

Aspen Plus® Tips

Tips and Frequently Asked Questions

This quick start guide is intended to supply first time Aspen Plus users with helpful tips and advice to accelerate the learning curve associated with this product. It is desired to create a sense of community, as users are encouraged to develop and submit their own tips and advice to be included in this quick start guide to benefit people of varying disciplines and locations.

Table of Contents

AspenTech Customer Support	3
➤ Support Center.....	3
➤ Aspen Plus Help.....	4
General.....	5
➤ Starting Aspen Plus V8.0 in Windows.....	5
➤ Starting Aspen Plus → Selecting a Template.....	5
➤ Go to Setup to enter title and select units	6
➤ Simulation and Properties Environments	6
➤ Aspen Plus Shortcut Keys	6
➤ Completing Input Specifications	7
➤ How to automatically assign a block/stream name with a prefix.....	8
➤ How to change the unit of measure.....	8
➤ How to display stream results on the flowsheet	9
➤ How to change the name of a stream/block?	10
➤ Open the Control Panel prior to running a simulation	10
➤ Saving Checkpoints.....	11
➤ How to rotate and resize a block?.....	11
➤ How to arrange windows in Aspen Plus.....	11
➤ How to select a unit operation	12
➤ How to select the stream type.....	12
➤ How to specify a pressure drop	13
➤ How to use the 'Next' button	13

- Improving the Appearance of the Flowsheet 14
- Columns..... 14
- Convention for stage numbering 14
- Improve convergence by doing preliminary mass balances..... 15
- Equipment Geometry 15
- Vessel Geometry 15
- Dynamic Simulation..... 15
- Types of Dynamic Simulations 15
- Reactors..... 16
- Modeling batch reactors in steady state simulations..... 16
- Copyright..... 16

AspenTech Customer Support

➤ **Support Center**

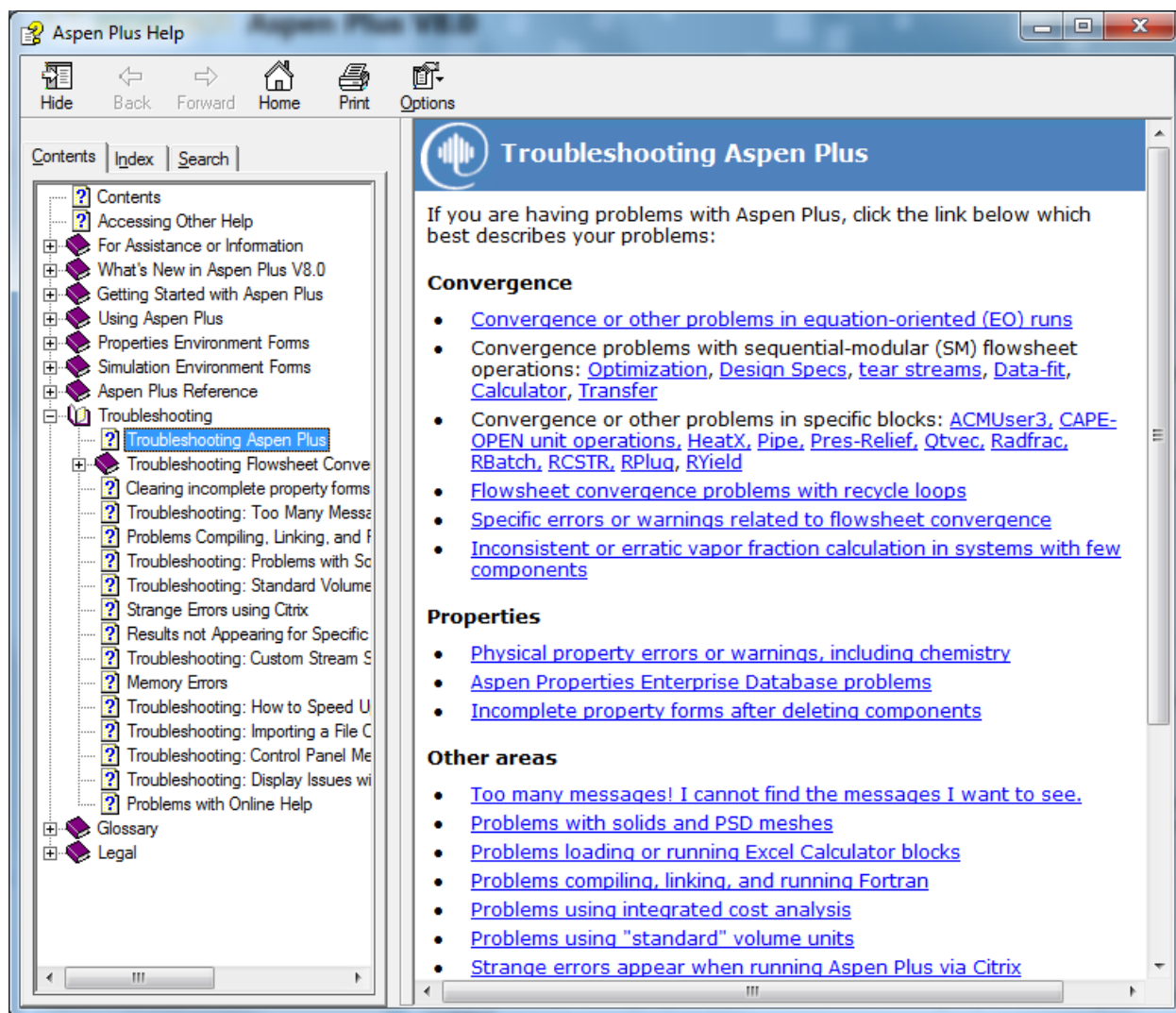
Visit the AspenTech Customer Support center at <http://support.aspentech.com> for technical support, self-help knowledgebase, software patches, upgrades and customer care services

The screenshot shows the AspenTech Support Center website. At the top left is the AspenTech logo and the text "Support Center". To the right are links for "Support Home" and "Training Home", a search bar, and icons for Email, Chat, and Phone. A left-hand navigation menu lists various options like "Site Access", "Find the Answer", "Need Help?", "Communities", and "Support Contacts". The main content area features a header "AspenTech Customer Support" with the tagline "Your Gateway for Award Winning Support!". Below this is a paragraph describing the support services. A navigation bar includes "Product Library", "My Support", "Knowledge Search", "Training Resources", and "News and Events". The "Knowledge Search" section contains a dropdown menu for "Choose product ..." and a list of frequently browsed products with links such as "Aspen Basic Engineering", "Aspen Capital Cost Estimator", "Aspen DMCPolus", "Aspen Flare System Analyzer", "Aspen Fleet Optimizer", "Aspen HYSYS", "Aspen InfoPlus 21", "Aspen PIMS", "Aspen Plus", "Aspen Process Explorer", "Aspen Shell & Tube Exchanger", and "SLM". An "Advanced Search" button is also present. Below the search section is a "Check out AspenTech Training in a location near you!" section with a grid of 12 images representing different global locations: Anchorage, AK; Calgary, Alberta; Denver, CO, USA; Brussels, Belgium; Aberdeen, Scotland; Frankfurt, Germany; Beijing, China; Seoul, Korea; Pune, India; Shanghai, China; Perth, Australia; and Brisbane, Australia. On the right side of the page, there are several vertical panels: "Welcome New Users" with links for "Getting Started", "Premier Support", "Premier Plus Support", and "Site Tour and Help"; "What's New?" with a "V7.3 release now available" announcement and links for "How to order", "Engineering", "Manufacturing", "Supply Chain", and "More Release News..."; "Support Resources" with links for "e-Bulletins", "Customer Services Guide", "Support Offerings", "Support Performance Reports", "Customer Survey Results", "Customer Support Brochure", and "Privacy Policy"; "Contact Us" with text "Phone, email or chat with one of our education experts" and a "Continue..." link; and a "SSPA star+award BEST PRACTICES" logo, along with another "SSPA star+award" logo and an "SCP" logo.

➤ Aspen Plus Help

Aspen Plus has online Help, prompts, and expert system messages to give you information as you use the program. To access Aspen Plus Help press F1. In Aspen Plus help you can search for a particular topic that you would like help on, or you can click on an item in Aspen Plus and then click F1. This will immediately open Aspen Plus Help to the section concerning what you had clicked on.

In Aspen Plus Help you can find what you need help with by navigating through the Contents, the Index, or you can use the Search function. Aspen Help contains a broad range of information, from very basic getting started information, to in depth details about convergence methods.



General

➤ Starting Aspen Plus V8.0 in Windows

1. Go to the Windows **Start** menu and select **All Programs**.
2. Find the folder labeled **AspenTech**
3. Within the **AspenTech** folder find the subfolder labeled **Process Modeling V8.0**
4. Select the **Aspen Plus** folder
5. Select **Aspen Plus V8.0** to open the **Aspen Plus V8.0** user interface

Tip: To open an existing file quickly, just double-click the file from Windows Explorer.

➤ Starting Aspen Plus → Selecting a Template

General Template: Use the General Template for a wide range of vapor-liquid applications

Petroleum Template: The Petroleum Template defines defaults commonly used in the petroleum industry. It is also appropriate for petrochemical applications such as ethylene plants, which involve petroleum fractions as feedstocks.

Gas Processing: The Gas Processing Template defines defaults commonly used in the gas processing industry. For example, stream flows are standard vapor volume flows in millions of standard cubic feet per day or millions of standard cubic meters per hour.

Air Separation: Use the Air Separation Template for cryogenic air separation simulations.

Chemicals: The Chemicals Template is suitable for a wide range of chemical (non-electrolyte) applications. It is also appropriate for petrochemical applications, such as MTBE production and VCM plants, where feedstocks are defined in terms of chemical components.

Electrolytes: The Electrolytes Template is used for applications that require rigorous modeling of electrolyte species. You can use this template in any application where electrolytes are important.

Specialty Chemicals: The Specialty Chemicals Template is for specialty chemical applications, with or without electrolytes.

Pharmaceuticals: The Pharmaceuticals Template uses NRTL as the default base property method. You can use this method for two-liquid-phase systems, or vapor and liquid systems at low pressure.

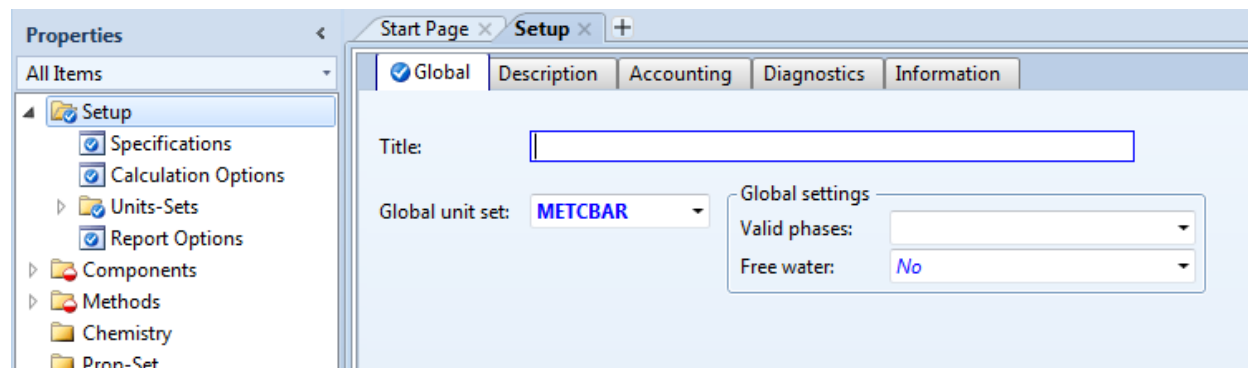
Hydrometallurgy Template: Use the Hydrometallurgy Template to model electrolytes and solids in hydrometallurgical processes.

Pyrometallurgy: Use the Pyrometallurgy Template to model high temperature metals processing applications.

Solids: Aspen Plus can model solids anywhere in a process flowsheet. A wide range of unit operation models for solids handling equipment is available including crystallizers, crushers, screens, and cyclones.

- Go to Setup to enter title and select units

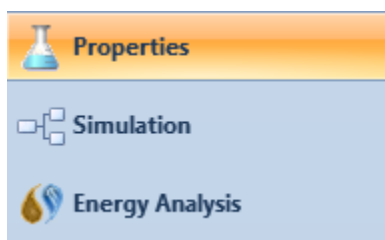
When creating a new simulation, it is a good habit to first navigate to the Setup form.



In this form you can enter a project title as well as choose which global unit set you would like to use.

- Simulation and Properties Environments

In Aspen Plus V8.0 there are three separate environments; **Simulation**, **Properties**, and **Energy Analysis**.



Within the **Properties** environment you can select components and methods, define chemistry, create property sets, perform physical property analyses, and retrieve experimental data sets. Within the **Simulation** environment you can create a flowsheet and run a simulation using the components and methods defined in the properties environment. You can use the **Energy Analysis** environment to explore variations on your plant model to reduce energy costs. Aspen Energy Analyzer examines your plant and suggests changes that can reduce your energy costs.

- Aspen Plus Shortcut Keys

Aspen Plus Help	F1
What's This Help	Shift + F1
View Page Breaks	F2
Reset Page Breaks	Shift + F2
Manage Views	F3
Next Input	F4
Run	F5
Step	Ctrl + F5
Reinitialize	Shift + F5
Control Panel	F7

Check Results	Ctrl + F8
Settings	Ctrl + F7
Stop Points	F9
Zoom Full	Home
Zoom In	Page Up or mouse wheel up
Zoom Out	Page Down or mouse wheel down
Hide/Reveal Model Library	F10
Copy	Ctrl + C
Cut	Ctrl + X
Delete	Delete
Paste	Ctrl + V
Rename	Ctrl + M
Select All	Ctrl + A
Align Blocks	Ctrl + B
Center View	Ctrl + Home
Exchange Icon	Ctrl + K
Hide ID	Ctrl + H
Reroute Streams	Ctrl + J
Results	Ctrl + R
Stream Results	Ctrl + D
Unplace Block or Group	Ctrl + U
Export File	Ctrl + E
Import File	Ctrl + T
New File	Ctrl + N
Open File	Ctrl + O
Print File	Ctrl + P
Save File	Ctrl + S
Close Active Window	Ctrl + F4
Close Aspen Plus	ALT + F4

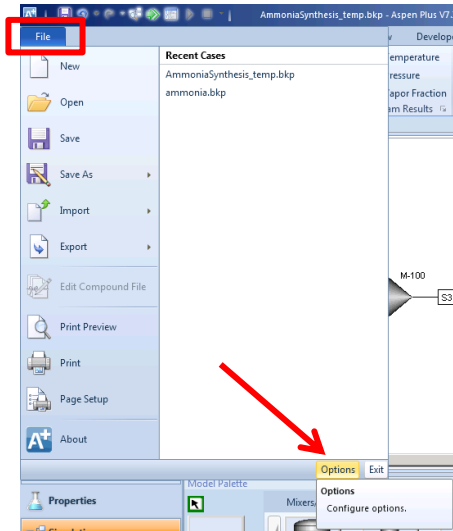
➤ Completing Input Specifications

1. Define Components (conventional components, petroleum assays, and pseudocomponents).
2. Define Methods. These methods are used along with data to calculate physical properties.
3. Define the simulation flowsheet (blocks, streams, and connectivity) in the main flowsheet window.
4. Define feed stream compositions, flows, and conditions.
5. Define blocks (design and operating conditions for each unit operation block in the flowsheet).
6. Define any reactions (define electrolytes chemistry, specify reaction kinetics for use in reactor and reactive distillation models).
7. Specify convergence options, user defined tear streams, convergence blocks, and sequences.
8. Add flowsheeting options (additional constraints and specifications to the flowsheet model).
9. Specify Model Analysis Tools (sensitivity studies, optimization runs, data-fit problems)

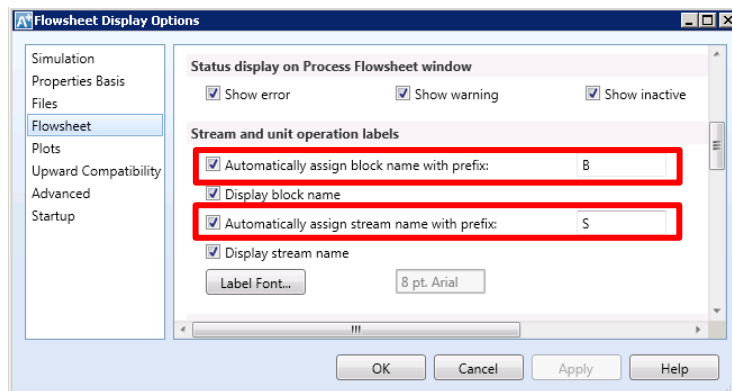
10. Specify Report Options (Specify options for generating the Aspen Plus report).

➤ How to automatically assign a block/stream name with a prefix

1. In the Aspen Plus V8.0 user interface go to File>>Options

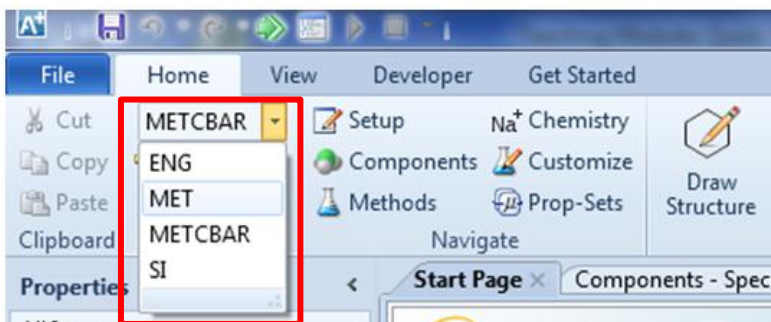


2. In the flowsheet display options check the boxes under 'Stream and unit operation labels' and enter the desired prefix

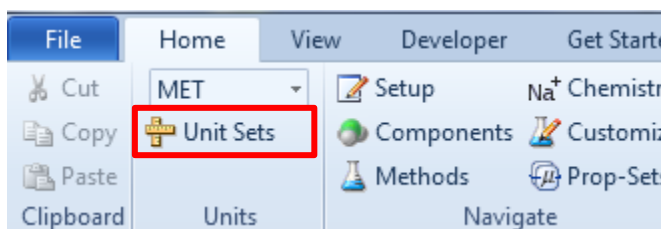


➤ How to change the unit of measure

1. Aspen Plus provides the following global unit sets: International system units (SI), English engineering units (ENG), and Metric engineering units (MET). Find the units selector in the 'Home' ribbon
2. Select a unit set

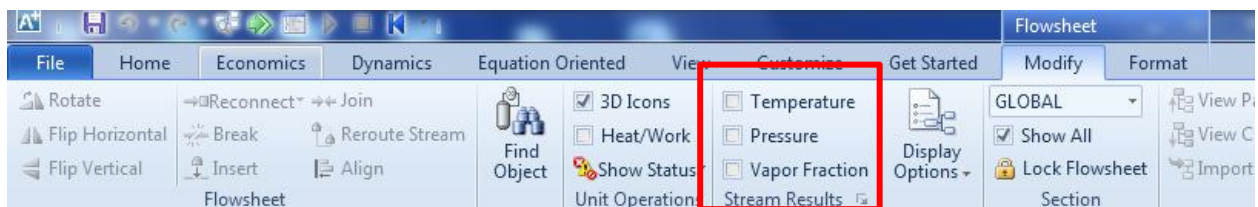


3. Click on 'Unit Sets' to create your own custom unit sets

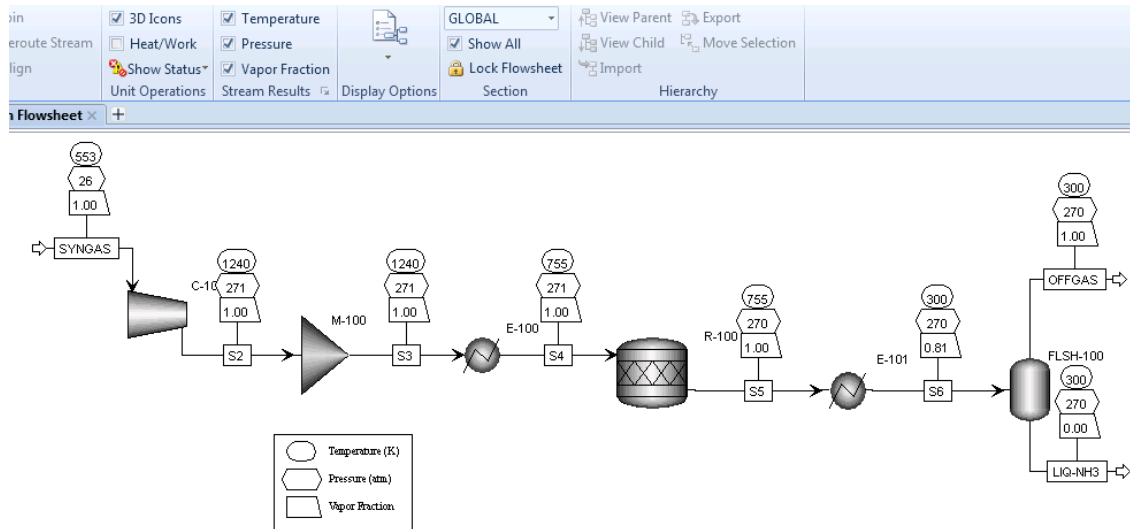


➤ How to display stream results on the flowsheet

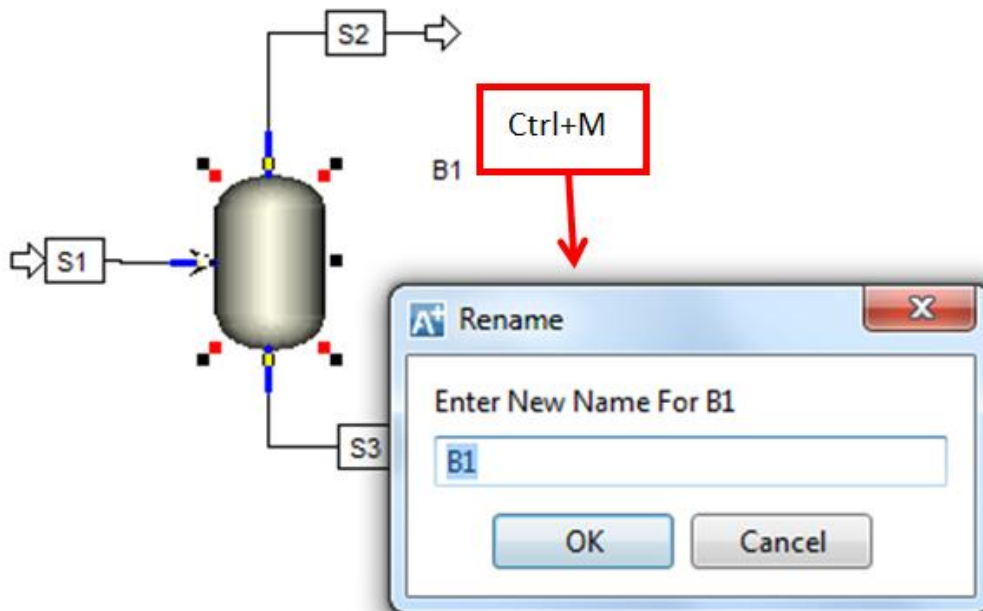
1. While on the main flowsheet, find the 'Modify' ribbon and click 'Stream Results'



2. Check boxes to display temperature, pressure, vapor fraction, heat/work, mole flow rate, mass flow rate, and volume flowrate. When you run a simulation, the values for the selected results will be displayed on the flowsheet, as shown below.



- How to change the name of a stream/block?
Select a block or stream and press Ctrl+M



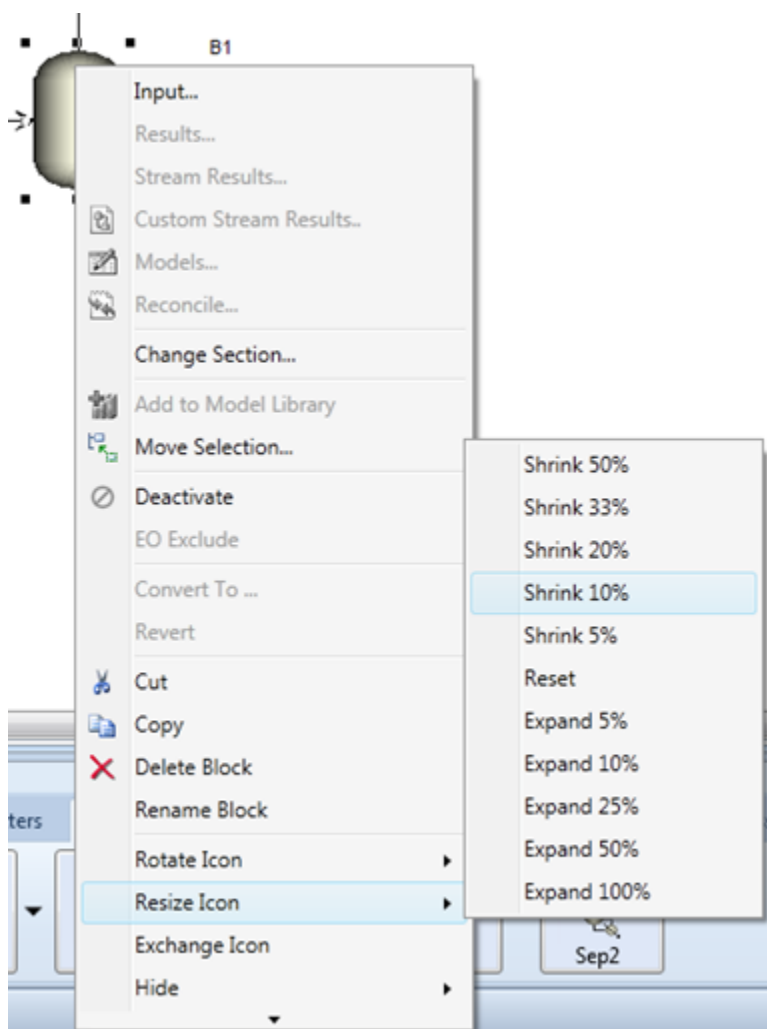
- Open the Control Panel prior to running a simulation
It is a good habit to develop to open the Control Panel before running a simulation. The Control Panel displays errors, warnings and diagnostic messages from the calculations. This can be very helpful when trying to converge a simulation.

➤ Saving Checkpoints

Save 'Checkpoints' as you go. Once you have a working section of the flowsheet, save the file as a .bkp with a new file name so you can revert to an earlier checkpoint and a known state.

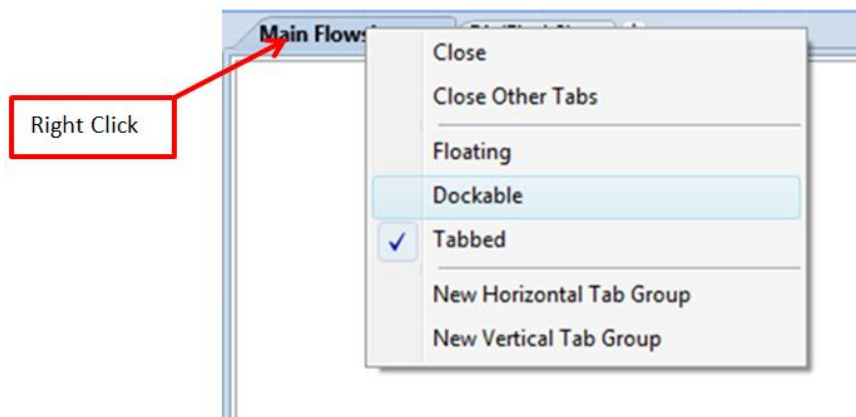
➤ How to rotate and resize a block?

Right click on a block and select 'Rotate Icon' or 'Resize Icon'



➤ How to arrange windows in Aspen Plus

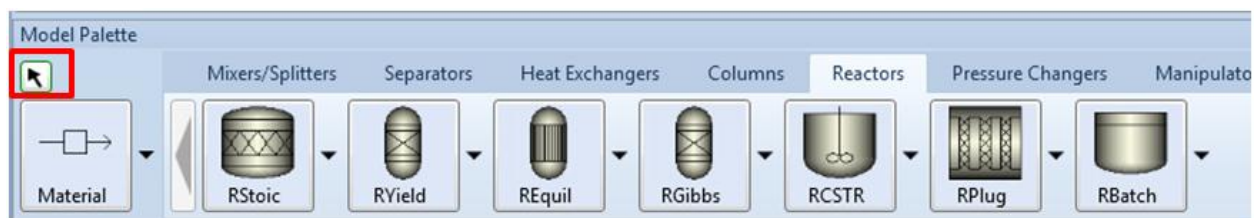
You can change the way the windows in Aspen Plus are displayed by right clicking on a tab and selecting Floating, Dockable, or Tabbed. You can also click and drag the tabbed window into a dockable position; top, bottom, left, right, center.



➤ How to select a unit operation

To select a unit operation model:

1. Click the tab that corresponds to the type of model you want to place in the flowsheet.
2. Click the unit operation model on the sheet.
3. To select a different icon for a model, click the down arrow next to the model icon to see alternate icons. The icon you select will appear for that model in the Model Palette.
4. When you have selected a model, click the flowsheet where you want to place the model. When you place blocks this way, you are in Insert mode. Each time you click in the Process Flowsheet window, you place a block of the model type that you specified. To exit insert mode and return to select mode, click the Cancel Insert Mode button on the upper left of the Model Palette or right click on the main flowsheet.

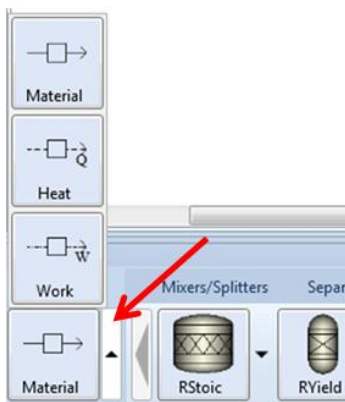


Tip: You can also place blocks in your flowsheet by dragging and dropping from the Model Palette to the main flowsheet window.

➤ How to select the stream type

To select stream type:

1. Click the down arrow next to the stream type displayed in the Model Palette.

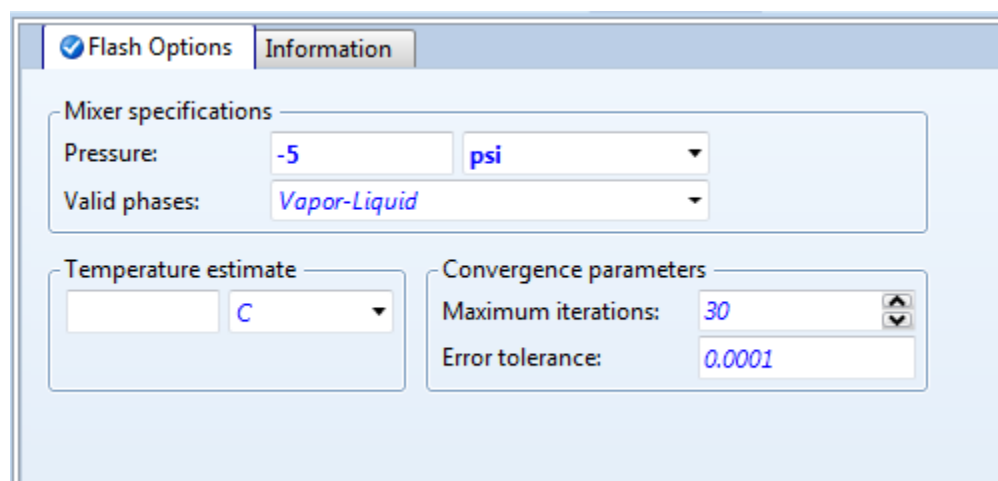


2. Select the stream type you want to place in the flowsheet (Material, Heat, Work)
3. Once a stream type is selected, simply click the ports on the flowsheet where you want to connect the stream.

Tip: When placing blocks and streams, the mouse pointer changes to the crosshair shape, indicating Insert Mode. After placing each block or stream, you remain in insert mode until you click the cancel insert mode button in the upper left corner of the Model Palette or by right clicking on the main flowsheet. You can also undock the Model Palette and use it as a floating palette.

➤ How to specify a pressure drop

When specifying operating conditions for different units, (such as a heat exchanger, reactor, mixer, etc.) you can specify a pressure drop by entering a negative pressure in the pressure field.



If you enter a number greater than zero, this value will be the operating or discharge pressure. If a number less than or equal to zero, this value will be the pressure drop over the block.

➤ How to use the 'Next' button

Click the Next button to move to the next input form or menu at any point in Aspen Plus. The Next button is on the Home ribbon, shown below. You can also access the Next feature by pressing F4.



Use Next to:

- Guide you through the required and optional input for a run by displaying messages
- Tell you what you need to do next
- Ensure you do not make incomplete or inconsistent specifications, even when you change options and specifications you have already entered

➤ Improving the Appearance of the Flowsheet

You can change the flowsheet layout at any time to improve the appearance of your drawing.

You can move:

- Blocks
- Block IDs
- Streams
- Stream IDs
- Stream connection locations

You can also:

- Hide block and stream IDs
- Reroute streams
- Align blocks
- Change block icons
- Resize icons
- Rotate icons

Columns

➤ Convention for stage numbering

The numbering convention in Aspen Plus is that the condenser is stage 1 and the stage number increases down the column. For example, for a column with 10 stages the condenser will be stage 1 and the reboiler will be stage 10.

- Improve convergence by doing preliminary mass balances
 - If you can give Aspen Plus a better initial guess for operating parameters, such as distillate to feed ratio or reflux ratio, it will solve the simulation faster

Equipment Geometry

➤ Vessel Geometry

Vessel Type:

- Instantaneous: Default vessel type for most vessels –requires no input for vessel geometry
- Vertical
- Horizontal

Vessel Geometry:

- Head type: Elliptical, Hemispherical, Flat
- Length
- Diameter

	FLAT	ELLIPTICAL	HEMISPHERICAL
VERTICAL			
HORIZONTAL			

Dynamic Simulation

➤ Types of Dynamic Simulations

Flow Driven:

- Feed flowrate and pressures are specified
- Flowrate is not controlled by pressure differences
- Useful for a first approach of the dynamic behavior of the process
- Good for liquid processes (usually good flow controllability)

Pressure Driven:

- Feed and product pressures are specified
- Flowrate results from pressure difference
- A bit more complex to specify (because you need to balance the pressures in Aspen Plus with valves, pumps, ...) but more rigorous

Reactors

- Modeling batch reactors in steady state simulations
 - Aspen Plus models batch reactors in steady state, so a real-world plant running batch reactors would need several reactors in parallel with staggered start and end times to approximate steady state operation

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