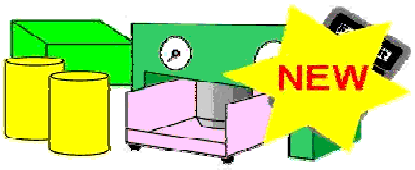
FoamKit 3000



FoamKit 3000 - our latest 32 bit software package for Single Block / Boxfoam processes.

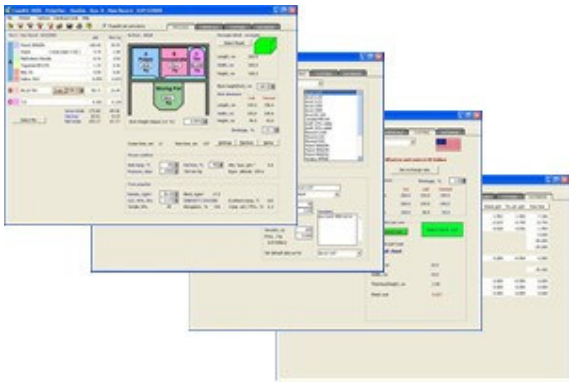
Based on powerful Microsoft Access™ database which contains all the formulation records, chemical information, machine configurations, chemical suppliers, etc.
Virtually no size limit - database expands to accommodate any new information. Huge capacity for thousands of formulation records and chemicals.

Effortlessly calculate all your **Single block** process and formulation needs with - **FoamKit 3000**

FoamKit 3000 provides a full screen, user friendly interface to combine ease of use with a powerful calculation ability.

Comprises four main screens:

- **Process**
- **Chemicals**
- **Costing**
- **Database**



Up to 25 chemical streams

The formulation table will accommodate up to 25 chemicals and automatically adjusts it's size to suit. Chemicals are arranged in groups of the same type – all polyols together, etc. Each group in the formulation table can contain multiple chemicals – even 10 polyols if you want!

Costing

Calculates mix cost, foam cost. Calculates foam cost after removing trim. Rectangular or round block. Select country and currency - large list of countries to select from. The costing can be exported as a PDF file.

FoamKit 3000 calculates –

- Foam properties – density, hardness, tensile strength, elongation, compression set - for the current formulation
- Effect of atmospheric conditions on foam properties
- Formulation for a required density and hardness
- Process conditions - Cream time, rise time, ambient temperature, relative humidity, pressure
- Output values for each chemical stream
- Mix temperature and viscosity
- Exotherm temperature (gives warning if >165°C)

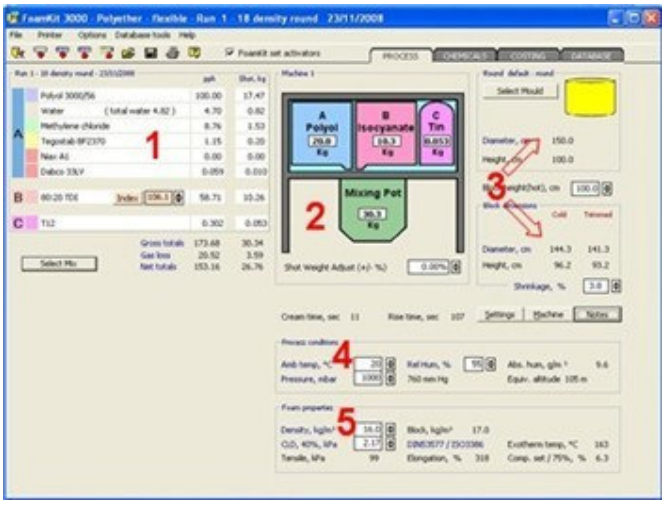
Run Sheet - PDF format

Any formulation can be exported as a Run Sheet PDF file which can be viewed or printed out using the free issue Adobe Acrobat viewer. The widely used PDF format allows Run Sheets to be easily transfered to another PC. E-mail your Run Sheets to another factory location.

User preferences

Select metric or imperial units / temperature in Centigrade or Fahrenheit / hardness test method.

Process Screen



The process screen is the opening screen that is displayed when FoamKit 3000 is started.

The process form is used for viewing and editing formulations, process conditions and foam properties.

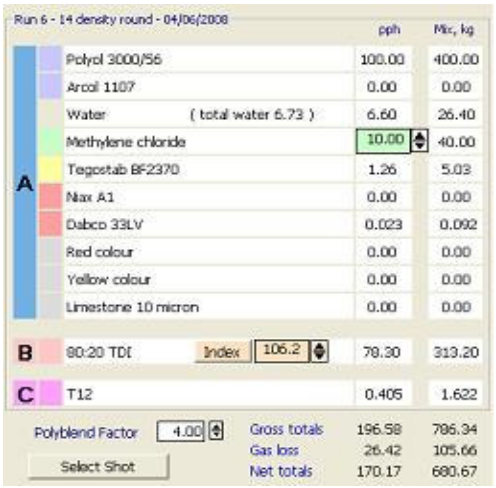
On the left side is the formulation table and on the right is the machine graphic, process data and foam properties data.

The process screen displays the following features:

1. **Formulation table**
2. **Machine graphic**
3. **Mould / Block dimensions**
4. **Process conditions**
5. **Foam properties.**

Formulation table

The formulation table consists of 3 columns:
Chemical name
Pph (parts per 100 of polyol)
Output - **mix mode** (Mix, Kg or Mix,lb) - **shot mode** (Shot, Kg or Shot, lb)



Formulation table shows chemical streams - chemicals of same type together in colour coded groups

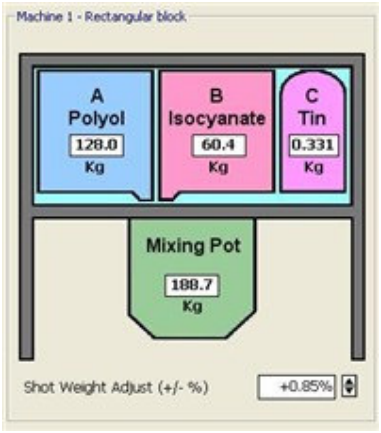
Chemical quantities expressed as pph (parts per hundred of polyol, by weight) and Output (Mix / Shot, Kg or Mix / Shot, lb - user preference).
(Switch between Shot and Mix values by clicking the 'Select Shot/Mix' button)

Mix values may be changed by adjusting the Polyblend factor.

Table capacity up to 25 chemical streams. As chemicals are added, the table expands accordingly.

Isocyanate index may be adjusted or, alternatively, isocyanate pph value can be inserted and the index is calculated and displayed

Machine Graphic



The machine graphic displays the name and block type of the machine for the current process.
Shot weight values are shown for the three blends, **Polyol(A)**, **Isocyante(B)**, **Tin(C)** and the weight of the combined blends in the **Mixing Pot** .

Shot weights can be adjusted from below this graphic to bring the calculated weights in line with actual production values found from experience.

A warning box will flash red if any weights are outside the limits that have been set for the machine.

The current machine can be changed or edited by clicking the Machine button on the process screen.

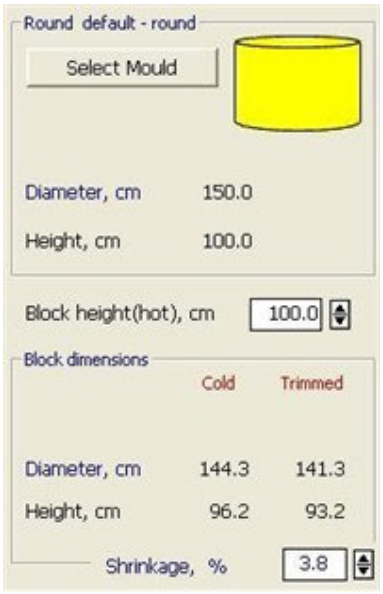
Select Machine

This form enables you to Select a different machine, add a new machine to the database.

You can edit the current machine name and adjust it's minimum / maximum weight limit values.

Any unused machines can be removed using this form.

Mould / Block dimensions



The dimensions of the current mould (round or rectangular) are displayed in the top frame.

The mould dimensions can be edited by clicking the 'Select Mould' button. (see below)

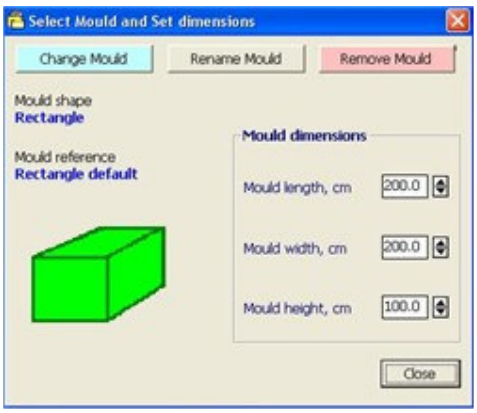
The Block height can be user adjusted (not exceeding the current mould height).

In the frame beneath, the Cold and Trimmed block dimensions are displayed. The foam shrinkage(%) can be adjusted for each formulation. It's initial default value is set to 3.5%

Select Mould

This form enables you to Select a different mould, add a completely new mould to the database or edit the current mould name and dimensions.

Any unused moulds can be removed using this form.



Process Conditions

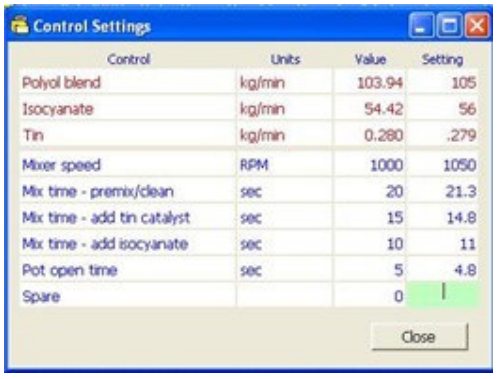
Cream time and Rise time are calculated and displayed.

The following controls are displayed and can be adjusted:

- **Ambient temperature**
- **Relative humidity**
- **Pressure** (normally the atmospheric pressure, or set as the foaming pressure for a variable pressure process).

Absolute humidity and altitude corresponding to the given atmospheric pressure are calculated and displayed.

Control Settings



All values and settings saved in this form are included in a table on the PDF Run Sheet.

These settings are not used in any way by FoamKit and are provided only for user reference.

Clicking on the 

button on the Process screen opens the Control Settings form.

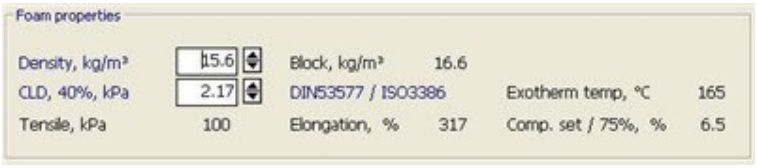
The shot weights for streams Polyol, Isocyanate and Tin are displayed with an empty column into which any user settings can be entered.

FoamKit also enables you to add your own settings that may be added to the Run Sheet (ie. mixer speed, process times, etc.)

There are 6 user defined rows whose default values are:

- **Mixer speed**
- **Mix time** - premix/clean
- **Mix time** - add tin catalyst
- **Mix time** - add isocyanate
- **Pot open time**
- **Spare**

Foam properties



When changes are made to the formulation, foamKit calculates their effect on the foam properties and displays:

- **Density** - foam piece and block density
- **Hardness** - ILD or CLD

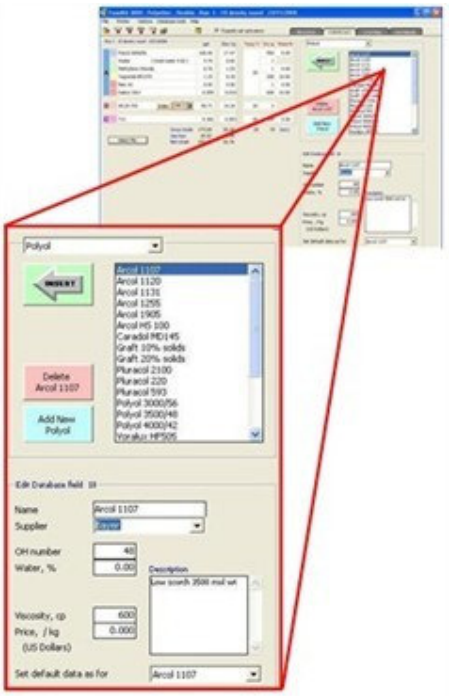
These values are user adjustable - Enter new density and hardness values and FoamKit 3000 will calculate a formulation.

Also displayed are:

- **Tensile strength** - ISO 1798
- **Elongation at break** - ISO 1798
- **Compression set** - ISO 1856 - 75% compression, 70 °C (158 °F) , 22 hours
- **Exotherm temperature** - a warning flashes on and off if the calculated exotherm temperature exceeds 165 °C (329 °F)

Chemicals

The Chemicals screen displays the formulation table together with the lists of chemicals currently in the database together with their properties.



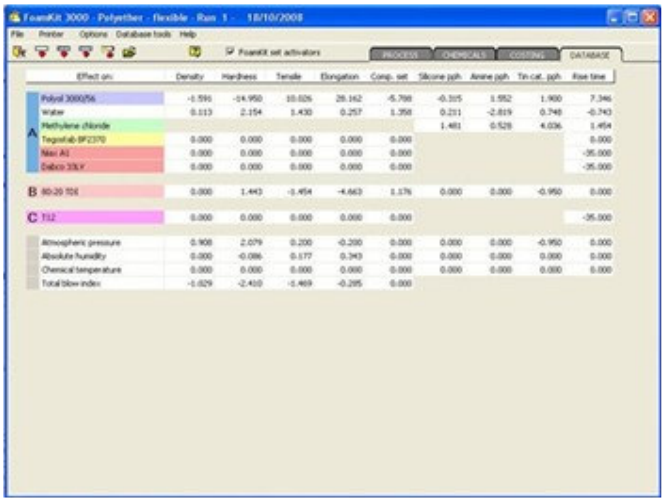
Chemical types

Polyol	Pigment dispersion
Isocyanate	Filler powder
Water	FR additive
Blowing agent	Process additive
Silicone	Cross-linker/chain extender
Amine catalyst	Plasticiser
Tin catalyst	Miscellaneous

For each chemical type the list of available chemicals of that type are listed. Chemical properties can be edited and new chemicals added. There is **no limit** to the number of chemicals which can be held in the database.

Chemicals can be inserted into (or removed from) the formulation table.

Database

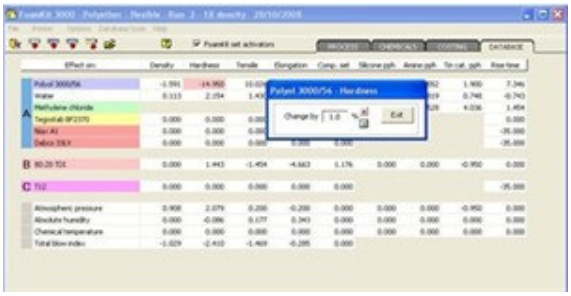


Calculations of density, hardness, other properties and process parameters are carried out by the FoamKit 3000 calculation software engine using the mathematical technique of ***Logarithmic Regression*** .

Each program variable and the factor causing changes in that variable has a Regression Constant associated with it. These values are displayed in the database table.

Regression Constants

To make changes in the Regression Constants you simply double-click the appropriate cell and a frame is displayed, allowing you to increase or decrease the value by percentage.



Costing

FoamKit 3000 calculates all your Chemical costs (per Mix and Shot), Foam costs and Sheet costs.

Chemical Costs

Enter a price for each of the chemicals in the formulation and Foamkit calculates all your costs, Shot and Mix

Automatically updated every time you enter a new value.

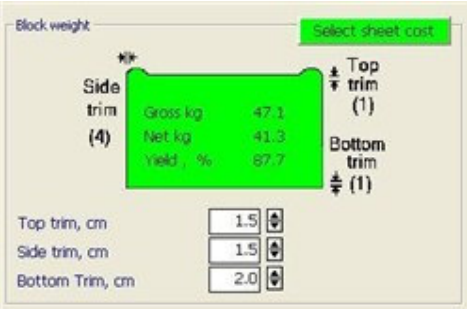
Costing table also displays the cost percentage of each chemical.

Price/kg	Cost/shot	Cost %
3.128	86.62	43.7
0.000	0.00	0.0
1.330	3.68	1.9
2.110	0.73	0.4
3.280	0.00	0.0
2.789	0.02	0.0
4.897	106.18	53.5
10.650	1.20	0.6
	198.44	

Block weight / Trim loss

The blocks Gross and Net weights are displayed, along with the Yield as a percentage.

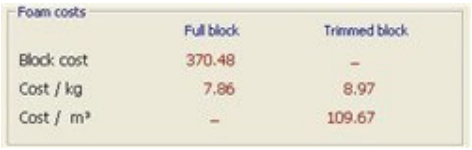
Top, bottom and side trims can be adjusted by the user. These adjustments are reflected in the foam cost claculations.



Foam cost

Foam costs are expressed as:

- **Block cost** (full block)
- **Foam cost per Kg/lb** (from total block cost)
- **Foam cost** - trimmed block (after removing skins)
- **Foam cost per unit volume** (cubic metre/cubic foot)



Clicking on the **'Select sheet cost'** button switches to the current sheets values.

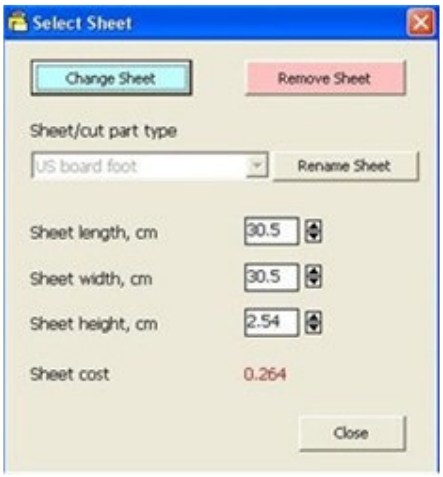
Sheet cost

The name, dimensions and cost of the currently sheet selected sheet are displayed in this section.

The current sheets dimensions or name can be edited or you can change the current sheet / add a new sheet by clicking the 'Select sheet type' button.

Sheet changes

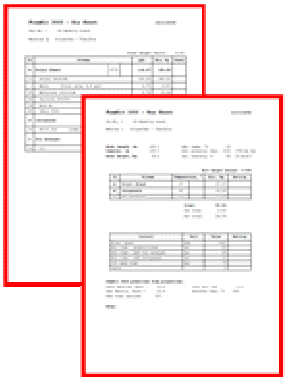
This form is activated from Sheet costs 'Select sheet type' button and provides all your sheet editing functions.



For sheets cut from round blocks, the maximum sheet length can be quickly calculated by clicking the 'Set Max' button.

The sheet cost is automatically updated with any changes to the sheet dimensions.

Mix sheet / Run sheet



The Mix sheet provides a check list with all the chemicals sub divided into blends:

- **A** - Polyol blend
- **B** - Isocyantes
- **C** - Tin catalysts

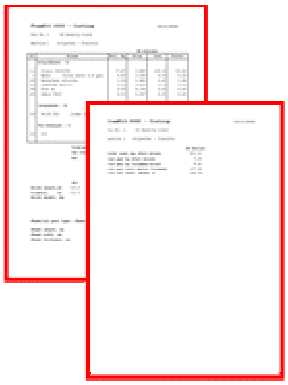
The temperature for each blend and all pph (parts per hundred) and Mix weight (Kg or lb) for each individual chemical in the formulation are displayed allowing them to be checked off as they are added.

The Run sheet displays all the values for the individual block run:

- Block dimensions / weight
- Process conditions
- Shot values for each blend
- Control settings
- FoamKit 3000 predicted foam properties
- User Notes

The Run sheet can be saved and printed as required, even sent to another location by e-mail

Costing Sheet



The costing sheet displays, and saves, all your costing details in PDF format.

The cost sheet includes:

- Chemical costs (per shot or mix)
- Block dimensions / weight
- Sheet dimensions
- Block costs - Full block, Trimmed block
- Sheet costs

The Cost sheet can be saved and printed as required, even sent to another location by e-mail