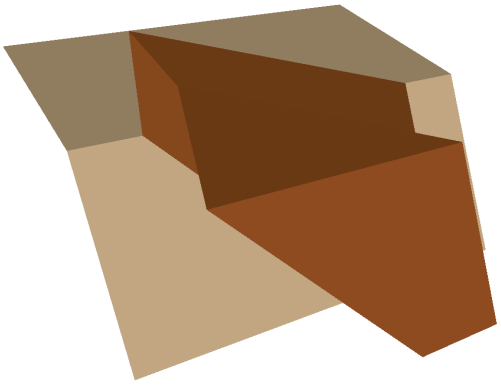
rocscience

SWedge

Surface Wedge Analysis for Slopes



Basal joint plane sliding along a slope

What is SWedge?

SWedge is a quick, interactive, and easy-to-use analysis tool for evaluating the geometry and stability of surface wedges in rock slopes.

Wedges are defined by intersecting discontinuity planes, the slope surface, and an optional tension crack. SWedge provides an integrated graphical environment for fast and easy data entry and 3D model visualization.

What's New in SWedge

Automation Features

SWedge introduces powerful new automation features that enable users to run large numbers of analyses and generate results quickly and efficiently. Batch Compute computes and generates results for multiple saved model files while Automate from Excel automates numerical model inputs, computes, and generates results for multiple scenarios.

- **Batch Compute Model Files**
  - Compute multiple deterministic, probabilistic, and combinations analyses models in one single process
  - Results files can be exported to Excel or other data processing software for further analysis and interpretation
- **Automate Model Inputs from Excel**
  - Pre-process numerical inputs, automate the computation of millions of wedges, and generate results for post-processing
  - Pre-processing can be done directly in or imported into the Excel automation file
  - Numerical inputs for wedge geometry, strength, seismic, water pressure, and scaling can all be automated
- **Robust and Customized Analyses with Automate from Excel**
  - Custom sensitivity analysis by varying any one input parameter or several input parameters simultaneously
  - Custom probabilistic analysis with random variables generated based on a custom sampling method and probabilistic distribution
  - Custom bench analysis with a range of bench face angles

Find more details: rocscience.com/software/swedge

Plans & Pricing

Personal License: Locked to one computer.

- Lease: **USD $795/year**
  Leased annually. Includes Maintenance+.
- Perpetual: **USD $1,595**
  Purchased outright. Includes 12 months of Maintenance+.

Flexible License: Installed on any number of machines. The license file sits on the server.

- Lease: **USD $1,195/year**
  Leased annually. Includes Maintenance+.
- Perpetual: **USD $2,295**
  Purchased outright. Includes 12 months of Maintenance+.

Maintenance+

Maintenance+ is our enhanced maintenance and support services subscription, purchased annually at 20% of the license cost.

With Maintenance+ Continuous Software you get access to all feature releases, enhancements, and bug fixes throughout the year and as soon as they're available. You also have access to convenient License Services, the support of our experts, and exclusive learning offerings.

Contact us at software@rocscience.com

SWedge Technical Specifications

Analysis Results
- Sidebar information panel
- Info Viewer analysis summary
- One-click export of data and charts to Excel

Automation
- Batch Compute model files
- Automate Model Inputs from Excel

Bench Analysis
- Optimize bench design for open pit mines

Combination Analysis
- Unlimited number of joints
- Analyze all possible combinations
- Find minimum safety factor wedges
- Import joints from Dips
- View results on histogram, scatter, and stereonet plots

Import from Dips
- Import mean planes
- Import joint set statistics (probabilistic analysis)
- Import all planes (combination analysis)

Joints
- Two sliding planes (tetrahedral wedges)
- Optional basal joint plane (pentahedral wedges)
- Shear strength—Mohr-Coulomb, Barton-Bandis, Power Curve
- Waviness angle
- Import planes from Dips

Loading
- Water pressure on joints
- Ponded water analysis
- Seismic coefficient
- External forces
- Pressure (surcharge or support)

Persistence Analysis
- Randomly vary wedge height and/or joint persistence
- Allowable persistence determines if wedge can form

Probabilistic Analysis
- Statistical distributions—normal, uniform, triangular, beta, exponential, lognormal, gamma
- Fisher distribution for joint orientations
- Histogram, cumulative, and scatter plots
- Import joint set statistics from Dips
- Monte Carlo or Latin Hypercube simulation
- Random or pseudo-random sampling
- Shear strength—define variability of mean strength envelope or individual strength parameters
- Correlation coefficient for cohesion and friction angle
- Best fit distribution, regression line
- Highlight failed wedges on plots
- Filter wedges by sliding mode
- Probability of failure, reliability index

Sensitivity Analysis
- Determine effect of individual variables on safety factor
- Multiple variables on one plot
- Vary strength of all joints simultaneously

Slope
- Slope plane/upper face
- Slope height, length, and bench width
- Overhanging slope
- Metric or imperial units
- Eurocode design standards

Stereonet View
- Plot great circles and poles
- Show joint intersections
- Highlight failed data
- Equal angle/Equal area

Support
- Rock bolts
  - Define bolt properties from the following bolt types: Mechanically Anchored, Grouted Dowel, Cable Bolt, Split Set, Swellex, and Simple Bolt Force
  - Option to use bolt Shear Strength
  - Option to apply Bolt Orientation Efficiency factor
- Pressure
- Active or passive support

Tension Crack
- Optional tension crack plane
- Arbitrary orientations
- Location—user-defined or automatic

Wedge Size
- Scale wedge size by slope height, slope length, bench width, trace length, persistence, wedge weight, and volume
- Truncate wedge with tension crack
- Persistence analysis (probabilistic)
- Minimum wedge size

Viewing Options
- 3D wedge view
- Interactively rotate, zoom, and pan
- Move wedge along sliding planes
- Customize display options
- Export image files