

ChemMaths features (V15 dated 12/12/2013 latest versions have further features, enhancements ...)

Contains numerous engineering tools to improve your work life, 3000+ data of chemical, mathematical, general scientific information. Solves hundreds of equations, 200+ unit conversions and much more see below for further features listing.

Solve numerous physics, electrical, mechanical, engineering equations etc. Over 300 equations. Contains all of EquationsPro equation solvers etc.

Chemmaths contains data on over 3000 chemical compounds. Contains all of the information within DataPro.

Draw, rotate, manipulate 2D/3D graphs. Contains many predefined mathematical graph equations i.e. straight lines, log graphs etc....

Contains numerous information charts containing maths, chemical, general information.

Allows for pipe flow processes to be simulated. Vessels, pumps, valves can be added and controls manipulated for various situations.

Contains standard calculator functions and many commonly used constants in the science/engineering field.

Units : Si Common Units Convert, Si Mass Units Convert, Plane/Time/Temp Units Convert : Contains 20+ categories of unit conversions i.e. Area, Volume, Pressure, volume flow etc. Contains 200+ units for conversion to their SI equivalents. Units can be converted imperial or SI. Converts mass transfer and viscosity units. A total of 30+ units in all. Converts angular, Temperature and Time units.

Data – Chemical

Periodic Table : Contains information on most of the elements of the periodic table. Atomic No., Mol. Weight, Density, Melting Point, Boiling point, Specific heat, Neutrons, Electronic Structure.

Chemical Inorganic and Organic compound Properties : Find information on over 2000 Chemical, Inorganic and Organic compounds. i.e. Details on the compounds, Formula, Molecular Weight, Compound Colour, Compounds Form, Specific gravity etc..

Critical Constant Calculations : Allows the prediction through calculation of the critical constants of compounds. The method employs using Lydersen's method.

Gas Diffusivities /Liquid Diffusivities Calculations : Allows for the prediction of gas and liquid diffusivities. The prediction is based upon the group contributions of each individual component of the compound.

Physical Chemical Data: Contains Details on 481 organic/inorganic compounds. Data includes : Molecular Weight, Normal Freezing point, Normal boiling point, Critical temperature, Critical Pressure, Critical Volume, Liquid Density, Heat of Vaporisation, Liquid Viscosity, Standard enthalpy of formation, Standard Gibbs energy of formation, ideal heat capacity, vapour pressure. Allows for temperature changes to occur in calculating certain properties. i.e. Heat capacity.

Prediction of Liquid Heat Capacity Calculations : Allows for the prediction of Liquid Heat Capacity of compounds. The prediction is based upon the group contributions of each individual component of the compound

Solids/Liquids/Gases Properties : Information on 101 solids compounds, 22 gas compounds, 24 liquid compounds. Density, melting, boiling point temperatures, conductivity, specific heat values.

Surface Tension Calculations : Allows the prediction of surface tension values for various organic compounds. It uses the Sugden equation and group contribution values.

Thermodynamic Data : Data on 376 compounds. Data includes compound state, Enthalpy, Gibbs free energy, Entropy, Heat capacity at standard conditions.

Thermal Conductivity Data : Calculates the thermal conductivity of liquids and gases using the Webber equation.

Viscosity Calculations : Calculates Viscosities of liquids by considering the components structure. Two methods can be employed Method 1. using the Arrhenius equation, Method 2. Souders' equation. The

program also allows viscosities of Binary Mixtures to be calculated.

Informational charts : Is a bit map viewer of information charts. Contains over 30 bit maps of information from general maths to chemical information of preparations & reactions of Alkanes, Alkenes unit conversions...etc.....

Equation Solvers : Solve 390 + equations ranging in the following Topics :-

Batch Reaction Equations

Condensers Equations

Decanters Equations

Design of Thin-Walled Vessels under internal pressure Equations

Design of Vessels subjected to external pressure Equations

Dimensionless Number Equations

Distillation Equations

Electrical Equations

Heat Equations

Heat Transfer Data. Laminar Flow Equations

Heat Transfer Data, Turbulent Flow Equations

Heat Transfer, Exchangers Equations

Heat-Transfer factor, j_h

Manufacturing Equations

Mechanical Design, Stress Equations

Membrane Stress Equations

Physics Equations

Pipes Equations

Vessels Design Subjected to combined loading Equations

Vessels/Tanks/pumps/Compressor Equations

Force Diagram Solvers : Allows calculation of the forces, angles and distances in various force related problems. From set structures to forces in any direction. Eight separate items. Includes drawing of the objects.

Maths Solvers :

Area/Surface/Volume : Calculates areas and volumes of over 35 shapes. Rectangles, circles, cylinders, pyramids, Annulus, sphere etc..... Includes a drawing representation of the objects.

Anti/Derivative : Find the Anti. and Derivative of 39 common functions.

Geometry : Calculate variables of Lines, Circle, Hyperbola equations. Includes drawing of the objects.

Interest : Interest Equations solved : compound, simple and Annuity interest and also deposit calculations. Variables of each equation can be solved for.

Laplace-trans : Contains 25 laplace-trans. formation equations to solve for.

Sequences & Series : Find the sum, terms of arithmetic, Geometric series. Calculate Permutations, Combinations. All variables of each equation can be solved for.

Statics : Allows the calculation of the centre of gravity and moments of Inertia for various objects. Includes drawing of the objects.

Triangles : The lengths, angles and areas of triangles can be solved for using either the sine or cosine rule. Any length or angled can be easily solved for.

Matrices : Add, Subtract, Multiply and find solutions to matrices up to 10x10 dimensions (only square matrices can be used)

Graph : Graph Presentations Drawer. Allows data to be displayed in 12 types of 2D/3D graphs. i.e. line, pie, 2d/3d barThe graphs can be easily manipulated in different presentation formats (titles, legends, axis, background etc. can all be manipulated), 3D graphs can be rotated, graphs can be printed, copied to other programs (through the Windows clipboard). Statistics of the graphs be easily displayed (max., min, regression lines etc..), data can entered manually or through a text file or

through the Windows Clipboard or generated using Graphs equations (see Below) or Excel. The data of the graphs can be saved.

Chemical Calculations :

ChemDesigner - Drawing : Chemical display/drawing package. Enables drawing of chemical compounds. Contains over 60 predrawn structures & symbols. Files can be saved and printed out.

Chemical – Stoic.: Calculates the mass mole of the compounds of a chemical equation, using the given information. Uses the Stco-metric coefficients, reaction consumption to calculate the required/remaining amounts of compounds once the reaction occurs.

Dilution Calculations : Calculates percentages and mass quantities of a two substance, two input and one exit stream system. The system enables calculation of unknown amounts of the mass and percentage of one or two streams. For instance the mass of stream 1 and the percentage of stream 3 can be calculated with all the other amounts known or the mass and percentage of stream 1 maybe determined or any single quantity can also be determined.

Distillation – Smoker : Calculates the No. of stages in a distillation column, using the Smoker method. The method involves using a quadratic equation to solve for each stage, hence values entered must be solvable by using this method or an error result will be displayed

Heat Calculations : Calculates the sensible heat and total heat of a process. There can exist any multitude of feed and product streams and heat, phase changes to the system. The results are all displayed in a grid which can saved to a text file.

Mole Calculations : Calculates/converts the compositions of compounds expressed in W/W%, M/Vol%, VOL/VOL% fractions. Calculates mass, mol fractions, density, volumes, percentages, concentration and finds totals.

Prosim – Simulator : Prosim is a customizable process design package. Which allows the user to design a process simulation situation. It currently incorporates 5 process items which controls can be manipulated through the effect of other items. Designs can be saved, edited, printed, process results can be saved as the process is running.

Situation Solvers : Solving 30 + problem situation scenarios. Featuring Heat, heat conduction through plates, pipes, mass flow & Work situations.

Chem Data Entry/Viewer : Spreadsheet design, allows for direct data display and modification of data files.