

Installing PROPEP 3

Propep and GuiPEP have now been superseded by Dave Cooper's PROPEP 3 program, which works on 64-bit machines as well as 32 bit machines, and is considerably more reliable.

The PROPEP 3 software is extremely useful. It's fast and it's fairly easy to add new propellants to the end of its very long list of possible rocket propellants.

PROPEP 3 is available to download at <http://www.tclogger.com> courtesy of Dave Cooper (click on the 'PROPEP 3 now available' icon).

PROPEP 3, like the original PROPEP software, reads an input file called pepcoded.daf which is a long list of propellants.

I've added a newer version of pepcoded.daf (which contains liquid nitrous among other additions) into this zip file.

Once you've installed PROPEP 3, pepcoded.daf lives in subdirectory mydocuments/ProPEP 3 on your computer. Replace the existing pepcoded.daf with my new one (but keep the old one for reference, rename it pepcoded_old.daf for example).

When you run PROPEP 3, a list will appear, of up to 15 different ingredients. Click on the box on the right of each ingredient to select your own ingredient.

Try to make all your ingredients add up to either 100 grams or 1000 grams in the 'total weight' box. This makes understanding the PROPEP results file easier: PROPEP calls this the 'system weight'.

On the right is the 'operating conditions' box:

The temperature should be set at 298 Kelvin: that's room-temperature, and is the initial temperature of the propellants. You can alter this for hotter or colder launching days.

The chamber pressure is at 1000 psi (pounds per square inch) which is a good first guess. Alter it to your own combustion chamber pressure (1 Bar = 14.5 psi).

The exhaust pressure is the nozzle exit pressure. It's set at 14.7 psi which is sea-level atmospheric pressure. Note that if you set this to zero to get rocket performance in the vacuum of Space, PROPEP 3 may crash! 0.01 psi is probably as low as you can go.

When you run PROPEP 3 (by pressing the 'calculate' button) a text file window will then pop up when you then click the 'display results' button. See my paper 'What the PROPEP results mean' included in this zip file, for an explanation of what the various numbers mean.

Use 'copy results to clipboard' to transfer the text to the windows clipboard. Then open windows wordpad or windows notepad and click 'edit -paste' to paste the text.

Once you've entered the ingredients, instead of pressing the 'calculate' button, go to the top menu and click the 'multiple runs' menu option.

A box will appear: entering 20 percent in the minimum % window, and 50 percent in the maximum % window, will allow you to perform multiple runs, varying the percentage of that propellant with each run. The 'steps' window decides how many runs to perform. For example, inputting '30' steps would increase the propellant by 1% by each run between 20% and 50% in this example.

Note that your other propellant (assuming just two propellants selected) will be decreased in proportion to keep the total propellant mass (e.g. 100 grams) the same for each run.