# Using Aspen to Obtain Stream Mixture Properties

We will use the Ergun equation to describe the momentum balance in a packed bed reactor.

$$\frac{dP}{dW} = \frac{-\beta_0}{A_c(1-\phi)\rho_c}\frac{P_0}{P}\left(\frac{T}{T_0}\right)\frac{F_T}{F_{T0}}$$

$$\beta_0 = \frac{G(1-\phi)}{\rho_0 D_p \phi^3}\left[\frac{150\cdot(1-\phi)\mu}{D_p}+1.75G\right]$$

In this week's lab, we provide you with the fluid physical properties for your calculations. For your design projects you will have to calculate these properties. One option is to extract these properties from your Aspen simulation. To do so, you will need first to set up a property set, under Properties, Prop-Sets and select New and name this set of properties.
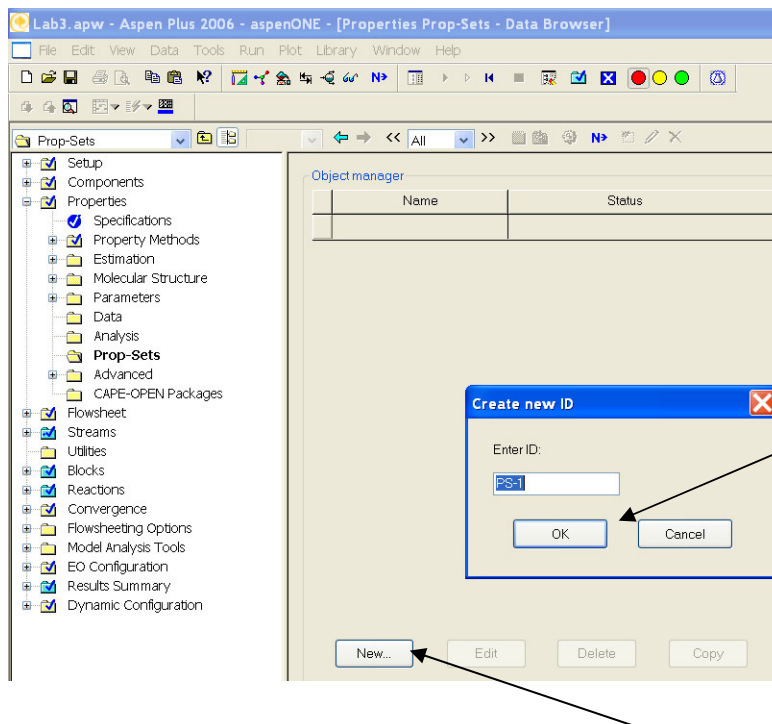
A new screen will open, and here you will need to select the properties you would like to display in your stream report. For these calculations we will need mixture viscosity and density. Select MUMX and RHOMX from the pull-down menu, and specify units. You will then need to specify a phase on the 'Qualifiers' tab. In most cases for our project, this will be the vapor phase.
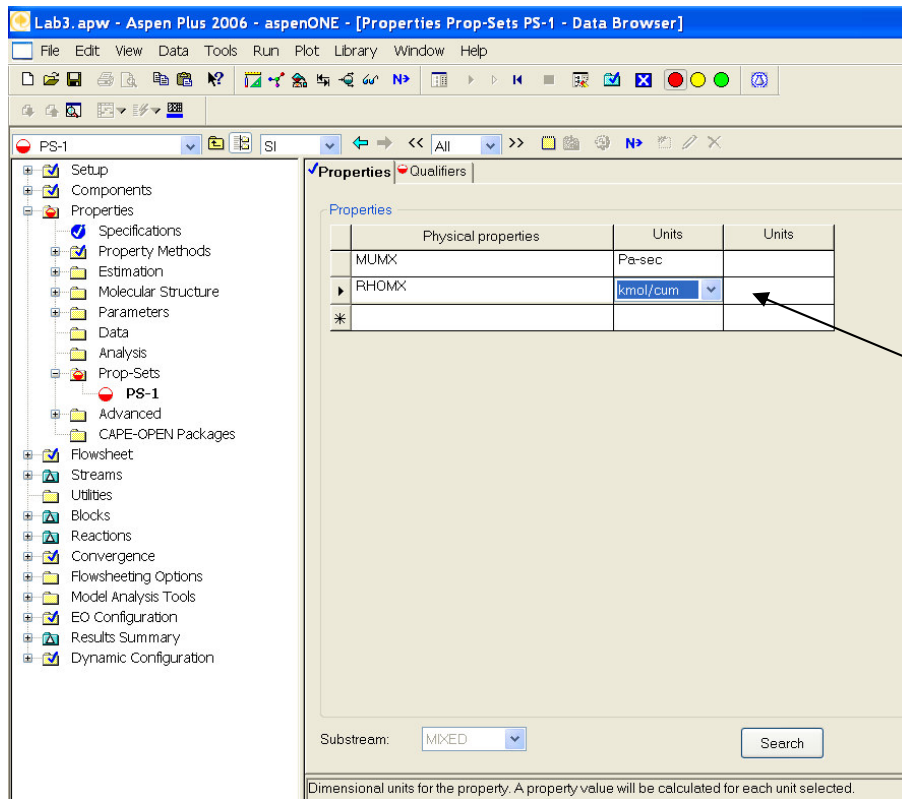
Now that your Prop-Set has been defined, you will need to tell Aspen how to use it. Go to Setup, Report Options, and select the stream tab. Click on Property Sets, and select the set you have just defined.
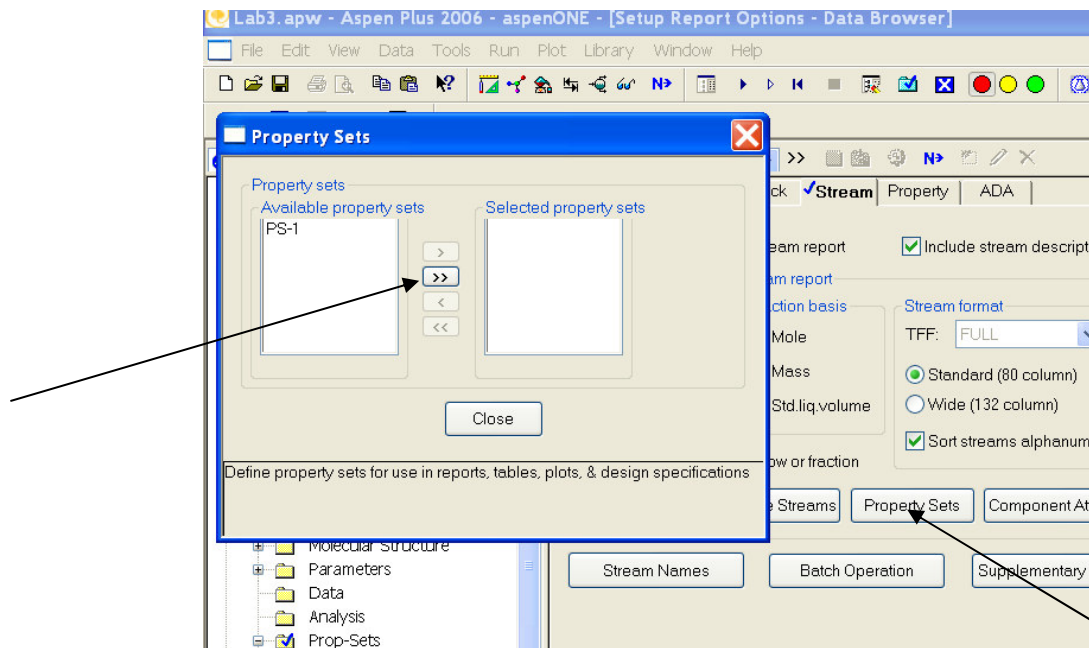
Now, when you run your model and display the stream report, these properties will be listed at the end of the report.