



Native CAD Formats refers to formats that are proprietary to specific CAD systems. If you have the ability to read these formats, they will have the most information and be more accurate than Geometric Modeling Kernel formats or Neutral CAD formats.

<b>Format</b>	<b>Extensions</b>	<b>Precise or Tessellated</b>	<b>Vendor</b>	<b>TransMagic Read</b>	<b>TransMagic Write</b>	<b>Notes</b>
<b>AutoCAD</b>	.dwg, .dxf	Both	Autodesk	R9-2017	R9-2017	DXF is ASCII
<b>CATIA V4</b>	.model	Precise	Dassault	4.1.9 – 4.2.4	4.1.9 – 4.2.4	
<b>CATIA V5, V6</b>	CATPart, CATProduct, CGR	Both	Dassault	15-2018 (R28)	15-2018 (R28)	File-based support for V6. Note that CGR is Visrep.
<b>Creo</b>	.prt, .asm	Precise	PTC	Up to 3.0		
<b>NX, Unigraphics</b>	.prt, .jt, .j_t	Precise	Siemens	NX up to NX11, JT up to 10.2		JT is a compressed visualization format ideal for viewing large assemblies.
<b>Pro/E</b>	.prt, .asm	Precise	PTC	Up to Wildfire 3		
<b>Inventor</b>	ipt, iam	Both	Autodesk	Up to 2018		
<b>SOLIDWORKS</b>	.sldprt, .sldasm	Both	Dassault	97-2017	97-2017	

Format	Extensions	Precise or Tessellated	Vendor	TransMagic Read	TransMagic Write	Notes
<b>Solid Edge</b>	.par, .asm, .psm	Both	Siemens	ST9		Best exported as X_T.

## Geometric Modeling Kernel Formats

Geometric Modeling Kernel formats are what Native CAD formats are built upon. Because these formats have stricter criteria, we've found over the years that they tend to be a better source of geometric information than STEP or IGES.

Format	Extensions	Precise or Tessellated	Vendor	TransMagic Read	TransMagic Write	Notes
<b>ACIS</b>	.sat, .asat, .sab, .asab	Both	Spatial Technologies	R1.5-R2017 (R27)	R1.5-R2017 (R27)	SAT is ascii, .sab is binary, and .asat and asab are specifically for assemblies. ACIS supports Non-Manifold geometry.
<b>Parasolid</b>	.x_t	Precise	Siemens	Up to 29.0	Up to 29.0	Parasolid supports only manifold geometry. <a href="#">Read more about Manifold and Non-Manifold here.</a>
<b>SMLib</b>	.sms, .iwb, .iwp	Precise	Solid Modeling Solutions	All	All	

## Neutral CAD Formats

Neutral CAD formats are the lowest-common denominator between CAD systems. If your customer does not have the software to read the native CAD file or the geometric modeling kernel format, STEP is your best bet.

Format	Extensions	Type	Managing Entity	TransMagic Read	TransMagic Write	Notes
<b>IGES</b>	.sat, .asat, .sab, .asab	Precise	ANSI / ASME	Up to 5.3	Up to 5.3	International Graphics Exchange Format; this format primarily supports surfaces and is generally the <a href="#">weakest of the translation formats</a> .
<b>STEP</b>	.stp, .step	Both	ISO	AP203/AP214, AP242	AP203/AP214, AP242	STEP is the most popular neutral CAD format in the world today, but <a href="#">STEP is not always the best go-to format for translation</a> .

## Tessellated Formats

CAD formats are often converted to polygonal formats such as STL and OBJ for the purposes of 3D printing, animation or game development. Polygonal formats are tessellated, or faceted, containing none of the engineering information found in Brep CAD models, such as weight or volume.

<b>Format</b>	<b>Extensions</b>	<b>Precise or Tessellated</b>	<b>Vendor / Managing Entity</b>	<b>TransMagic Read</b>	<b>TransMagic Write</b>	<b>Notes</b>
<b>3DXML</b>	.3dxml	Tesselated	Dassault	Up To R2016 (v4.3 internal version)	Up To R2016 (v4.3 internal version)	
<b>3D PDF</b>	.pdf	Tesselated	Tetra 4D	Up to 1.7	Up to 1.7	3D PDF is an ideal format for sharing information with people who don't have a CAD system or a CAD viewer; all you need to view a 3D PDF file is Adobe Acrobat Reader, which almost everyone has.
<b>OBJ</b>	.obj	Tesselated	Wavefront	NA	NA	
<b>Collada</b>	.dae	Tesselated	ISO	NA	NA	
<b>PLY</b>	.ply	Tesselated	Stanford University			
<b>POD</b>	.pod	Tesselated		NA	NA	

Format	Extensions	Precise or Tessellated	Vendor / Managing Entity	TransMagic Read	TransMagic Write	Notes
<b>Stereo Lithography</b>	.stl	Tessellated	3D Systems			STL is the default format for 3D printing. <a href="#">STL files can be optimized using export settings</a> , or via the <a href="#">Polygon Reduction tool</a> .
<b>VRML</b>	.wrl	Tesselated	WWW3	1.0 & 2.0		
<b>WebGL</b>	.html	Tesselated	WWW3	1.0 & 2.0		WebGL files are viewable and rotatable in any HTML5-supported browser with no plugins necessary, making them ideal for online parts libraries.

## Precise vs Tessellated Models

'Precise' models are CAD Brep (Boundary Rep) models, with precise geometric boundaries and capable of mass properties calculations.

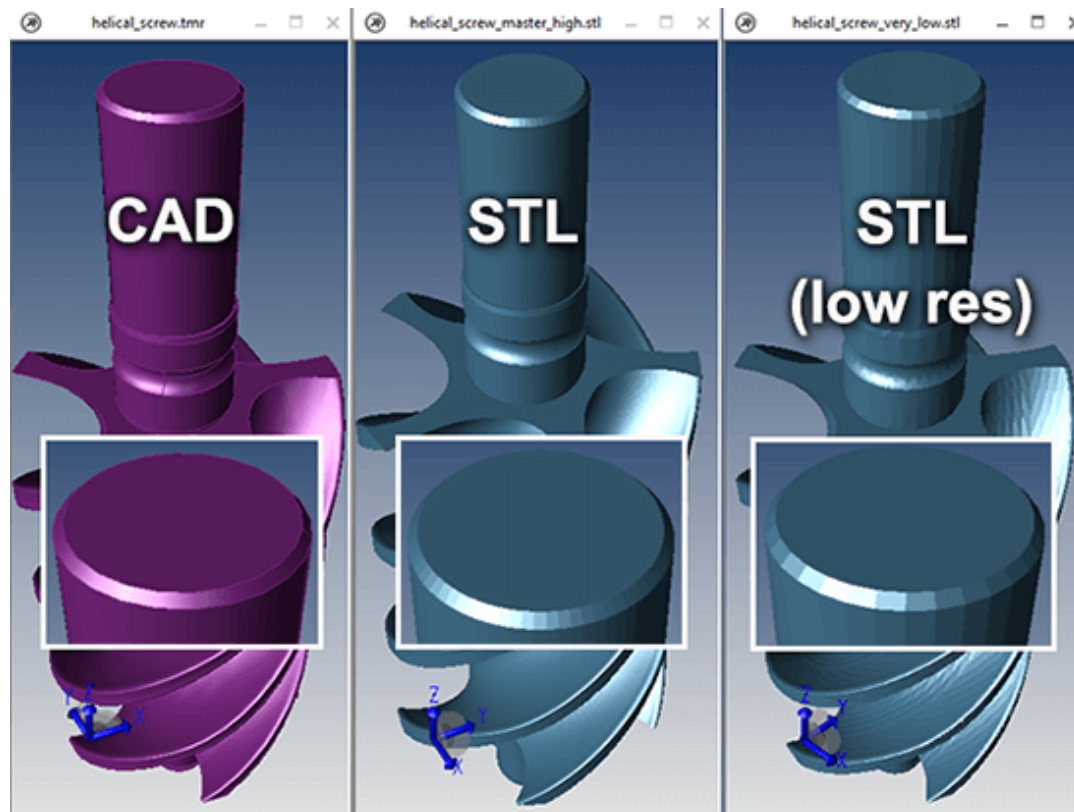
'Tessellated' models are polygonal, or Visrep (visual representation), useful for visualizing models or assemblies, though faceted in nature. [Read more about Brep vs Visrep here.](#)

The figure at right (moving from left to right) shows a CAD model (in purple), a faceted STL model, and a very roughly faceted STL model. Notice that there are no straight lines, or 'facets' on the CAD model. CAD models are geometrically precise, which is why they are sometimes referred to as 'precise' models. Tessellated or faceted models, on the other

hand, are composed of triangles, and are mere approximations of the model, even if they are so finely faceted that it is sometimes difficult to tell.

## Specific Read / Write capabilities

- All TransMagic core products read polygonal, neutral, geometric modeling kernel and native formats.
- TransMagic **EXPERT** writes polygonal, neutral, geometric modeling kernel and native formats.
- TransMagic **PRO** writes polygonal, neutral and geometric modeling kernel formats.
- TransMagic **SUPERVIEW** writes only polygonal formats.



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## TESTIMONIALS

### Origin International

We used TransMagic on an 80 MB CATIA file that choked another translator. It translated the file in just 14 minutes!

- J. B., Origin International

Superlift/Black Diamond Suspensions 

Sunset Tool 

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CAD Model Validation

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### Contact Us

+1 303.460.1406

[info@transmagic.com](mailto:info@transmagic.com)

### Mailing Address

P.O. Box 350759

Westminster, CO 80035, USA

### Physical Address

11859 Pecos Street - Suite 310

Westminster, CO 80234, USA

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