

This short guide will show you how easy it is to use the new PhysPack and how quickly you can calculate accurate physical properties.

The first 30 seconds ...

Within 30 seconds from now you will have learned how to use PhysPack to access physical property data for pure components – both the constant properties like critical temperature, critical pressure and boiling point, and the liquid and vapour properties over a range of pressures and temperatures. You will also have learnt how to display the results graphically.

Okay, the clock starts now...

Starting PhysPack

1. Click on **Start | Programs | PEL | PhysPack**.

The main PhysPack window appears. There are 4 tabs across the top of the window; the Components tab is selected by default. On this tab there are 3 options – Pure Component, Aqueous Solution, and Mixture; Pure Component is the default.

The first thing we need to do is to select a component.

2. In the *Search for Name* box, type **MET** for methanol. All the components on the databank beginning with MET are then listed below. Click on **Methanol** and PhysPack automatically switches to the Constants tab to display all the constant properties for Methanol.

Next, let's view the liquid and vapour properties.

3. Click the **Liquid** tab.

All the liquid properties for Methanol over the temperature range 0 – 60°C at 1bara are automatically displayed. Notice at the bottom of the screen the Quality Assurance panel displaying the validity of each calculated point value. Move the cursor into the different cells to see their associated QA values.

4. Click the **Vapour** tab to view the vapour properties.

All the vapour properties for Methanol over the temperature range 70 – 100°C at 1bara are automatically displayed again with their associated QA codes.

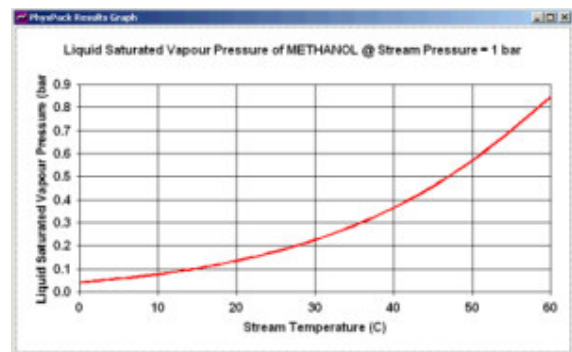
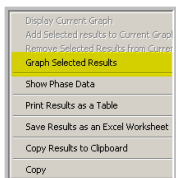
Notice that the liquid properties stopped at 60°C and the vapour ones started at 70°C.

5. Click the Constants tab to check the boiling point.

Finally, let's plot a graph of saturated liquid vapour pressure v temperature

6. Click the **Liquid** tab. Scroll across to the *Liquid Saturated Vapour Pressure* and then click on the **column header** to highlight that column. Next click the **right-mouse button** and select **Graph Selected Results** from the pop-up menu.

You should now see the graph opposite...



The next 30 seconds ...

Okay this time we're going to look at aqueous solutions and plot a graph of liquid density v temperature at different concentrations – again all within 30 seconds!

- Click on the **Components** tab and select **Aqueous Solution**.

First, let's look at the properties of a 15% W/W solution of nitric acid?



- Enter **15** in the %W/W box and then click **Nitric Acid** from the list of available solutions.

Again PhysPack automatically switches to the Constants tab to display the constant properties. Notice PhysPack reports the 2 concentrations it has used for the interpolation of the results determined by combination of Nitric Acid – 10% and 20%.

- Click the **Liquid** tab to view the liquid properties.

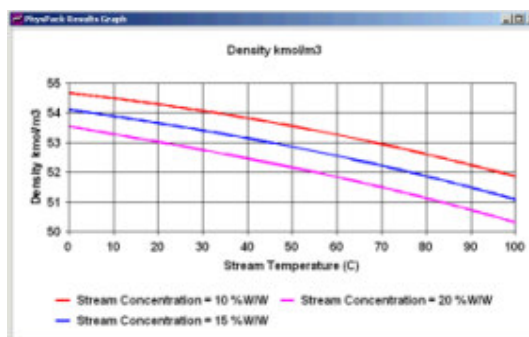
And that's it – well not quite. Remember we wanted to plot the liquid density at different concentrations. So we need to go to the Specification tab and set the concentration ranges for the calculation.

- Click the **Specification** tab and then select **Range** under the concentration panel. Set the Start to **10%W/W**, the Finish to **20%W/W**, and the Step to **5%W/W**.

Now all we need to do is recalculate the results and plot the graph

- Click the **Liquid** tab to display the new results over the concentration range and then click on the **column header** for *Density* to highlight that column. Next click the **right-mouse button** and select **Graph Selected Results** from the pop-up menu.

You should now see the graph opposite...



That's it – and all within 60 seconds! Time now to try out Part 2 of the 60 Second Guide to PhysPack and see how easy it is to do more complicated calculations involving mixtures of components.

After you've learned the basics it's time to read the **PhysPack User Manual**. This will tell you more about all of the really useful features and options in the program.

This program is developed, maintained and supported by PEL Support Services, ABB. We run a Hotline telephone and email service to answer any queries about the PEL products. You can contact us:

E-mail: pel.support@gb.abb.com
Telephone: +44 (0)1925 74 1126
Fax: +44 (0)1925 74 1265
Website: www.pelsoftware.com

Post: PEL Support Services
ABB Ltd
Daresbury Park, Daresbury
Warrington, Cheshire, WA4 4BT