User Guide

DXT Compression Plug-in for Adobe Photoshop

Introduction

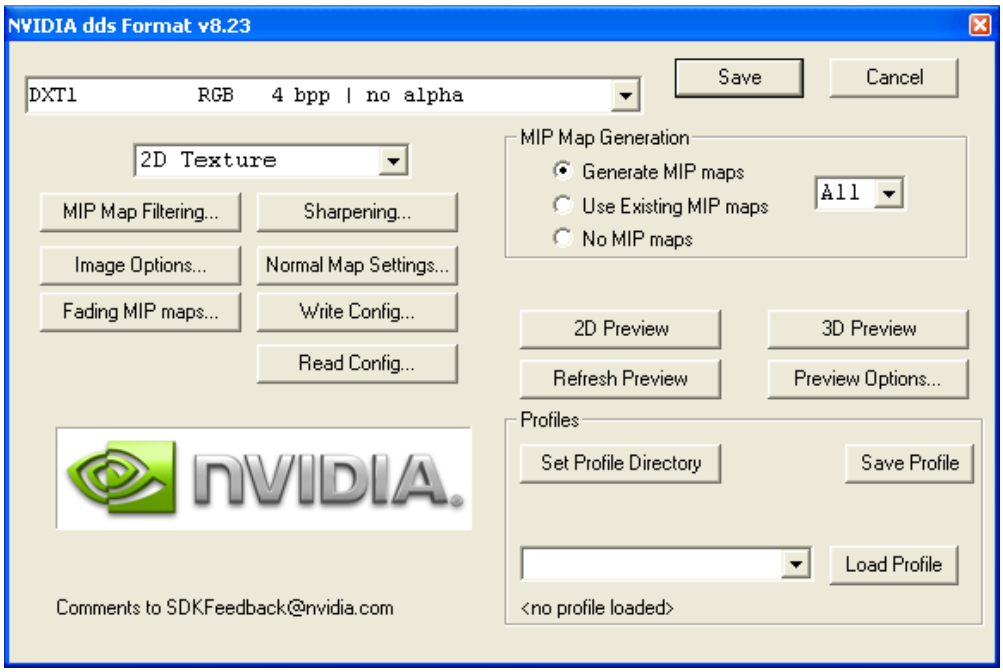
The DXT Compression plug-in for Adobe Photoshop allows Direct Draw Surface (.dds) files to be opened and saved. This plug-in also allows drag and drop of .dds files into PhotoShop.

Installation

This .dds Photoshop plug-in requires Direct3D 9.0 or higher to be installed. The latest version of **DirectX 9** is available from Microsoft's web site.

Saving DDS Files

To save as a .dds file, select an image and under File->Save As select the.DDS format. The dialog below should be displayed.



This is the main dialog for saving dds files.

The **Save Format** pull-down selects the format in which the image will be saved.

Compressed formats are DXT1 through DXT5 and currently require a power of two width and height image. This is done because most hardware only supports power of two images for compressed images. The GeForce Series 6 hardware is one of the first graphics chips that supports arbitrary sized compressed textures.

DXT1, DXT1 with alpha, DXT3 and DXT5 are compressed formats

DXT1's compression ratio is 8:1

DXT3 and DXT5's are 4:1 compression ratio

Other formats are uncompressed:

- 16 bit (4444) - 4 bits for alpha, red, green and blue
- 16 bit (1555) - 1 bit for alpha, 5 for red, green and blue
- 16 bit (565) - no alpha, 5 bits for red, 6 bits for green, 5 bits for blue
- 32 bit RGB - 8 bits for alpha, red, green and blue
- 24 bit RGB - 8 bits for red, green and blue
- 16 bit (0:5:5:5) 5 bits for red, green and blue
- 8 bit index - create a 256 entry paletted texture RGB or RGBA
- V8U8 - Environment-Mapped Bump Mapping (EMBM) format. 16 bit
- CxVuU8 - Compressed Normal map format C = sqrt(1 - (U^2 + $V^{2)}$). 16 bit
- A8 - Alpha channel only. 8 bit
- 4 bit indexed - create a 16 entry paletted texture RGB or RGBA
- 8:8:8:8 Q8W8V8U8 (32 bit, signed)
- A8L8 Alpha/Lum (16 bit)
- fp32 fp - 32 bit, floating point point texture with 4 channels
- fp32 x 4 fp - 32 bit, floating point texture with one channel
- fp16 x 4 fp - 16 bit, floating point texture with 4 channels

You can preview your texture in a 2D or 3D window.

For 3D

Select the formats that you wish to preview and select 3D Preview. Change options in the dialog, then hit Refresh View to update the textures

For 2D

Select 2D Preview (no formats are needed, 2D preview is always 8888 format). Change options in the dialog, then hit Refresh View to update the textures.

MIP Map Generation

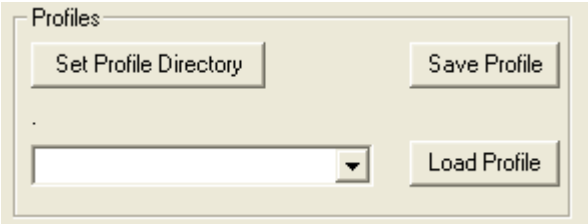
Generate MIP maps - MIP maps will automatically be generated for you. Filtering and Sharpening applies.

The combo box specifies the number of MIP maps to generate or use from the existing image.

Use Existing MIP maps - The image contains the MIP maps already. Use those.

No MIP maps - No MIP maps will be exported.

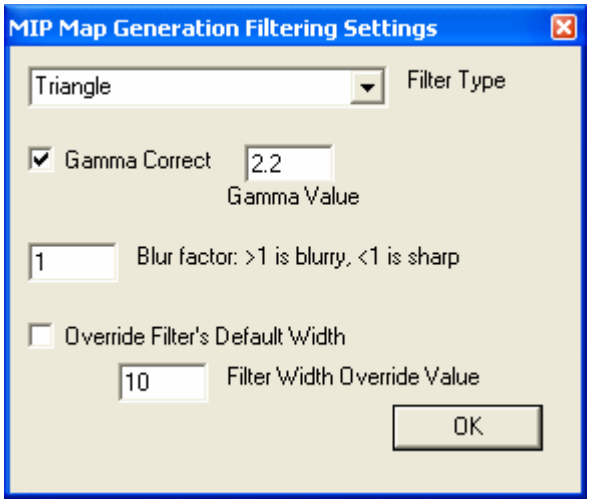
Profiles



You can save your settings in a profile and load it back in later. You can also specify a profile directory and the combo box is populated with all the profiles in that directory.

The default directory is '.' , the current directory.

MIP Map Generation



Filter Type

When MIP maps are generated different filtering algorithms are used to create the MIP levels.

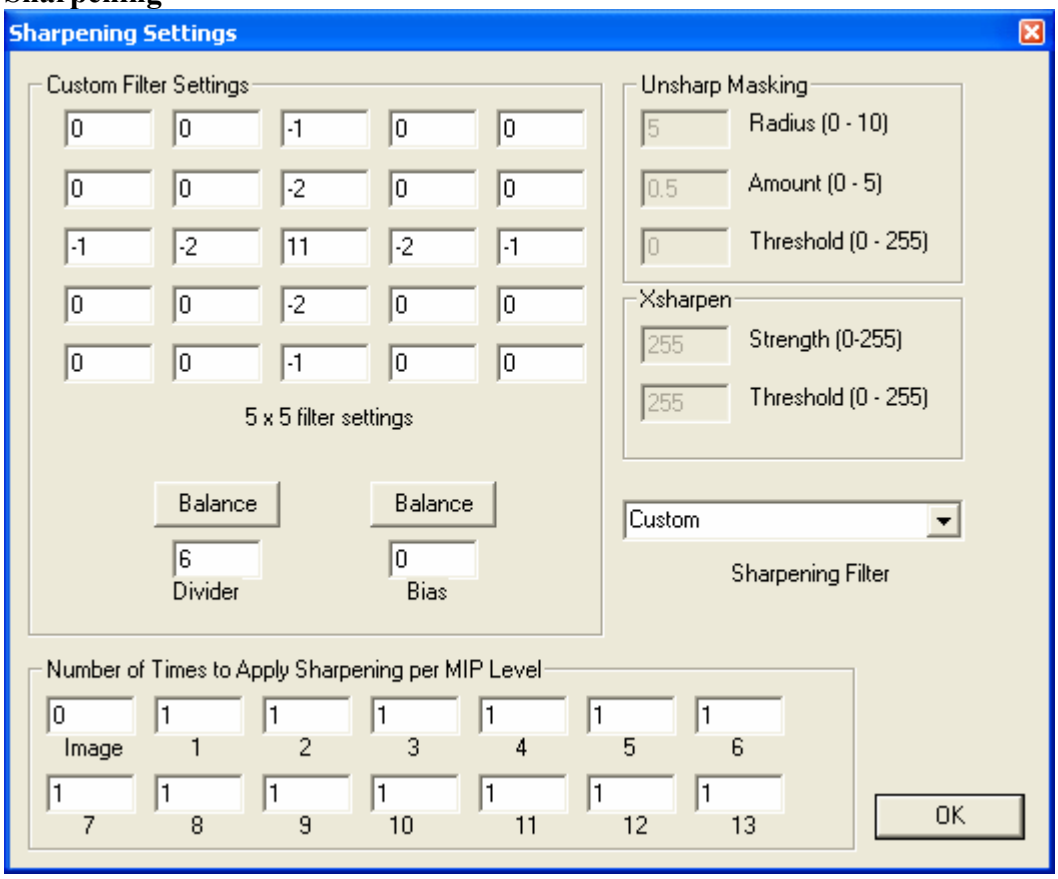
- *Point*: No filtering
- *Box*: Fastest filtering
- *Mitchell*: High quality filtering
- Other filters: *Triangle, Quadratic, Cubic, Catrom, Gaussian, Sinc, Bessel , Hanning, Hamming, Blackman, Kaiser*

Note: Photoshop seems to use cubic filtering during resizing.

Filtering Properties

- *Kaiser Gamma:* Gamma value for filtering in gamma space. Not implemented yet. Default 2.2.
- *Blur Factor:* During MIP map generation, you can increase the sharpening or blurring. Default is 1
- *Gamma Correct:* Enable gamma correction for image. Image is converted to gamma linear space, filtered, then converted back.
- *Gamma Value:* Gamma value used for gamma correct filtering.
- *Override Filter's Default Width:* Each filter has a default width associated with it. You can override it by selecting this.
- *Filter Width:* Use this filter width instead of the filter's default value (0 - 10)

Sharpening



You can optionally sharpen an image after MIP map creation with the sharpening filters. These are applied after the MIP map is created.

The *Sharpening Filter* pull-down gives you these options:

- None - Do not apply a sharpen filter
- Smoothen - Slightly blur
- Sharpen Soft
- Sharpen Medium
- Sharpen Strong
- Mean Removal - Sharpening
- UnSharpen Mask – set the radius, amount and threshold in the unsharpen section
- XSharpen – set the strength and threshold in the xsharpen section
- Warp Sharp - currently disabled until I get a version that works properly
- Custom - Create a custom filter.
  (Enter the filter values in the 5x5 table in the upper left.)

Image Intensity - These are not related to sharpening

- Negative - Negates the colors
- Lighter - Makes the image brighter
- Darker - Makes the image darker
- Contrast More - Add contrast
- Contrast Less - Reduce contrast

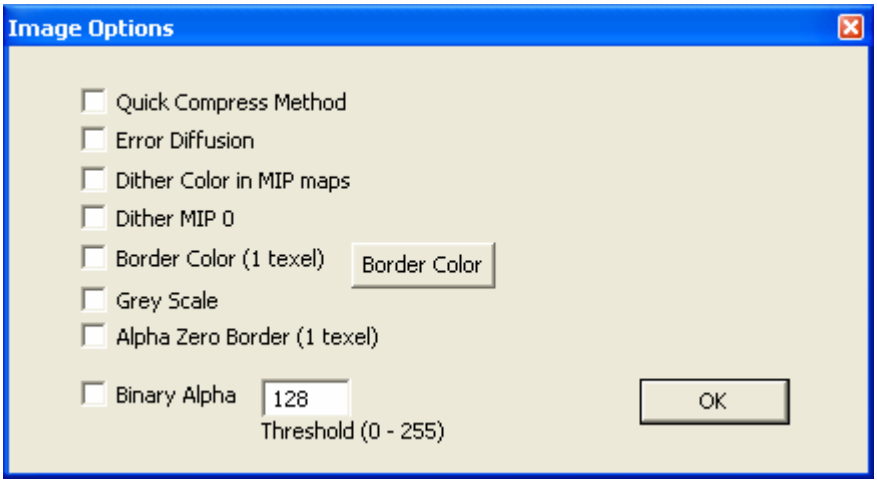
Edge Related - These are misc that show other filtering weightings

- Find Edges
- Contour
- Edge Detect
- Edge Detect Soft
- Emboss

Create a 5x5 filter by selecting 'Custom' in the filter combo and change the 25 entries in the Custom Filter Settings area.

Each setting is divided and biased as above. To maintain the intensity of the image, you can balance the divider or the bias by hitting the Balance button.

Image Options



Quick Compress Method - A Fast, low quality compression method

Error Diffusion - Add error diffusion to compression. This is usually used for normal maps or smooth gradient images.

Dither Color in MIP maps- jitters image so 16 bit image look better.

Dither MIP 0 - Apply dithering to MIP main image

BorderColor (1 texel) - Create a one texel border around each MIP level.

Border Color - Specify the border color

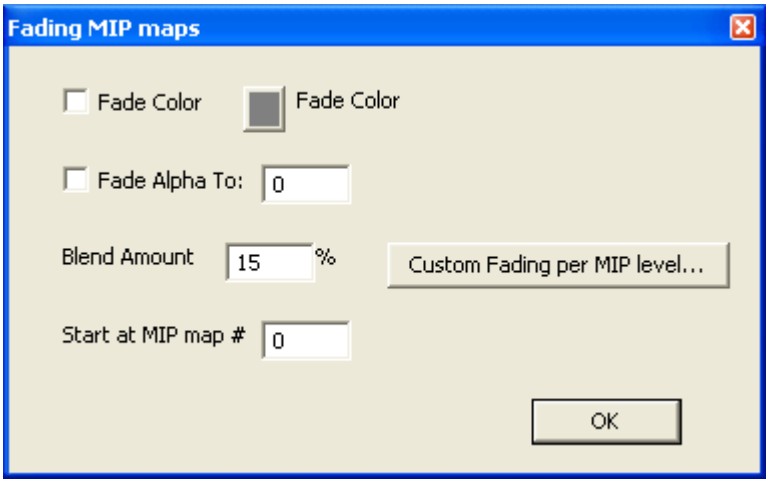
GreyScale - Set if image is all or mostly a grey scale.

Alpha Zero Border - Set the alpha channel to zero for the border of each MIP level

Binary Alpha - treats alpha as one bit only for MIP map generation

Binary Alpha Threshold - When *Binary Alpha* is selected, this value determine if the alpha is zero or one. If the alpha channel is greater than or euqal to this threshold, alpha is set to 1.0, otherwise alpha is set to 0.0.

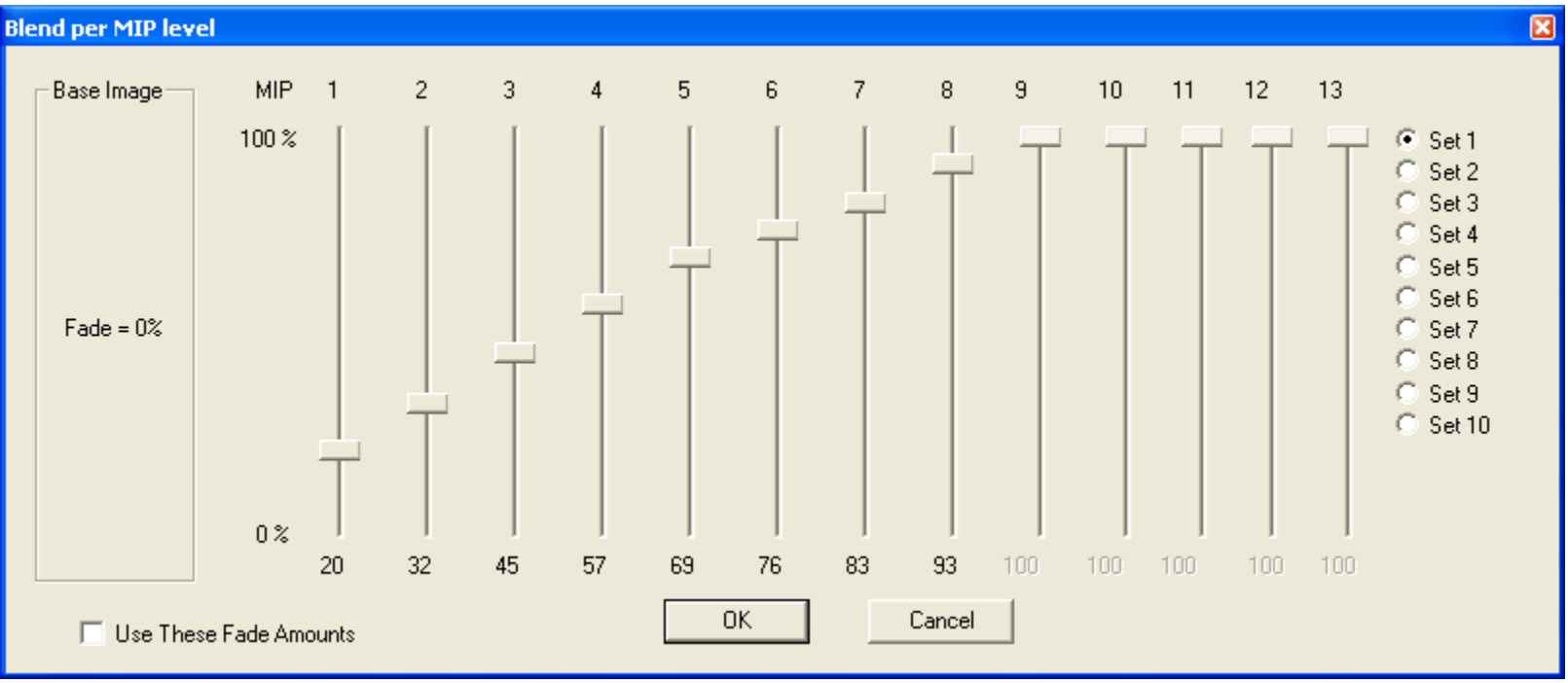
Fade MIP maps



You can fade each MIP maps to a specific color.

- *Fade Color* - gradually fades from the image to a selectable color over *n* MIP maps.
    - *Fade Color* (button) selects the color
- *Blend Amount* lets you specify a percentage fade for each MIP level.
- *Start at MIP*. delays fade until a given MIP level
- *Custom Fading per MIP level.* Instead of programmatically fading alpha, you can specify the alpha fade on a per MIP map level. This button displayes the '*Blend per MIP level'* dialog.

Custom Fading per MIP level… brings up this dialog:



MIP 0 (base image cannot be faded)

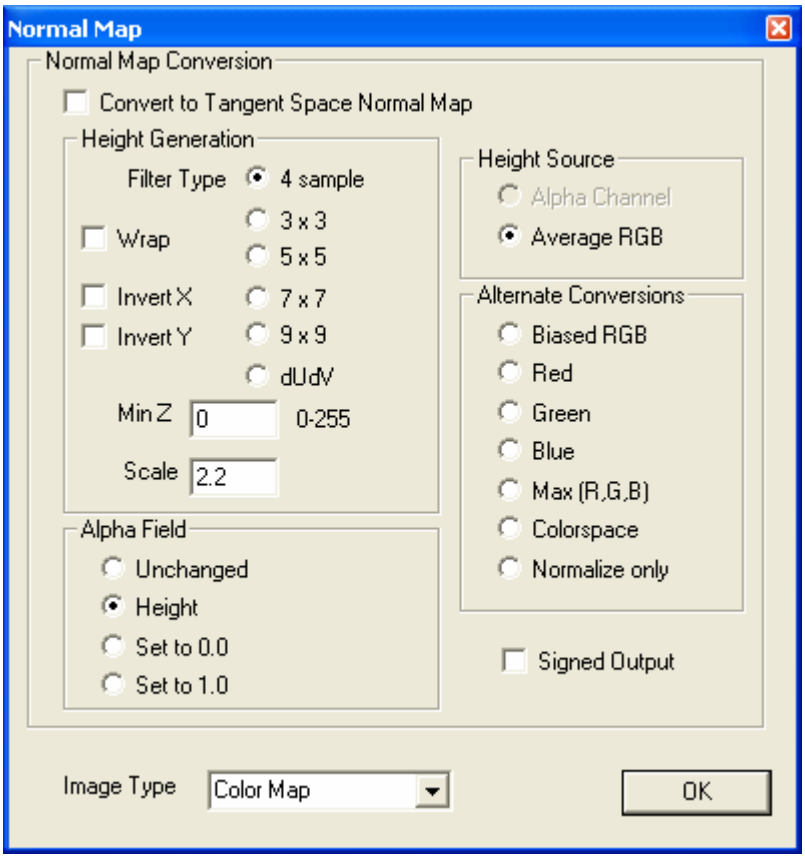
Specify what percentage of the fade amount for each MIP level

Set numbers allow up to 10 different fade profiles to be saved

Controls are disabled if there is no MIP map present. In this case levels 10-13

Use These Fade Amounts - Enable the use of the blending set. Otherwise the main dialog values are used.

Normal Map Settings



You can convert height maps to normal maps by checking *Convert tp Tangent Space Normal Map'* button

Normal map generation converts the image to height to generate the normal maps. The height can come from the alpha or color channels.

The normals are created by using adjacent texels. You can specify how many in the "Height Generation" area.

- *Scale* - Specifies how much to scale the height values. floating point value.
- *MinZ* - Forces the "up" direction to be a minimum value
- *Du/Dv* - Use this to create EMBM maps
- *InvertX, InvertY* - changes the direction of X or Y

Alternate conversions

Biased RGB subtracts average color of image from each texel

- Red - Use the red channel as height
- Green - Use the green channel as height
- Blue - Use the blue channel as height
- Max - Use the maximum value from the R,G and B channel
- Color space - Height = 1.0 - [(1.0 - r) * (1.0 - g) * (1.0 - b)]
- Normalize Only - Image is already a normal map, just renormalize

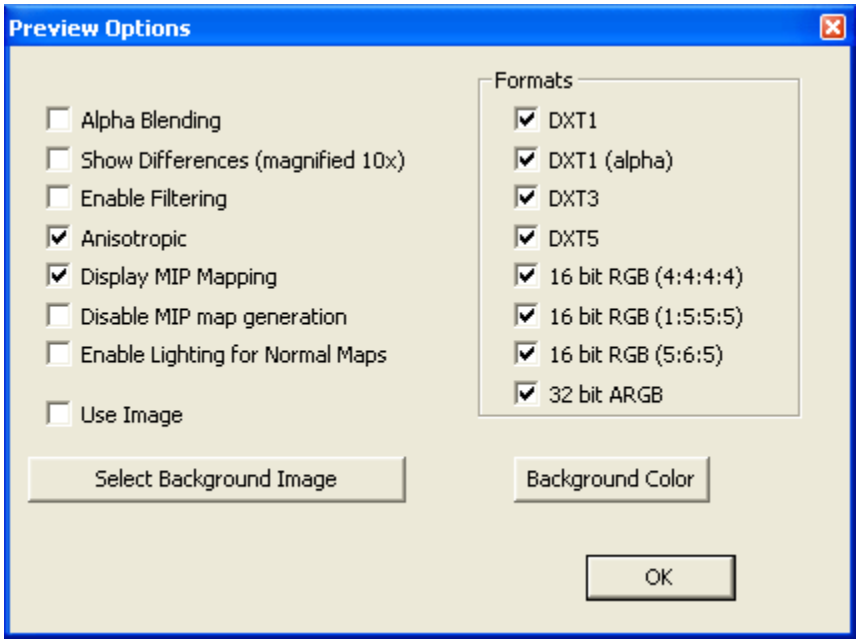
Alpha Field - Specifies what is placed in the alpha channel after normal map generation

Select 'Using Multiple Layers' if you are are using Layers and cannot get the alpha channel to work

Image Type

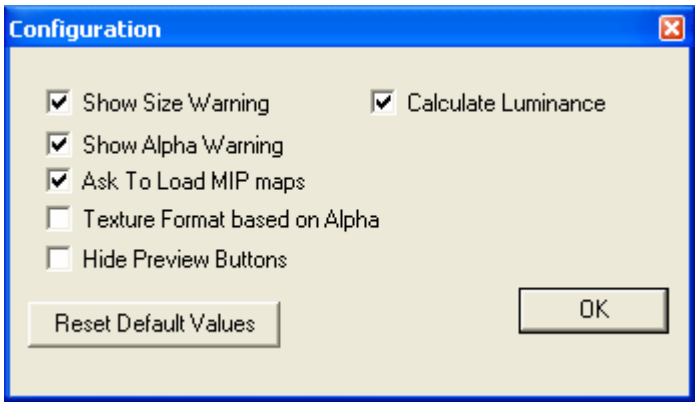
This selects what the type of input image you are working with. Different compression methods are used depending on what the image is.

Preview Options



- *Alpha Blending* - Enables/disable alpha blending using the alpha channel of the texture. This is applied to 2D and 3D previews
- *Show Differences* - Compares the full precision image with the modes that are selected. Differences are magnified 10 times.
- *Enable Filtering* - Enables disable all texture filters
- *Display MIP Mapping* - Enables/disable MIP mapping display (no MIP maps are displayed)
- *Disable MIP Mapping* - Enables/disable MIP mapping generation (no MIP maps will be created)
- *Anisotropic* - Enables/disables anisotropic filtering
- *Background Color*- Specify the background color in the 3D display
- *Background Image*: Specify a background image in the 3D display.
    - *Use Image: Enable/Disable use of the backgound image*
    - background image file name is listed at the bottom of this group

Configuration Settings



Show Size Warning: Warns if the texture is the wrong size

Ask To Load MIP maps: Enable/Disable the dialog that asks you if you want to load MIP maps

Show Alpha Warning: Warns if alpha is all black

Texture Format based on Alpha: Choose the texture format based on the alpha channel

DXT1 is no alpha channel

DXT3 if there is an alpha channel.

Hide Preview Buttons: Hides the preview options in the main dialog.

Calculate Luminance: Enables converting RGB values to a luminance value when writing out formats that support luminance values. When this is disabled, the red channel is stored in the luminance channel for export.

Reset Default Values - resets all values to defaults

Contact

Please send comments, feature requests, and bug reports to texturetools@nvidia.com.

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