



FreeForm® Feature Comparison Chart

SensAble Technologies, Inc.®

Modeling Product	FreeForm® Modeling™	FreeForm® Modeling Plus™
Software Version Number	v10.0	v10.0
Items in <i>Red Italics</i> are new in the latest releases		
System Configurations		
Haptic Device		
PHANTOM® Desktop™	✓	✓
PHANTOM Omni®	✓	
PHANTOM Omni® Basic		
Operating System		
Microsoft® Windows XP (32 & 64-bit editions)	✓	✓
<i>Microsoft® Windows Vista® (32 & 64-bit editions)</i>	✓	✓
Voxel Modeling Features		
Construct Clay Features		
Basic Shapes, Wire Cut, Spin, Inflate, Add Clay, <i>Layer</i> , Mirror, Buck	✓	✓
Loft, Sweep, Toothpaste, Pipe, Offset Piece	✓	✓
Sculpt Clay Features		
Carve with Ball, Corndog, Scraper, Smudge, Attract, Spike,	✓	✓
Smooth, Smooth Area	✓	✓
Carve with Cube, Carve with Angle, Carve with Loop, Carve with Razor, Carve with Knife, Smooth - Blend with Mask, Custom Carve Tools, <i>Limit to Depth</i>	✓	✓
Detail Clay Features		
Groove, Emboss with Curve, Emboss Area, Emboss with Image, Emboss Text, Emboss with Wrapped Image	✓	✓
Emboss with Curve with Falloff, Ridge, Variable Round Edge, Bevel Edge	✓	✓
Deform Clay Features		
Tug, Tug area, <i>Surface Fair</i>	✓	✓
Tug & Tug Area with Ruler, Shape, Deform Box, <i>Slice Deform</i> , <i>Tug with Curve</i>	✓	✓
Select and Move Features		
Select with Ball, Select with Profile, Lump Select, Separate with Curve/ <i>Plane</i> , Mask, Paste 3D Pattern	✓	✓
Select Clay with Box, Select Clay with Plane, Align Piece, Add Selection to Buck	✓	✓
Reposition, Reposition Piece, Reposition Origin	✓	✓
3D Curve Features		
Select/Edit, Draw Curve, <i>Trace Mode</i> , Fit Curve, Project Sketch, Split Curve, Copy from Reference Group, Join Curve, Mirror Curve, Plane to Clay Intersection Curve, Automated Split or Join Curve (including ability to heal curves)	✓	✓
Fit Curves with Adaptive Fit, Project Curve to Plane, Intersect Sketches, Copy Curve from Sketch Plane, Split Curve (<i>Enhanced: Split with greater accuracy</i>) Extend/ <i>Retract</i> Curve, Offset Curve (<i>Enhanced: Offset curves segments</i>), Curve Helix, Sub-divide Curve Loop,	✓	✓
Surface to Clay Intersection Curve, Copy Curve from Solid Edge, <i>Offset Curve Segment via Clay Normal</i> , Smooth Curve, Flatten Curve, Axis Marker		✓
Plane Features		
Create Plane, Reposition Plane, Orient Plane Flat to View, Import 2D Art to Plane	✓	✓
Orient Plane Through Three Points, Orient Plane to Curve, Copy Profile	✓	✓



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2D Sketch Features		
Select/Edit, Freehand Curve, Curve by Control Points, Line, Arc, Round Corner, Circle, Ellipse, Rectangle, Trim, Mirror, Offset, Move, Rotate, Scale, View Flat to Sketch Plane	✓	✓
Pencil, Erase Pencil, Freehand Cyclic Curves, <i>Extend/Retract Curve</i> , Rectangular Array	✓	✓
Mesh Features		
Import, <i>Curvature Based Hole Filling on Import</i> , Convert to Clay, Decimated Export	✓	✓
Edit Mesh Selection, Edit Mesh with Curve Loop	✓	✓
<i>Edit and Stitch Mesh Workflow</i>	✓	✓
<i>Slice Deform Mesh, Tug Mesh with Curve</i>	✓	✓
NURBS Surfacing Features		
Select All Patches, Find Folded Patches, Measure Fit of Patches to Clay, Environment and Zebra Mapping, Show Normals		✓
Extend Patch, Trim Patch, Mirror Patch, Shape Patch, Stitch Patches, Refit Curves and Patches, Copy Patches from Piece		✓
Semi-automatic Patch Creation, Auto-Surfacing		✓
Convert NURBS Patches to Clay		✓
Split Mesh		✓
NURBS Solids Features		
Wire Cut, Spin, Loft, Sweep, Mirror Solids		✓
Convert NURBS Solids to Clay, Stitch Patches into NURBS Solids		✓
<i>Edit and Stitch Solid Workflow</i>		✓
Paint and Render Features		
Voxel Paint - Paint Brush, Air Brush	✓	✓
Project & Wrap Image	✓	✓
mental ray® Rendering Engine	✓	✓
Import/Export File Formats		
3D Import Formats - STL, OBJ, PLY, ZCP	✓	✓
3D Export Formats - STL, OBJ, PLY, ZCP, <i>VRML</i>	✓	✓
2D Import Formats - AI, PDF, <i>DXF</i>	✓	✓
<i>2D Export - AI, PDF, DXF,</i>	✓	✓
Export TextureKiln™	✓	✓
IGES Curves	✓	✓
Actify® .3D	✓	✓
IGES & STEP Solids and Patches		✓
Native Parasolid® Solids and Patches		✓
Dimensional Control		
Haptic Guides	✓	✓
Reposition Origin(s), Reposition Piece(s) (numeric accuracy relative to local or global coordinates)	✓	✓
Ruler	✓	✓
Scale	✓	✓
Dimension Parasolid Edges		✓



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Evaluation Features		
Shading Clay - Flat, Smooth, <i>Wireframe, High Quality, Transparency, Drop Shadows</i>	✓	✓
Shading Reference Pieces - Flat, Smooth, <i>Wireframe, High Quality, Transparency, Drop Shadows</i>	✓	✓
Scalable Secondary Views	✓	✓
Save Screen to BMP or <i>JPG</i>	✓	✓
<i>Save Views to JPG</i>	✓	✓
Piece Density	✓	✓
Mass Properties (<i>non-modal</i>): Surface Area, Volume, Weight, Center of Gravity	✓	✓
Parting Line Color, Rainbow Color Draft Display	✓	✓
Cutaway View	✓	✓
Piece to Piece Fit Analysis, Surface Modification Analysis		✓
Customization & Utilities		
Favorites Palette, Custom Color Schemes, Incremental Backup File Saving, Pop-Through Force Control, Relocate Palette Stack	✓	✓
Hide/Show Curves, Hide/Show Reference Pieces, Fit to View, Perspective View	✓	✓
Toggle Touchable Reference Pieces	✓	✓
Hide/Show Patches and Solids		✓
Design/Prep for Manufacturability		
Parting LineTools - Definition, Exploration, Smoothness and Curvature Evaluations, Automatic Smoothing		✓
Undercut Evaluation and Fixing Tools - Parting Line (Undercut) Color, Automatic Draft Fixing, <i>Fix Draft Selection</i>		✓
Shelling		✓
Split Line Curve Definition & Joint Design		✓
Reference Import Solid Geometry from CAD		✓
Mold Design		
<i>Offset Curve Segments</i>		✓
Define a Pull Direction		✓
Insert Block Extents		✓
Planar Parting Line Sections		✓
Parting Surface Creation - Extruded, Shape Clay and Patches		✓
3D Offset Parting Surface		✓
Trim Parting Surface		✓
Multiple Component Creation		✓
Preview/Create Core & Cavity Inserts		✓