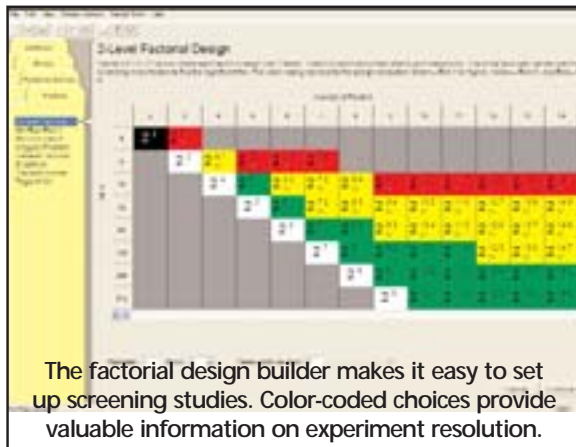


Design-Expert® Software, Version 7.0

Optimize your product or process with design of experiments (DOE)

Design-Expert®, version 7 software (DX7) is a powerful and easy-to-use program for design of experiments (DOE). With it you can quickly set-up an experiment, analyze your data, and graphically display the results. This intuitive software is a must for anyone wanting to improve a process or a product. Use it to screen for vital factors, identify ideal process settings with response surface methods (RSM), and discover your optimal product formulations via mixture design.

Design-Expert software offers an impressive array of design options and provides the flexibility to handle categorical factors and combine them with mixture and/or process variables. After building your design, generate a run sheet with your experiments laid out for you in randomized run order. Add, delete or duplicate runs in any design with the handy design editor.



With annotated statistical analysis and an extensive context-sensitive help system, you can easily interpret the outputs. Interactive 2-D color graphics support use of your mouse to drag contours or set flags that display coordinates and predicted responses. Rotatable 3-D color plots make response visualization easy.

With the powerful optimization features in Design-Expert, you can maximize desirability for dozens of responses simultaneously. There are also unique tools for generating and graphing propagation of error (POE), thus allowing you to achieve six-sigma objectives for reducing variation. Maximize, minimize or hit targets with factor levels set to give you robust results.

With version 7 you will find dozens of new features that make an already great product even better. Changes include new design creation tools, enhanced design aug-

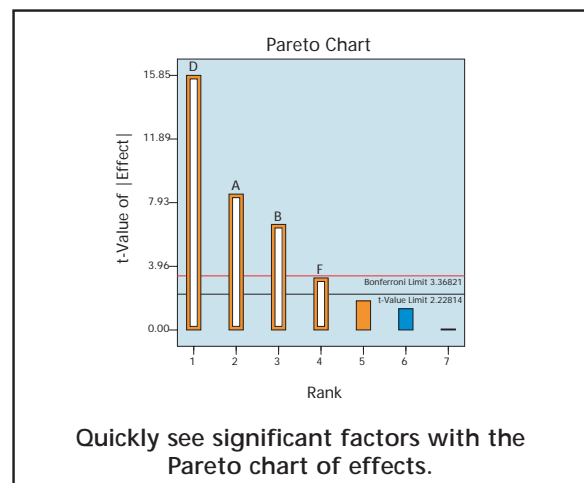
mentation ability, powerful analysis and diagnostic capabilities, updated graphics, an improved user interface, more options for design evaluation, expanded help, and new import/export tools.


"Congratulations on the new release! It looks gorgeous! I always tell people what a great package Design-Expert is. It will be a pleasure to introduce them to version 7!"

*Carol Kavanaugh, C.F. Kavanaugh & Associates
Kingston, Ontario, Canada*

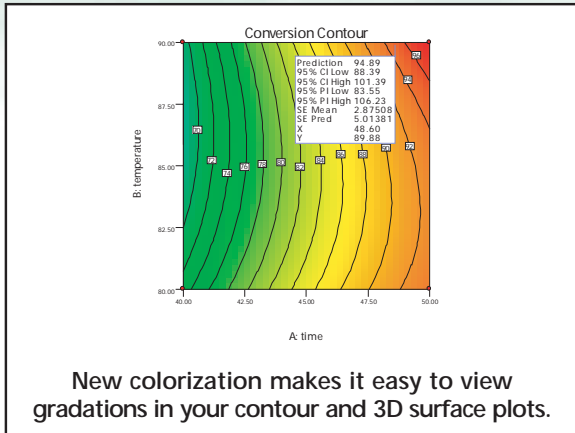
What's New in Design-Expert 7—The Highlights

- *"Min-Run Res IV" (two-level factorial) designs for 5 to 50 factors:* Use a minimum number of runs to screen main effects.
- *"Min-Run Res V" designs for 6 to 31 factors:* Resolve two-factor interactions (2FI's) with a minimum number of runs.
- *Two-level fractional factorials for up to 512 runs and 21 factors:* Accomodate more factors than ever-before possible.
- *Pareto chart of effects:* Quickly see the vital few effects relative to the trivial many in two-level factorial experiments.

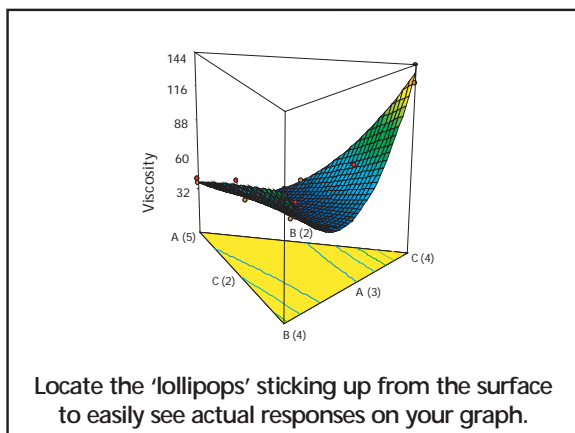


- *New "Color By" option:* Color-code points on graphs according to the level of another factor—a great way to incorporate another piece of information into a graph.
- *"Screen tips":*  Press the new tips button for enlightenment on the current screen—this is especially helpful for novice users.

- **Full-color contour and 3D surface plots:** Graduated colorization adds life to response surface methods (RSM)



- **3D surface plots for categorical factors:** See colored bars towering above others where effects are the greatest.
- **On plots of effects simply draw a box around the ones you want selected for your model:** This is much easier than clicking each one with your mouse.
- **Central composite designs (CCD's) are now available for up to 30 factors and 8 blocks:** This represents a significant expansion in RSM capability.
- **CCD's based on Min-Run Res V fractional-factorial core:** Take advantage of a much more efficient design for larger numbers of factors.
- **Data Points on 3D graphs:** See 'lollipops' protruding from surfaces where actual responses were collected.
- **Box-Behnken designs expanded up to 21 factors:** This popular RSM previously was limited to certain numbers of factors, but that's no longer the case.



- **Crosshairs window:** Predict your response at any place in the response surface plot.

- **Magnification feature:** Incredible tool for expanding a mixture graph that is originally a small sliver and difficult to interpret.
- **Mixture-in-mixture designs:** Develop sophisticated experiments for immiscible liquids or multilayer films involving separate formulations that may interact.
- **Add blocks D-optimally:** This will be especially useful for mixture designs, which previously could not be blocked automatically.
- **Mixture design builder recognizes inverted simplexes and constrained regions that benefit by being inverted:** This provides dramatic advantages in the power for estimating model terms.
- **Row(s) in the design layout are highlighted when point(s) are selected on diagnostics:** The highlighting feature makes identification of problematic data much easier.
- **Numerical optimization solutions are now carried over to graphical optimization and point prediction:** Explore the results of the numerical optimization on other screens.
- **Right-click on any response cell and "ignore" it:** Previously one had to ignore an entire row in the design matrix, even though the other responses may have good data.

"Bottom line: A Great Product!...It is always a pleasure to work with you because you are such a responsive organization. Your approach to communicating with customers is clearly the best in the statistical software business."

Wendell Smith
Author of Experimental Design for Formulation
Consultant/Trainer, New York, NY

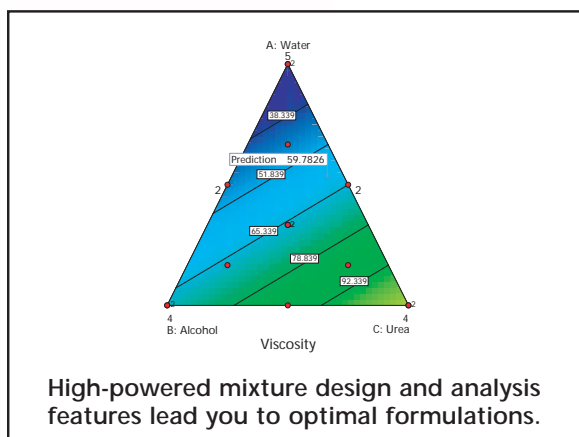
Design-Expert (DX) Features: Powerful, Yet Easy to Use

Designed as a specialized DOE software package offering response surface methods (RSM) and mixture design, DX7 offers features for ease of use, functionality and power that you won't find in general statistical packages. You'll discover a wide variety of designs with the flexibility to modify them, unique evaluation capabilities, tools for response modeling, graphics to simplify interpretation, multiple response optimization, POE capabilities, an intuitive interface and a greatly expanded help system.

A Tremendous Variety of Designs Meet All Your Experimental Needs

- Standard two-level full and fractional factorials (up to 512 runs) for testing up to 21 factors simultaneously, along with minimum-aberration blocking choices
- General (multilevel) factorial designs (up to 32,766 runs) using factors with mixed levels

- High-resolution irregular fractions, such as 4 factors in 12 runs
- Plackett-Burman designs for 11, 19, 23, 27 or 31 factors in up to 64 runs respectively
- Taguchi orthogonal arrays
- Response Surface Method (RSM) designs, including central composite (small, face-centered, etc.), Box-Behnken (3-level), hybrid and D-optimal
- Mixture designs, such as simplex-lattice, simplex-centroid screening (for up to 24 components) and D-optimal



- Combined mixture and process designs (mix your cake and bake it, too!)
- Ability to graph any two columns of data on the XY graph (this is a great way to view a blocked effect)
- Easy-to-use automatic or manual model reduction
- Ability to easily analyze designs with botched or missing data

Enjoy Incredible Flexibility in Design Modification

- Define your own generators for fractional factorial designs
- Impose linear multifactor constraints on RSM or mixture designs
- Add categorical factors to RSM, mixture or combined designs
- Create a factorial candidate set for RSM designs when only specific factor levels are available
- Ignore a row of data or a single response while preserving the numbers

Build Confidence with Statistical Analysis of Data

- Select optional annotated views for assistance interpreting the ANOVA

- If your model is aliased, a warning will pop up prior to viewing the ANOVA for two-level fractional factorials, allowing you to make substitutions for aliased effects
- Inspect F-test values on individual model terms and confidence intervals on coefficients
- Automatically select effects using Lenth's criteria or probability values
- Take advantage of user preferences, ex: make a global change in the significance threshold (0.05 by default vs. 0.01 and 0.1)

Make Use of Powerful Tools for Response Modeling

- Change models from RSM to factorial and back and from Scheffe (mixture) to slack (during design building and at model selection)
- Add integer power terms to the model, for example, quartic
- Select terms for model, error, or to be ignored (allows analysis of split-plot and nested designs)

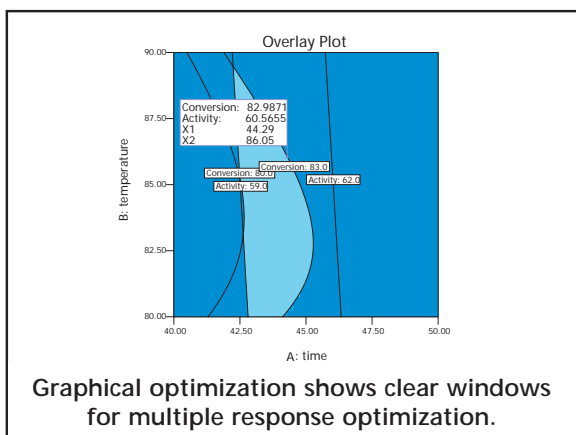
Simplify Interpretation with Terrific Graphics

- A quick summary of the design type as well as factor, response and model information is available by clicking on the design status node
- Discover significant effects at a glance with half-normal or normal probability plots, made easier by including points representing estimates of pure error (if available from your design)
- Graph alternative aliased interactions
- See the Box-Cox plot for advice on the best response transformation
- View a complete array of diagnostic graphs to check statistical assumptions and detect possible outliers (bonus feature: predicted-versus-actual graphs with a 45° line)
- See the effects plot in the original scale after transforming the response
- Observe variation in predictions by viewing the least significant difference (LSD) bars on the model graphs
- Poorly predicted regions on contour maps are shaded to give you confidence in your predictions
- Slice your contour plots using a simple slide bar (and see actual design points when they're on a slice!)
- Drag 2-D contours using your mouse
- Rotate 3-D graphics and see projected 2-D contours

- Set flags to reveal the predicted response at any location
- Edit colors, text and more to produce professional reports
- See all effects on one graph with trace and perturbation plots
- Plot the standard error of your design on any graph type (contour, 3-D, etc.)

Locate Your Sweet Spot with Multiple Response Optimization

- Maximize, minimize or target specific levels for both responses and factors
- Set weight and importance levels to prioritize responses for desirability
- Choose 2-D contour, 3-D surface, histogram or ramp desirability graphs
- Include categorical factors
- Set factors at constant levels
- Add equation-only responses, such as cost, to the optimization process
- Look at the overlay plot to view constraints on your process or formulation
- Predict responses at any set of conditions (including confidence levels)
- Discover optimal process conditions or formulations



Achieve "Six-Sigma" Goals

- Explore propagation of error (POE) for mixtures, crossed designs and transformed responses, as well as RSM
- For purposes of POE, enter your own response standard deviation or set it at zero

Save Time with Design-Expert's Intuitive Interface

- Cut and paste graphics to your word processor or presentation, or numbers to and from a spreadsheet
- Easily maneuver through the program: down trees, through wizards, and across progressive toolbars
- Quickly select the next step with incredibly easy-to-use push-buttons
- Open reports and graphs for automatic updating
- View numerical outputs spreadsheet style
- Export any grid view as ASCII text, for example, design layouts or ANOVA reports
- View several graphs simultaneously using the handy pop-out option
- 32-bit architecture provides maximum performance on Windows 98SE, 2000, NT and beyond
- Access graphic and spreadsheet options instantly with a simple right click
- Choose significant terms to plot from the pull-down list on the Factors Tool

Find Answers to your Questions in Help

- Better guidance helps you choose the best model
- A bonus help section provides "quick start" advice
- Special user tips offer hints not normally found in help systems

System Requirements

- Pentium 200 or higher recommended (minimum 486)
- Windows 98SE, ME, 2000 or XP
- CD-rom drive
- 40 MB hard-disk space
- Memory: 128 MB minimum, 512 MB recommended
- Annual Network licenses available

Extras!

- Free technical support
- Limited free statistical support
- Helpful tutorials illustrate the most powerful features
- 30-day money-back guarantee
- Go to <http://www.statease.com/dx7descr.html> to see many more new features in Design-Expert 7