

Texture formats overview

From FSDeveloper Wiki



This page is a work-in-progress.

Generic message - Please note some detail may possibly be missing or incorrect.

Direct X Texture formats (DXTn) are licensed use of **S3 Graphics Ltd** S3 Texture Compression (S3TC) technology.

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Applicable

MSFS
MS Flight
LM P3D5
LM P3D4
LM P3D3
LM P3D2
LM P3D
FS World
FSXSE
FSXA
FSX
FS2004
FS2002
XP11
XP10
XP9

S3TC Format Comparison

S3TC (aka DXTn or DXTC) (http://en.wikipedia.org/wiki/S3_Texture_Compression)

DXT4/5 use an interpolated alpha scheme, they generally produce superior results for alpha (transparency) gradients than DXT2/3.

Some consider DXT5 to be the most flexible general purpose compression codec.

FOURCC	FS versions	Description	Alpha premultiplied?	Compression ratio	Texture Type
DXT1	All ¹	1-bit Alpha / Opaque	N/A	8:1	Simple non-alpha
DXT2	Not supported	Explicit alpha	Yes	4:1	Sharp alpha
DXT3	All	Explicit alpha	No	4:1	Sharp alpha
DXT4	Not supported	Interpolated alpha	Yes	4:1	Gradient alpha
DXT5	FSX only	Interpolated alpha	No	4:1	Gradient alpha

Notes

- ¹ DXT1 with an alpha may cause transparency issues in FSX SP2 when using pre-FSX objects. In this setting, it is the model material settings that cause the difficulties, rather than the single bit colorkey alpha.

- For any packages requiring dual FS9 & FSX compatibility, to minimize any transparency issues, recommend using DXT3 type.
- For conversion utilities, see the **Tools** section below.

N.B.

It is important you understand the impact of missing textures, or mis-matched texture file extensions.
Please first read - **Texture - Missing (FSX)**

DXT Types

DXT1

DXT1 is a four-bit compressed color format that allows for opaque, and one-bit alpha textures; that is, textures with no transparency at all, and textures with a single transparent color.

DXT1 is not suitable for gradients, and will result in banding, DXT1 should not be used for glass or props.

DXT3

DXT3 adds support for a four-bit explicit alpha channel, on top of DXT1's color compression. Four-bit explicit alpha allows for sixteen distinct alpha values, making it good for textures with sharply contrasting translucent/opaque areas.

DXT5

DXT5 support a four-bit interpolated alpha channel.

Three bits are used to determine explicit alpha values, and two eight-bit values are used to interpolate gradually between them.

This makes the format especially suited for soft gradients and other textures where the alpha areas vary less wildly.

Further Detail

For further information, please see - **DXT compression explained**

Alpha Types

INSERT explanation of alpha types, or a link to.

- 1-bit Alpha - placeholder
- Explicit alpha - placeholder
- Interpolated alpha - placeholder
- Simple non-alpha - placeholder
- Sharp alpha - placeholder
- Gradient alpha - placeholder

Tools

Tool	Description	Rating	Availability	URL
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Image Tool	Official - All formats manipulation	* * * *	SDK	SDK Installation (FSX)
DXTBmp	16/24/32 bit and DXT Extended Bitmap Manipulation ²	* * * *	Freeware	Click button at foot of page (SizeMb) (http://www.mnwright.btinternet.co.uk/)
Tool Name	Descriptive blurb	?????	Payware	Download Page (SizeMb) (http://www.yoururl.com)
ColorPix	Colour grabbing tool.	* * * *	Freeware	Download Page (SizeMb) (http://www.colorschemer.com/colorpix_info.php)

- ² DXTBmp - **This info is only for FSX BMP to DDS.** You must flip the image with DXTBmp before you convert it to DDS. If you want to use bmp you don't need to flip it.
- ColorPix - Useful for colour-matching when correcting overlaid transparency issues.

Related

Internal

Texture - Related

Quick links to related topics - Translusion-Texture-Oneline

General Night · Perspective - Correcting (GIMP) · Seasonal textures · Taxilines with Gmax · Reflection and scenery · Bump Maps · Disappearing textures

Transparency Problem solving · PhotoShop

Performance Optimising for performance · DrawCallMonitor · Texture - Missing (FSX)

File Formats Formats (Overview) · DXT Compression · Texture.cfg (FSX)

SDK - FSX Modeling SDK (FSX) · Panels and Gauges SDK (FSX) · SimObject Container SDK (FSX)

SDK SDK Toolset (FS9) · SDK Toolset (FS8)

Click the links to access the topic pages, (Default - Opens in same window).

- SDK Installation (FSX)
- Problem Resolving (FSX) - A selection of hints & tips for resolving those issues & configuring FSX.

External

- Direct3D (<http://en.wikipedia.org/wiki/Direct3D>) - Exposes the advanced graphics capabilities of 3D graphics hardware, including z-buffering, anti-aliasing, alpha blending, mipmapping, atmospheric effects, and perspective-correct texture mapping.
- Bump Mapping (http://en.wikipedia.org/wiki/Bump_mapping) - A technique to add details to shading without using more polygons.
- Normal Mapping (http://en.wikipedia.org/wiki/Normal_mapping) - An enhancement of bump mapping.
- DirectDraw Surface - Wikipedia (http://en.wikipedia.org/wiki/DirectDraw_Surface) (aka .dds) - A file format used for storing textures and cubic environment maps, both compressed and uncompressed.
- DirectDraw Surface - MSDN (<http://msdn2.microsoft.com/en-us/library/bb943990%28VS.85%29.aspx>) (aka .dds) - A file format used for storing textures and cubic environment maps, both compressed and uncompressed.

- 3Dc (<http://en.wikipedia.org/wiki/3Dc>) - A lossy data compression algorithm for normal maps invented and first implemented by ATI. It builds upon the earlier DXT5 algorithm and is an open standard. 3Dc is now implemented by both ATI and NVIDIA.

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