PLAXIS® 2D Product Tiers

Find the Right Product Level for Your Needs

Project teams and their requirements can change. The right geotechnical analysis tools can help you conquer common or complex challenges with confidence, no matter how requirements evolve.

PLAXIS 2D is a user-friendly, finite element package with trusted computation that is used by geotechnical engineers worldwide. We offer three flexible options, each tailored to the different geotechnical analysis needs of any firm:

- **PLAXIS 2D** offers all the essential functionalities to perform everyday deformation and safety analysis for soil and rock that do not require the consideration of creep, steady state groundwater or thermal flow, consolidation analysis, or any time-dependent effects.
- **PLAXIS 2D Advanced** enhances your geotechnical design capabilities with more advanced features and material models to consider creep, flow-deformation coupling through consolidation analysis, and steady-state groundwater or heat flow. Its multicore solver adds powerful functionality to accelerate problem solving.
- **PLAXIS 2D Ultimate** adds functionality to deal with the most challenging geotechnical projects. This comprehensive package enables you to:
  - Analyze the effects of vibrations in soil and rock, such as earthquake and traffic loads
  - Simulate complex, hydrological, time-dependent variations of water levels, or flow functions on model or soil boundaries
  - Assess the effect of transient heat flow on the hydraulic and mechanical behavior of soil and rock

PROJECT AND MODEL PROPERTIES	PLAXIS 2D	PLAXIS 2D Advanced	PLAXIS 2D Ultimate	Available without GSE*
· Selection of imperial and SI units for length, force, etc.	●	●	●	●
· Selection of plane strain and axi-symmetric models	●	●	●	●
· Selection of 6-noded and 15-noded element types	●	●	●	●
· Constants tab in Project properties		●	●	●
GEOMETRY CREATION				
· Create borehole tool	●	●	●	●
· Select, move and array tools	●	●	●	●
· Create soil polygon, soil rectangle tools	●	●	●	●
· Create point and line load tools	●	●	●	●
· Create point and line prescribed displacement tools	●	●	●	●
· Create embedded beam, plate, geogrid, fixed-end anchor, node-to-node anchor, interface, discontinuity and cable tools	●	●	●	●
· Create line contraction tool	●	●	●	●
· Create well, drain, and groundwater flow boundary conditions tools		●	●	●
· Create thermal flow boundary condition tool		●	●	●
· Create added mass tool			●	●
· Tunnel designer	●	●	●	
· Reinforcement (Rockbolts, cables, and node-to-node anchors) definition in tunnel designer	●	●	●	

*GSE – Geotechnical SELECT Entitlement.

MATERIAL MODELS	PLAXIS 2D	PLAXIS 2D Advanced	PLAXIS 2D Ultimate	Available without GSE*
· Linear elastic	●	●	●	●
· Mohr-Coulomb	●	●	●	●
· Hardening soil	●	●	●	●
· Hardening soil small strain stiffness	●	●	●	●
· Modified cam-clay	●	●	●	●
· Jointed rock model	●	●	●	●
· NGI-ADP	●	●	●	●
· Hoek-Brown, with parameter guide	●	●	●	●
· Soft soil		●	●	●
· Soft soil creep		●	●	●
· Sekiguchi Ohta (viscid)		●	●	●
· Sekiguchi Ohta (inviscid)		●	●	●
· UDCAM-S and cyclic accumulation tool		●	●	●
· Concrete		●	●	●
· User defined soil models		●	●	
· SHANSEP Mohr-Coulomb		●	●	
· SHANSEP NGI-ADP		●	●	
· Overconsolidated clay		●	●	
· Creep-SCLAY1S		●	●	
· Masonry		●	●	
· Visco-elastic perfectly plastic		●	●	
· Generalized hardening soil		●	●	
· Hypoplastic model with inter-granular strain		●	●	
· Swelling rock		●	●	
· Isostropic jointed rock with Mohr-Coulomb failure criterion		●	●	
· Hoek & Brown with softening (strength softening and GSI softening models)		●	●	
· CreepRock-N2PC and N2PC-MCT (Norton-based double power creep with or without MC and tension cut-off failure surface)		●	●	
· NorSand		●	●	
· Clay And Sand Model (CASM)		●	●	
· Fluid		●	●	
· Frozen and unfrozen soil			●	
· PM4SAND			●	
· PM4SILT			●	
· Barcelona Basic Model			●	
· UBC3D-PLM (liquefaction)			●	●

MATERIAL DRAINAGE TYPES				
· Drained	●	●	●	●
· Undrained A	●	●	●	●
· Undrained B	●	●	●	●
· Undrained C	●	●	●	●
· Nonporous	●	●	●	●

STRUCTURAL ELEMENT MATERIAL TYPES	PLAXIS 2D	PLAXIS 2D Advanced	PLAXIS 2D Ultimate	Available without GSE*
• Elastic, elastoplastic, and elastoplastic (M-Kappa) plates	●	●	●	●
• Mohr-Coulomb for discontinuities	●	●	●	●
• Elastic, elastoplastic, elastoplastic (N-Epsilon), and viscoelastic geogrids	●	●	●	●
• Elastic, elastoplastic, and elastoplastic (M-Kappa) embedded beams	●	●	●	●
• Elastic and elastoplastic cables	●	●	●	●
• Elastic, elastoplastic, and elastoplastic with residual strength fixed-end and node-to-node anchors	●	●	●	●
DYNAMIC, GROUNDWATER AND THERMAL FLOW MATERIAL PROPERTIES				
• Groundwater properties, including soil classification systems (Hypres, USDA, etc.) and predefined data sets for (approximate) Van Genuchten models for soil materials	●	●	●	●
• Thermal properties for soil and structural elements (excluding embedded beam row)		●	●	●
• Rayleigh damping for soil and structural elements			●	●
INITIAL CALCULATION TYPES				
• K_0 procedure	●	●	●	●
• Gravity loading	●	●	●	●
• Field stress	●	●	●	●
• Flow only			●	●
DEFORMATION CALCULATION TYPES				
• Plastic	●	●	●	●
• Safety	●	●	●	●
• Consolidation		●	●	●
• Dynamic			●	●
• Dynamic with consolidation			●	●
• Fully coupled flow-deformation			●	●
PORE PRESSURE CALCULATION TYPES				
• Phreatic level	●	●	●	●
• Use pore pressures from previous phase	●	●	●	●
• Steady state groundwater flow		●	●	●
• Transient groundwater flow			●	●
THERMAL CALCULATION TYPES				
• Ignore temperature		●	●	●
• Earth gradient		●	●	●
• Steady state thermal flow		●	●	●
• Use temperatures from previous phase		●	●	●
• Transient thermal flow			●	●

MISCELLANEOUS FEATURES, TOOLS, AND INTEROPERABILITY	PLAXIS 2D	PLAXIS 2D Advanced	PLAXIS 2D Ultimate	Available without GSE*
• Spatial variation of preconsolidation	●	●	●	●
• Tunnel deconfinement	●	●	●	●
• Create cluster field stress	●	●	●	●
• Staged construction and automatic regeneration of construction stages	●	●	●	●
• Multicore and parallel calculation		●	●	●
• Design approaches		●	●	●
• Pseudostatic analysis		●	●	●
• Generate stratigraphy from imported CPT Logs	●	●	●	
• SoilTest and parameter optimization tool	●	●	●	
• Sensitivity analysis and parameter variation	●	●	●	
• PLAXIS 2D to 3D converter	●	●	●	
• Calculation manager	●	●	●	
• CAD import and export	●	●	●	
• Import 2D cross section from Seequent Central**	●	●	●	
• Command line input (input, output, and soiltest)	●	●	●	●
• Command line autocomplete (input, output, and soiltest)	●	●	●	
• Commands runner (input, output, and soiltest)	●	●	●	
• Macro library and running macros (input, output, and soiltest)	●	●	●	
• Remote scripting for input, output, and soiltest	●	●	●	
• Scripting reference	●	●	●	
• 1D site response analysis tool			●	
• ProjectWise integration, loading from and saving to ProjectWise server	●	●	●	
• Bentley Cloud Services: personal and project portal, project association	●	●	●	
TIME-DEPENDENT FUNCTIONS				
• Time-dependent groundwater flow components for water levels, groundwater flow boundary conditions, and soil clusters			●	●
• Definition of groundwater flow functions to specify time-dependent changes in head or discharge, etc.			●	●
• Time-dependent thermal components for thermal flow boundary conditions and soil clusters			●	●
• Definition of thermal flow functions to specify time-dependent changes in temperature or heat flux, etc.			●	●
• Dynamic components in x and y direction for point and line loads or prescribed displacements			●	●
• Definition of dynamic multipliers to create vibration and earthquake signals			●	●
• Scaling tools, Fourier, response spectra, and Arias intensity plots and drift correction for input earthquake signals			●	●
DYNAMIC BOUNDARY CONDITIONS				
• Viscous			●	●
• Tied degrees of freedom			●	●
• Compliant base and free field boundaries			●	●
• All nodes fixity			●	●

**Requires a valid Seequent Central license

POSTPROCESSING AND RESULTS	PLAXIS 2D	PLAXIS 2D Advanced	PLAXIS 2D Ultimate	Available without GSE*
• Various ways to display forces, displacements, stresses, and strains in contour, vector, and iso-surface plots	●	●	●	●
• Tables of results with copy, sorting, and filter options	●	●	●	●
• Curve manager to plot graphs of various results across a selection of calculation phases	●	●	●	●
• Load-displacement curves	●	●	●	●
• Cross-section tools and cross-section curves	●	●	●	●
• Automatic and manual centerline extraction for structural forces plots of volume plates	●	●	●	●
• Resulting forces view	●	●	●	●
• Plot annotations	●	●	●	●
• Animations	●	●	●	●
• Report generator	●	●	●	●
• Printing and saving plots and curves	●	●	●	●
• Plots and curves of accelerations, velocities, structural forces envelopes for dynamic phases			●	●
• Curve plots of Pseudo Spectral Acceleration, relative displacements and switching between time and frequency representations			●	●
• Plots and curves of pore pressures for phreatic level calculations	●	●	●	●
• Plots and curves of pore pressures, saturation, suction, and Darcy flux for steady state groundwater flow calculations		●	●	●
• Plots and curves of pore pressures, saturation, suction, and Darcy flux for transient groundwater flow or fully coupled flow deformation calculations			●	●
• Plots and curves of temperature, ice saturation, and heat flux for steady state thermal flow calculations		●	●	●
• Plots and curves of temperature, ice saturation, and heat flux for transient thermal flow or full thermo-hydro-mechanical coupled calculations			●	●
• Export of results to Paraview	●	●	●	

Ready to buy? PLAXIS can be purchased on Bentley's eStore – **virtuosity.com/software/geotechnical-engineering-seequent**

To request a follow-up for more information,
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