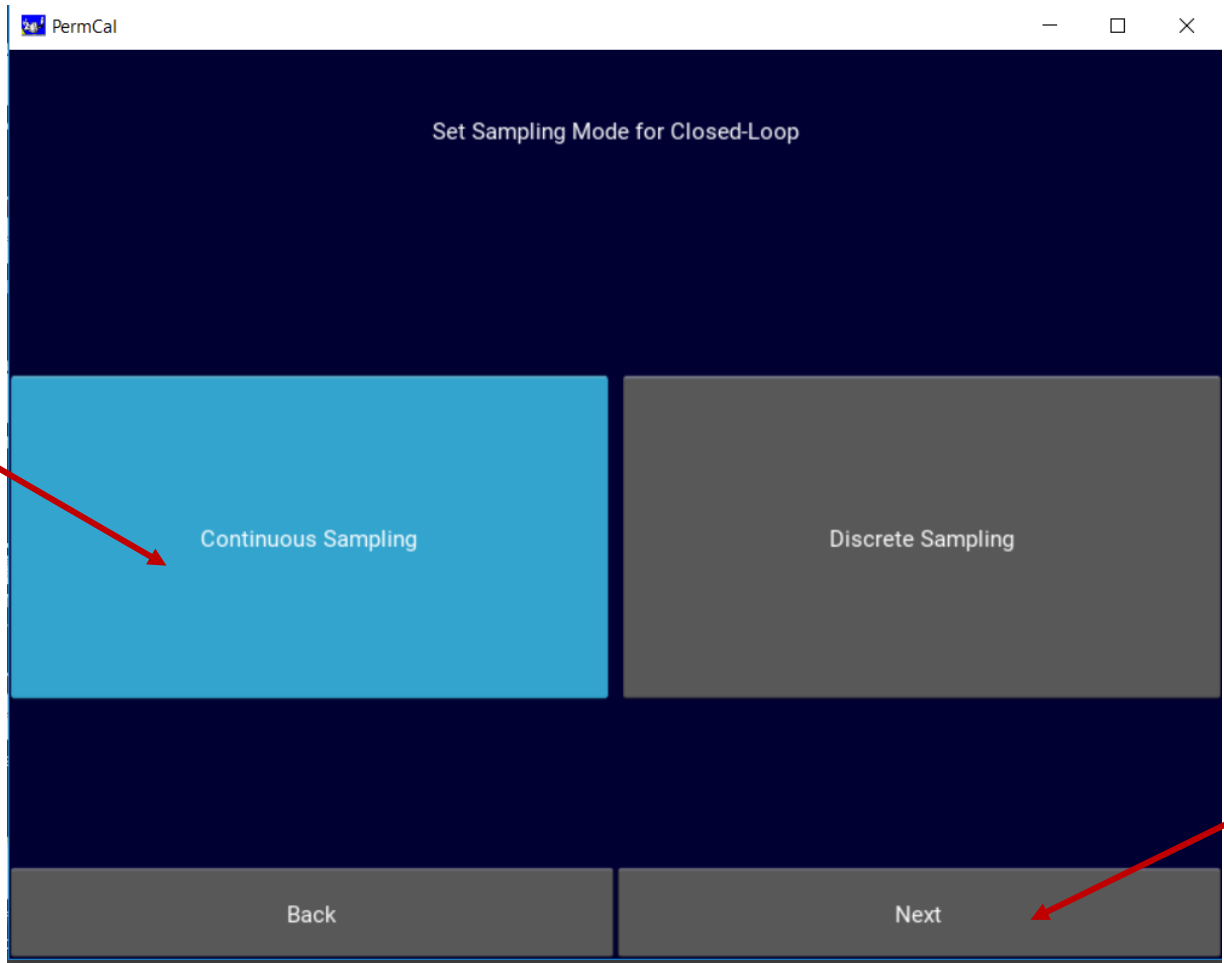
Input Data

- The first column is for time data with the format minutes, YYYY/MM/DD HH:MM:SS, or MM/DD/YYYY HH:MM:SS ##.
- The second column is for concentration data with the unit $\mu\text{g/L}$.
- The third column (optional) is for flow rate data with the unit L/min.

Time (minutes)	Concentration ($\mu\text{g/L}$)
0	0
20	0
40	0
50	10
60	30
80	80
100	130
120	180

Load Data Next





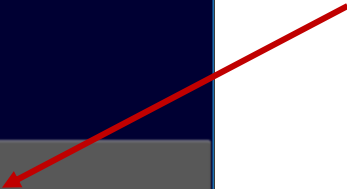
PermCal

Set Parameters for Closed-Loop Continuous Sampling

Total Volume of the Collection Medium (V_t in ASTM F 739): L

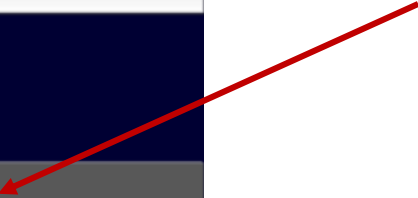
Minimum detectable permeation rate: $\mu\text{g}/\text{cm}^2/\text{min}$

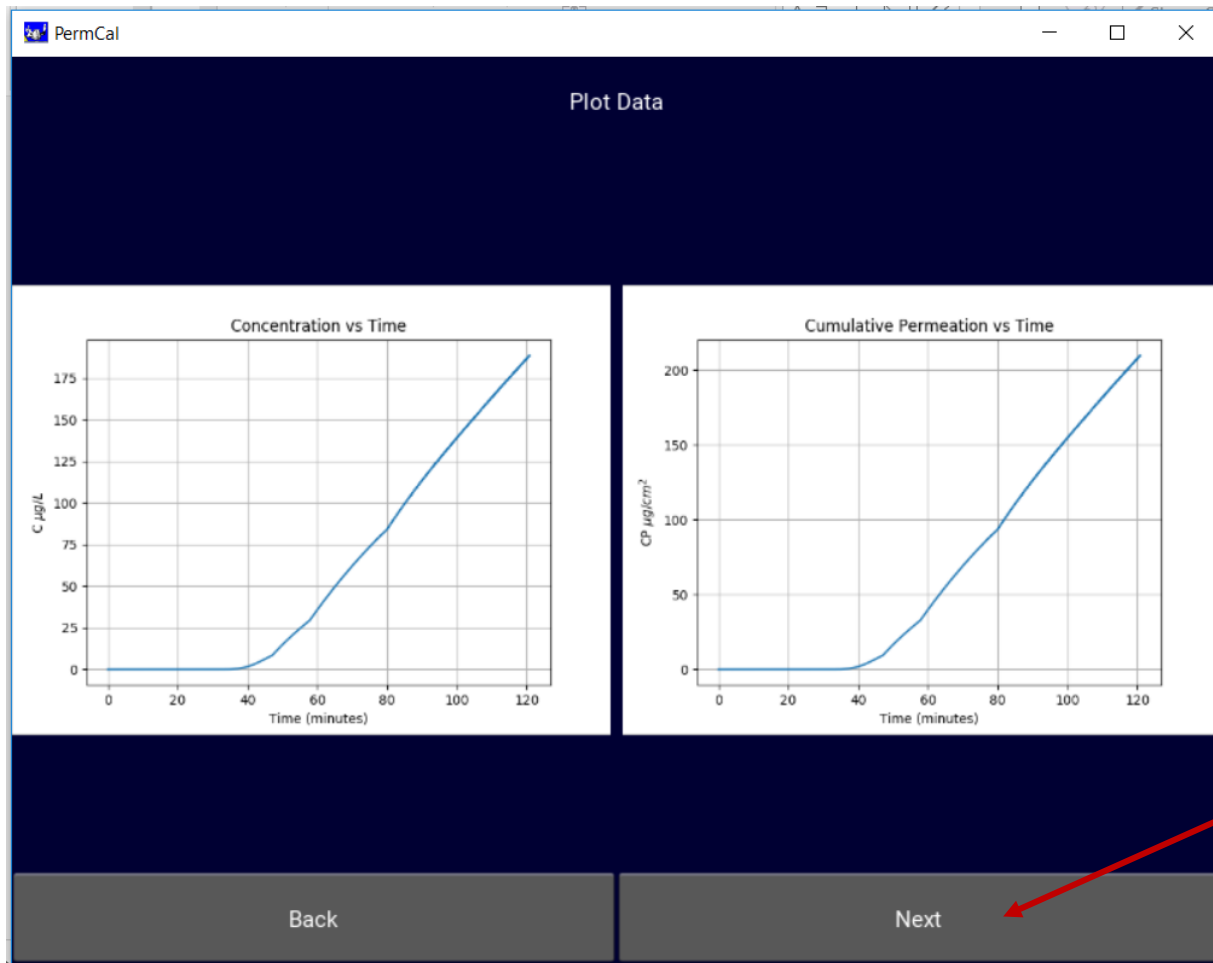
Back Next



PermCal

Swatch Exposure Size (for A in ASTM F 739)	<input type="text" value="1"/>	<input type="button" value="Diameter"/>	<input type="button" value="Area (cm<sup>2</sup>)"/>
		<input type="button" value="cm"/>	<input type="button" value="inch"/>
Specimen Weight	<input type="text" value="1"/>	<input type="button" value="grams"/>	<input type="button" value="grams/m<sup>2</sup>"/>
Cumulative Permeation for:	<input type="text" value="60"/>	<input type="button" value="min"/>	
Cumulative Permeation Mass target:	<input type="text" value="150"/>	<input type="button" value="μg/cm<sup>2</sup>"/>	
Enter times Ti-1:	<input type="text" value="0.0"/>	and Ti:	<input type="text" value="120.83"/>
(in Minutes) for Average Permeation Rate			
<input type="button" value="Back"/>		<input type="button" value="Next"/>	





Report Title:

Results

Operator:

Joe

Project Number:

000

Material:

|

Test Chemical:

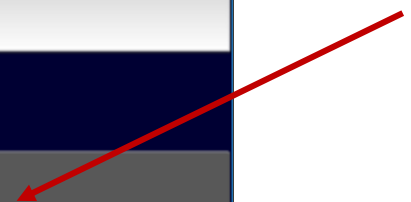
Temperature:

Analytical Technique:

Additional Comments::

Back

Next



PermCal

Report Title: Results

--Results Calculated with NIOSH Permeation Calculator Version 3.0.0--

Operator: Joe
Data Filename: C:\Users\wrt8\Desktop\permcaw\Data_Files_for_Practice
Project Number: 000
Experiment type: Closed Loop, Continuous Sampling.


Breakthrough Time--
Breakthrough Detection Time (BDT): 37.14 min
Standardized Breakthrough Time (permeation rate at 0.10 $\mu\text{g}/(\text{cm}^2\cdot\text{min})$): 33.94 min
Normalized Breakthrough Time (permeation mass at 2.5 $\mu\text{g}/(\text{cm}^2)$): 40.859 min
Minimum Breakthrough Detection Time (permeation rate at 0.01 $\mu\text{g}/(\text{cm}^2\cdot\text{min})$): 33.162 min

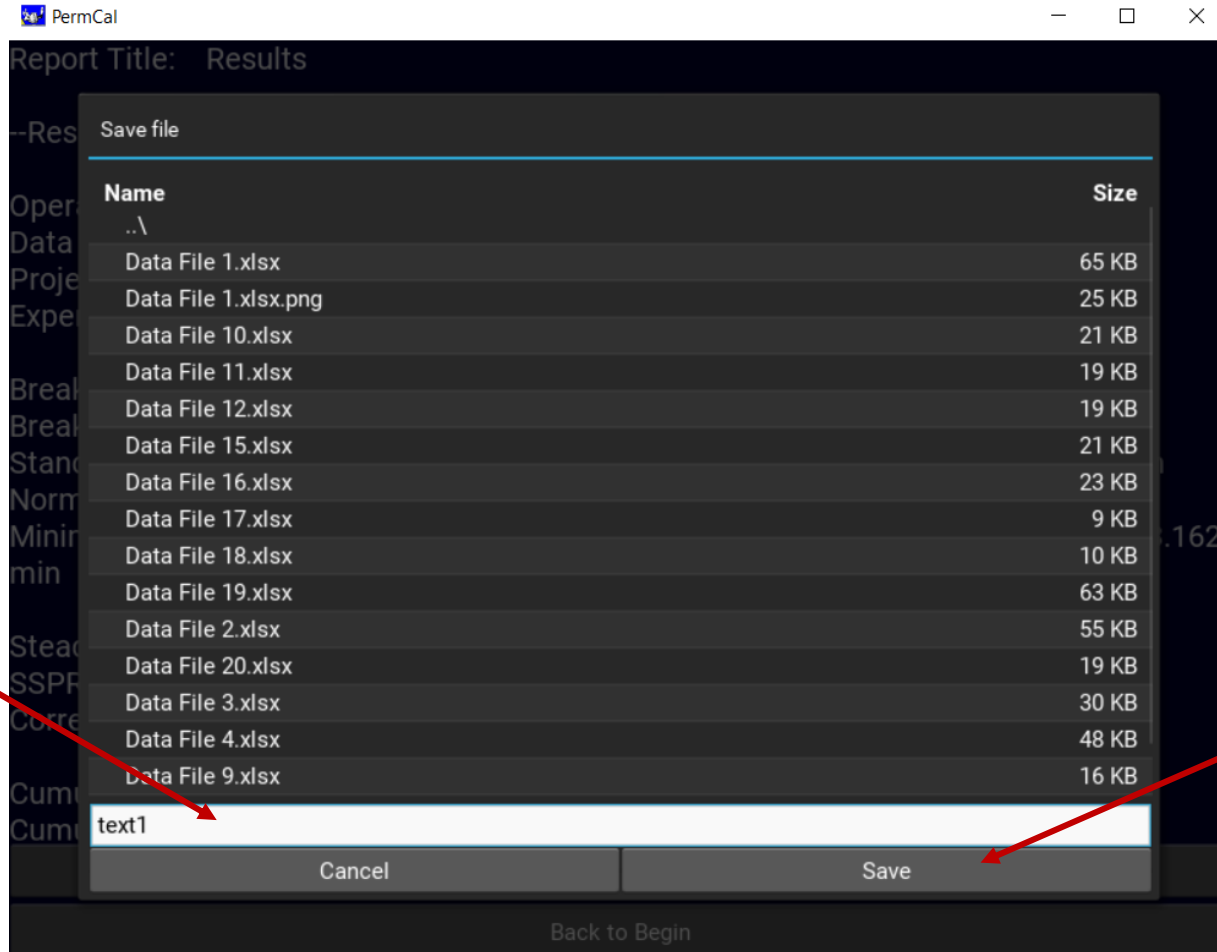
Steady-State Permeation Rate (SSPR)--
SSPR: 2.739 $\mu\text{g}/(\text{cm}^2\cdot\text{min})$
Correlation Factor (R^2) in the region: from 93.52 min to 108.87 min 0.999717

Cumulative Permeation--
Cumulative Permeation for 60.0 minutes: 39.875 $\mu\text{g}/\text{cm}^2$

Save Results

Back to Begin





Type in file name.