Purpose:
Fitting a 2-value data set to a Rosin-Rammler formula.

Method:
The general form of the Rosin-Rammler equation is:

\[ R = e^{\left(\frac{D}{D_n}\right)^n} \]

where: \( R \) is the %retained at a size \( D \), and both \( D_n \) and \( n \) are fitting parameters.

Given two points, \( R_1 \) retained at size \( D_1 \) and \( R_2 \) retained at size \( D_2 \), the two fitted parameters may be determined as follows:

\[
D_n = \exp\left(\frac{\ln\left(\frac{1}{R_1}\right) \times \ln\left(D_2\right) - \ln\left(\frac{1}{R_2}\right) \times \ln\left(D_1\right)}{\ln\left(\frac{1}{R_1}\right) \times \ln\left(\frac{1}{R_2}\right)}\right) \quad \text{and} \quad n = \frac{\ln\left(\frac{1}{R_1}\right)}{\ln\left(D_1 / D_n\right)}
\]

Once fitted, the %retained \( R \) at any size \( D \) can be estimated from the general form of the equation:

\[ R = e^{\left(\frac{D}{D_n}\right)^n} \]

and any size \( D \) that sees a %retained \( R \) can be determined by:

\[ D = \left[\ln\left(\frac{1}{R}\right) \times D_n^n\right]^{1/n} \quad \text{or, rearranged as} \quad D = \left[\ln\left(\frac{1}{R}\right) \times D_n^n\right]^{1/n} \]

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The author will not accept any responsibility for loss or damage caused by use of these formulae. The equations have not been tested under stringent conditions that allow them to be considered robust enough for Engineering use. People using this method must themselves accept responsibility to confirm that results are correct and applicable to the application being calculated.

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