

Modeling For GameGuru: Texture Sets

Taken from an online guide by By Belidos .
PDF Version by Tony Strike.

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Introduction

What you will find in this mini-guide is a simple explanation of which texture sets GameGuru uses for both PBR and non-PBR with some basic examples, hopefully it answers a few questions for those who aren't sure.

What you won't find in this guide is instructions on how to make these textures, the scope of this guide is to simply tell you which textures do and don't work in GameGuru, it is up to you to learn how to make your own textures.

There are two primary methods of PBR (there are variations, but these two are the common methods):

- Spec/Gloss: This will usually include a Diffuse or Albedo, Specular, Gloss, Normal, and Ambient Occlusion
- Metallic/Roughness: This will usually include a Color, Metallic, Roughness, Normal, and Ambient Occlusion

There are also additional maps you can use, such as height, detail, glow etc.

With GameGuru, we have two rendering methods:

- The first is the basic non-PBR which consists of Diffuse, Specular, and Normal (with additional options for illumination and cube maps),
- The second is for PBR models, and we use a Metallic/Roughness method with a little twist, the Roughness map is named `_gloss`, but is actually a roughness map, and the metallic map is named `_metalness`.

Height maps, although added to the PBR workflow in GameGuru, as far as i know don't actually work yet (confirmed as not working by Lee 6th March 2018), and i'm not sure if _ao is added yet (confirmed as working by Lee 6th March 2018).

As of a recent update both non-PBR and PBR textures can be supplied with a model, and with a simple change in GameGuru's setup.ini you can switch between using non-PBR and PBR by using changing the value of pbr_override from "1" to "0" and vice versa.

Note:

The textures and model shown in the images in this guide aren't perfect, they're just quick examples i knocked up to give a rough idea of how they look.

Non PBR Textures

Textures a non-PBR model should have in Gameguru are:

_D

- this is the diffuse texture

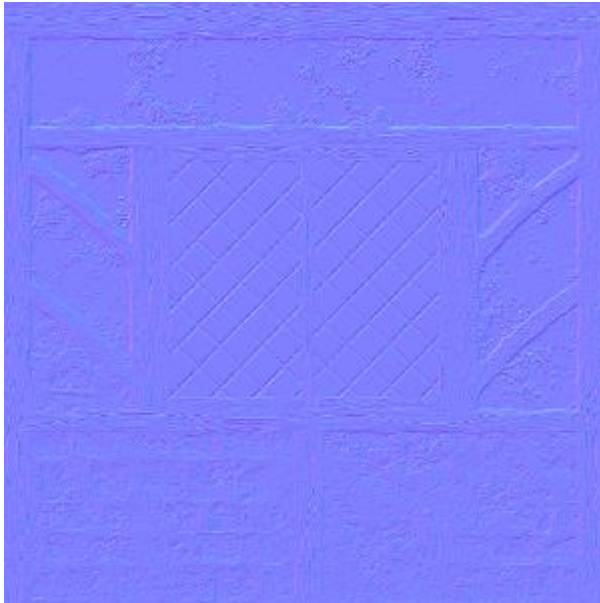
A Diffuse map defines the color and pattern of the object. Mapping the diffuse color is like painting an image on the surface of the object.



_N

- this is the normal texture

A Normal Map is a texture that fakes the lighting for bumps and grooves in a texture, effectively adding geometry without creating more polygons.



_S

- this is specular texture

Specular maps are the maps you use to define a surface's shininess and highlight colour. The higher the value of a pixel (from black to white), the shinier the surface will appear in-game.



_I

- this is an illumination texture

An illumination texture is used to highlight areas on the model that glow, all areas that have no glow should be masked in black, and the areas you want to glow will be filled in a different colour, if you want it to glow the colour on it's main texture then you fill the area in a shade of grey to white, if you wish to give it a colour to glow, then you fill the area in with that colour, the lighter the colour the brighter it will glow.

- **Optional**
- *I don't have an example of an illumination map at this time.*

_cube

- this is a cube reflection map

A cube reflection map is a way for the shaders to use a texture to fake reflections, each cube map contains 6 mipmap images, with each image representing a direction around the object (up down left right front back etc.) those images are projected onto the model in such a way that as you move around the object it appears to be reflecting them back to you.

- **Optional**
- *I don't have an example of a cube map at this time.*

Result in GameGuru:



PBR Textures

Textures a PBR model should have for GameGuru are:

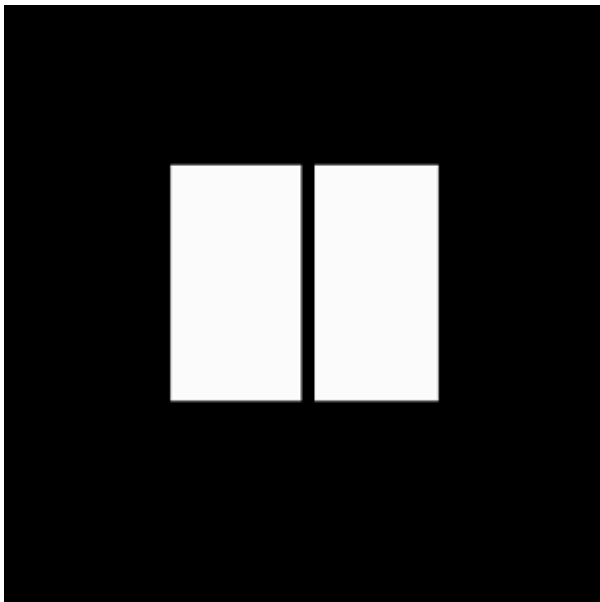
`_color`

- this is your base coloured texture.



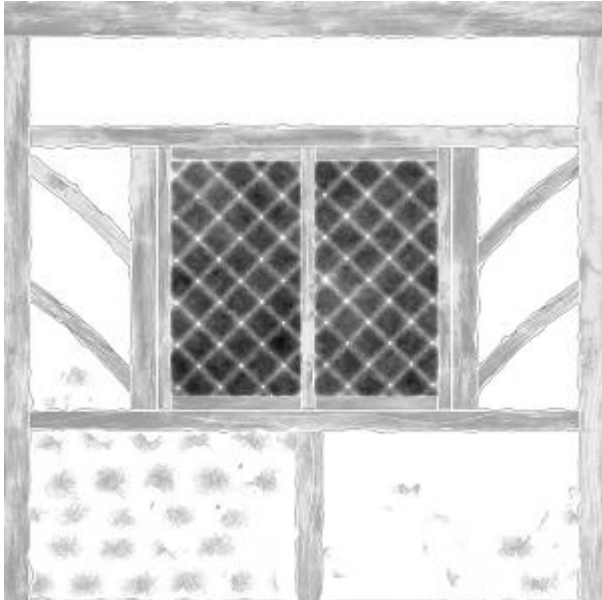
`_metalness`

- this is a standard metallic texture, this is a grey scale image where white is highly reflective/shiny, and black is non-reflective/shiny. This would be the **Specular map**.



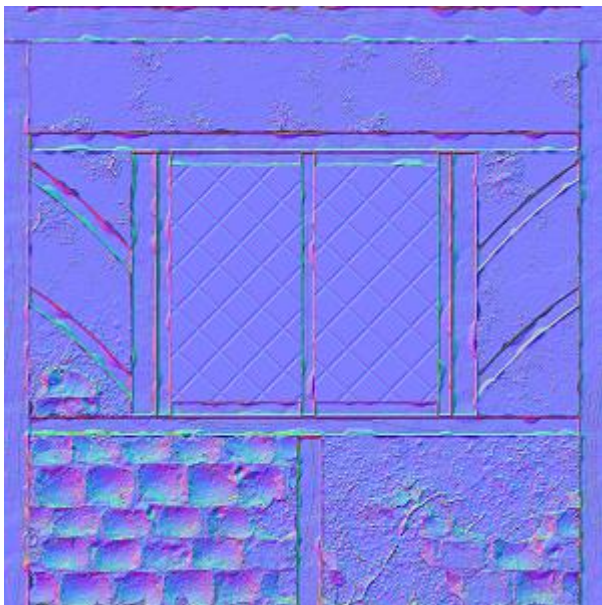
`_gloss`

- this is actually a roughness texture renamed to `_gloss`, it is a grey scale image where black is completely smooth, and white is highly rough.



`_normal`

- this is your normal map



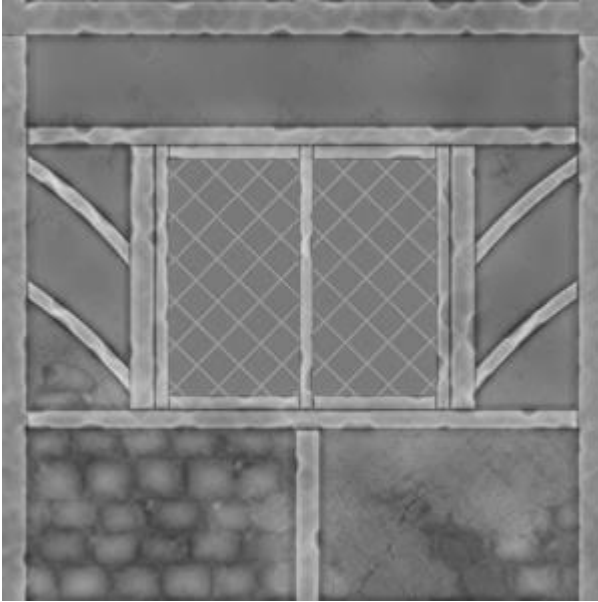
Just a quick note to add:

*With the `_normal` texture required for **PBR** in GameGuru the normal direction should be -y in the green channel, most mesh painters tend to paint the normals in +y so you may need to load the `_normal` in a paint program like photo shop, or GIMP, go to the green channel and invert it, then save it out again.*

`_height`

- a height map (confirmed as not working by Lee 6th March 2018)

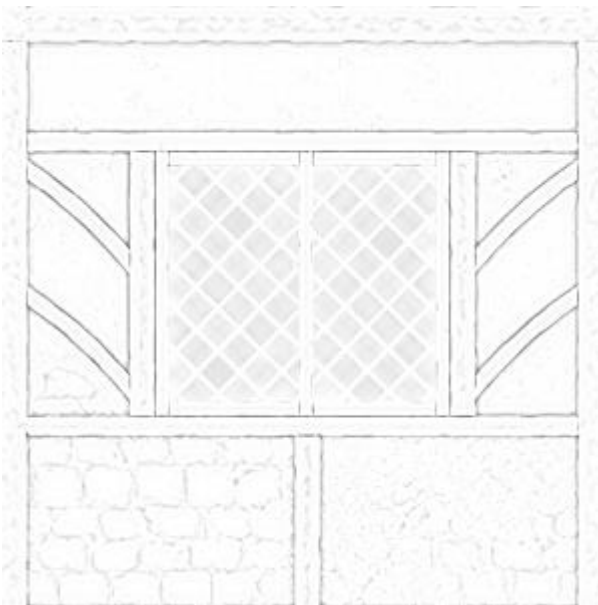
- *Optional*



`_ao`

- ambient occlusion, a grey scale image that creates the shadows in cracks, crevices, and corners etc. (confirmed as working by Lee 6th March 2018)

- *Optional*



`_detail`

- this adds fine detail scaled and tiled across the model

- **Optional**
- *I don't have an example of a detail map at this time.*

`_illumination`

- this is an emissive map, it will allow you to assign areas of your texture to glow. Primarily it is grey scale with black = no glow, white = glow, however the glowing areas can be coloured, and lighter is brighter, the illumination map will take the place of the detail map, they cannot be used at the same time.

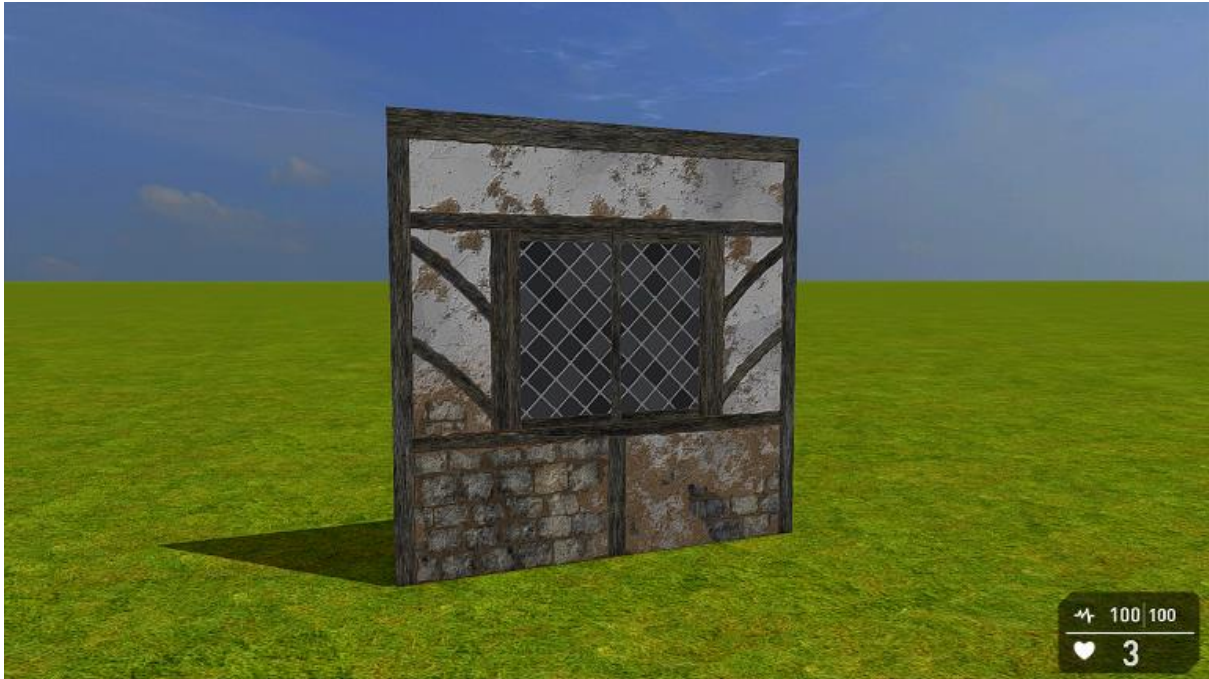
PirateMyke: to use an illumination map the models fpe shader line has to point to a `pbr_illum.fx` .
GraPhyX: Confirmed you don't need to change the FX, and `_emissive` will also work.

- **Optional**
- *I don't have an example of an illuminationmap at this time.*

Result in GameGuru:



NON-PBR TEXTURES



PBR TEXTURES



Thanks to GraPhiX

`_ALBEDO = _color`

`_METAL = _metalness`

`_ROUGH = _gloss` (has to be inverted)

`_NORM = _normal`

`_AO = _ao` (ambient occlusion)

`_DISP = _height`

`_RMA` = RMA texture is just the Roughness, Metallic and AO packed into the RGB channels of an image. (not used in GG yet but maybe soon)

Questions & Answers

Q: Is the .X model used the same as the .fbx as far as PBR rendering is concerned?

A: As far as any rendering is concerned now, Static FBX files can be used like the x file was. The engine will make the required .dbo file for use in the game level.

Q: Can current .X models be converted to PBR by restructuring the texture files, and switching to the `apbr_basic` shader in the FPE?

A: Any model can be converted to pbr texture use. Follow the metallic workflow and use the roughness map as the gloss map. You can most time use the `apbr_basic` shader unless you want illumination, animated bones objects, or characters.

Q: What is an emmissive file. How does it work?

A: Label your emmissive map as `_illumination` and use the `apbr_illum.fx` shader for objects and `character_basic` for characters.

Q: Should we be using .dds or .png now for PBR?

A: That is really up to you. .dds format is for gaming engines
.png and .jpg and .bmp can also be used for dx11 stuff. Strangely enough you can't use .tga files in dx11.

I did some experimenting converting an old model of mine from (`_D_N_S`) to PBR.
I took the `_D` map into Photoshop, and changing nothing, I saved a new copy `_color.dds`
Using the NVidia plug-in I created a new Normal map, and saved this as `_normal.dds`
I used the specular map as the `_metalness.dds` map, simply blacking out items that I know are not metal.

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Create a grayscale version of the color map, and used it as the `_gloss.dds` file.
Make the `_ao.dds` file. Copy, renamed, and modified the FBE file to the new texture (`_color.dds`) set the effect to `apbr_basic.fx`, using the same `.x` model as the original.
The PBR structure does make the shadows much more natural. There is also a very noticeable difference to metals, making them look more life-like. The Ambient slider works the way it should

Questions:

How do you reduce the wet look?

You can either turn the specular down in the asset properties in GG editor or tone down your gloss map. The wet look is probably your gloss map.

In gameguru the `_gloss` map is NOT a gloss map, it's actually a roughness map that has been called `_gloss`, so the black and white will be reversed. So if you are using anything that generates the maps, like B2M3, you need to ignore the gloss map it produces and use the roughness map and change its name to `_gloss`, or edit the existing gloss map in a paint program and invert the colours..