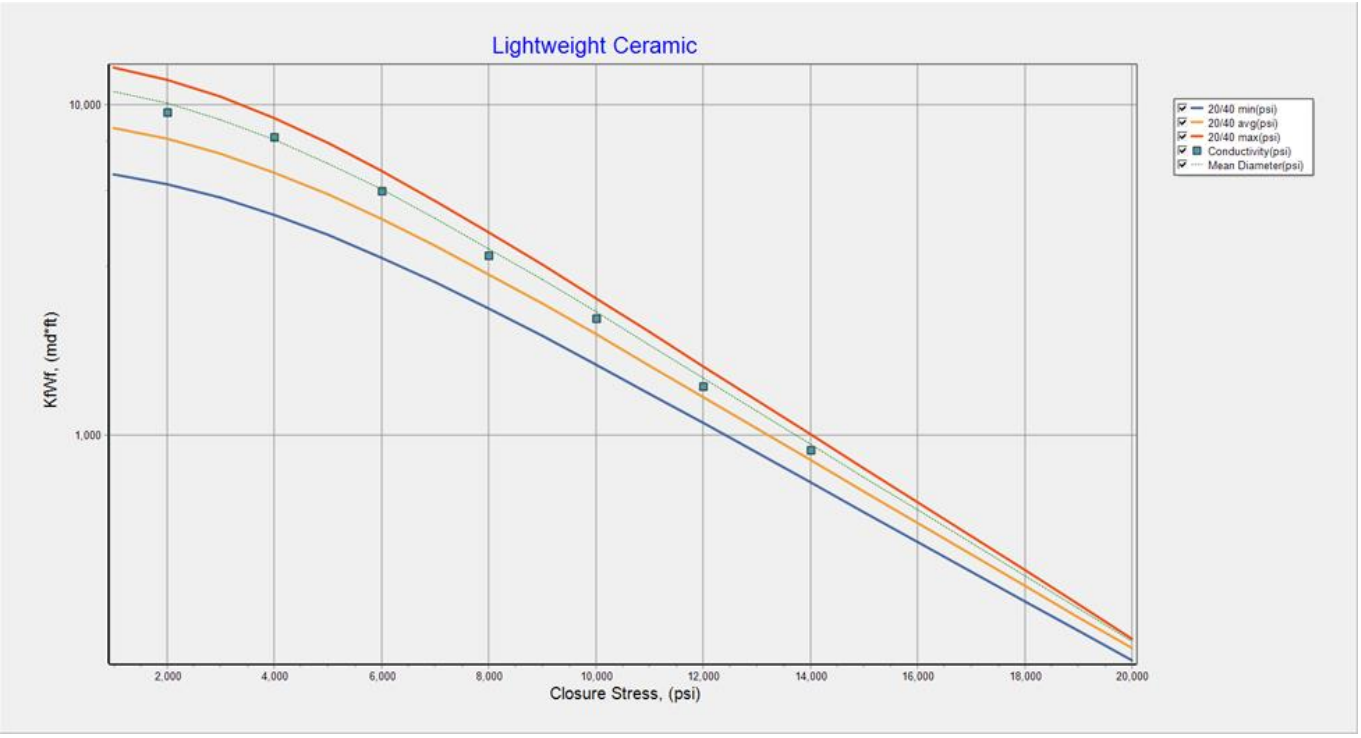
PREDICT-K “TIP OF THE MONTH”

Generic Proppant Correlations

Predict-K is built on 30 years of proppant testing experience and numerous tests of proppants of all types and sizes conducted by Stim-Lab on behalf of the Consortium (Proppant Manager contains roughly 1500 such tests). Even this large number of tests is dwarfed by comparison to the tens of thousands of customer conductivity tests that Stim-Lab has performed over the past thirty years. Through that work and experience, we have developed a firm understanding of the expected behavior of proppants as a function of stress and a number of other variables. This understanding allows us to predict the conductivity of proppants in realistic downhole conditions as a function of proppant type and size.

Most of the Predict-K workflows use real conductivity testing data stored in Proppant Manager for the proppant type that is being used in your simulation. However, the Proppant Correlation mode is built to give a prediction of conductivity as a function of stress for any proppant given its median diameter and proppant type. In Proppant Correlation mode, you simply select the proppant type and size, and Predict-K will output an expected range of baseline conductivity.



Predicted Baseline Conductivity of a 20/40 Lightweight Ceramic

Proppant Data

Generic Proppant Selection

Lightweight Ceramic

Generic Size Range

20/40

Proppant Conc (lb/sq ft)	2.0
Min Diameter (microns)	600
Avg Diameter (microns)	680
Max Diameter (microns)	800
Mean Diameter (microns)	750

Sample Data Clear

Stress	Conductivity
2000	9500
4000	8000
6000	5500
8000	3500
10000	2250
12000	1400
14000	900

Proppant Correlation Input Screen

In the plot above, the three solid lines represent the minimum, average, and maximum conductivity that might be expected when testing a proppant of that type and size. You can also input a specific median diameter, which will populate an additional dashed green line that shows the model prediction for that median diameter. In addition, you can input real test results to ensure that the results match predictions. The test results should lie somewhere in the range of the three lines and follow the same general decline trend of the lines. If they don't, some investigation is necessary to discover why the proppant doesn't match expectations. The simplest reason for a mismatch is mislabeling of the proppant in question. This case can be easily diagnosed if the data is far outside the expectations and can only be matched by selecting a proppant of different type or size. The other possibility is that the tested proppant simply performs differently from proppants of same type and size. If the proppant performs better than its counterparts, further investigation is needed to confirm the result because this proppant may be a preferred proppant if the result holds. If performance is lower than expectations, additional Predict-K simulation can be used to determine if the lower cost that may associated with the reduced performance is significant enough to result in an overall increase in net present value of the fracturing treatment.

For more information on the models used in the Proppant Correlation mode, see Dr. Bob Barree's SPE paper presented at last year's Hydraulic Fracturing Technology Conference, SPE 79135 "Generic Correlations for Proppant Pack Conductivity".

To view the Predict-K Tip of the Month archive please go to: http://www.corelab.com/stimlab/predictk-tip-of-the-month

To view our Predict-K training videos main page please go to: http://www.corelab.com/stimlab/training-videos

Predict-K Training Videos (opens in YouTube):

1. How to obtain your license for Predict-K and Proppant Manager
2. Predict-K Main Screen
3. Quick Entry
4. Predict-K General Structure
5. Creating a New Proppant Manager Database
6. Running the Proppant Manager Correlations
7. Exporting Proppant Manager Results to Predict-K
8. Baseline Conductivity Demonstration Base Project for Videos 8 - 10
9. Dynamic Conductivity
10. Production Analysis Overview

11. Adding Production Data to Predict-K Demonstration Base Project for Video 11 Simulated Production Data Excel File

12. Matching Production Data