

DOSCH DESIGN TUTORIAL

Using HDRIs in 3ds max

A Step-by-Step Guide

This tutorial show you how to use HDRIs in 3ds max by using **Vray** or **Brazil r/s**.



Step 1

Things you will need for this tutorial.

- 3D Studio Max 4.xx or above
- **Vray** or **Brazil r/s**
- HDRI files from one of the **Dosch Design HDRI** collections
- the scene files delivered with this tutorial

About HDRI

There are two types of images. Low Dynamic Range Image(LDRI) and High Dynamic Range Image(HDRI).

The first one comprises "normal" bitmaps [like JPEG, TIFF, BMP...], bitmaps which have 8 bits per pixel, with values between 0-255 [in RGB mode]. Which means that there are only 256 levels of luminosity, which doesn't cover by far the range that can be captured by a real camera, with different levels of exposure.

On the other end we find HDRI, whose values can get a lot higher than 256. The main feature is that the value of each pixel is proportional with the quantity of light on each pixel. Basically, instead of just storing colors on the screen like normal bitmaps do, the HDR format stores the quantity of light per pixel. Meaning we can have more than 256 levels of luminosity.

Let's Start

File>Open hdri101_start.max. This is the scene we'll use. It has standard all polys and standard materials. This is a render with Max's standard Scanline Renderer with only ambient lighting. (Image 00)
Not too pretty, is it?

And this is what you will get when using

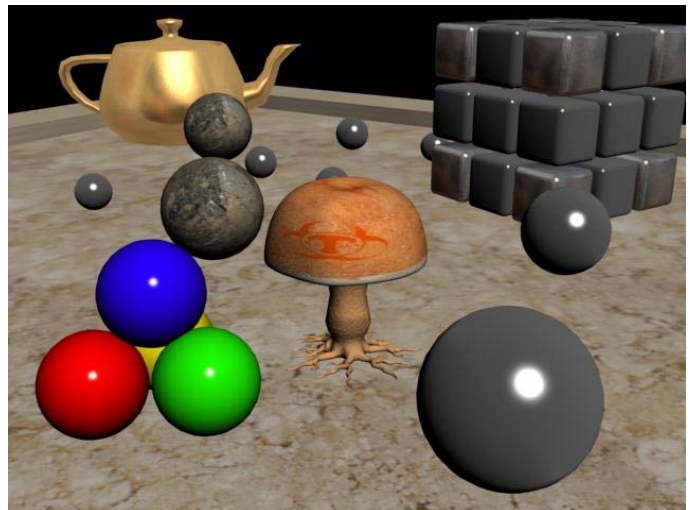
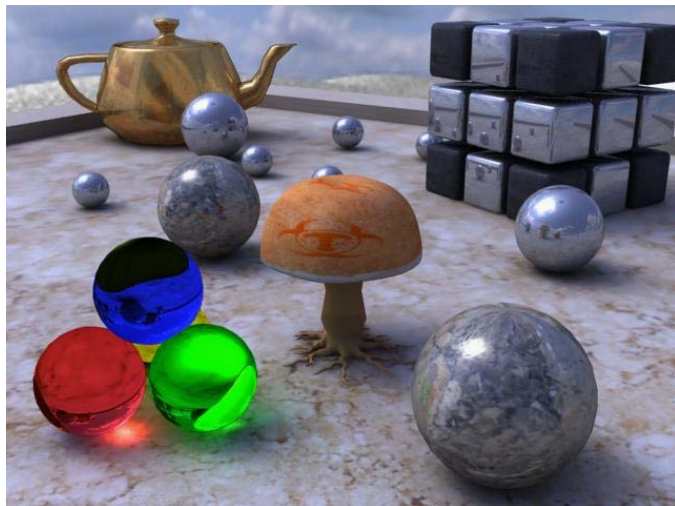


Image 00

Vray



Brazil r/s



Vray

First thing let's open the scene. *File>Open* and choose *hdri101_vray.max* . This is a scene with materials already assigned to them. Basically all that was changed is a Vraymap in the reflection or refraction slot.

But before that, go to *Rendering>Render* or just pres **F10** to go into the rendering settings menu.

Tip. Learn to use Max's shortcuts. They are real time savers. All around this tutorial shortcuts will be highlighted in green, so make yourself a favor, learn them.

Now in the settings menu, go to the *Current Renderers* tab and press in the Production slot you should see something like *Default Scanline Renderer*. Press the *Assign* button next to it then choose Vray. (Image 01)

Now click on the *Image Sampler* tab and select *Adaptive Subdivision*. Select *Indirect Illumination(GI)* and select *On*. Select *Irradiance Map* and at *Min Rate/Max Rate* use *-6/-5*. These settings are good for test renders. The render times will be short, which is a good thing especially for doing GI and material set-up work. For final rendering I recommend using *Simple Two-Level*, under the *Image Sampler* tab, and for *Min Rate/Max Rate* use *-3/0* or *-2/0*, depending on the scene. Also use *Clr tresh: 0.3*, *Nrm tresh:0.25*, *Dist tresh:0.1* and *HSph subdivs* at 40. Be prepared for BIG rendering times. But don't be afraid to EXPERIMENT.

Environment Mapping

Now let's map the environment. There are several ways of doing this. I'll tell you in short then detail them one by one. First there is the standard *Max Environment mapping*. Then we have Vray's own environment mapping. And here we can use either a *VrayHDRI* map, or a simple *Bitmap*. The latter option requires the *hdri.bmi* plugin from the *Splutterfish* website. It's free. All it does is enables Max to import *.hdr* files.

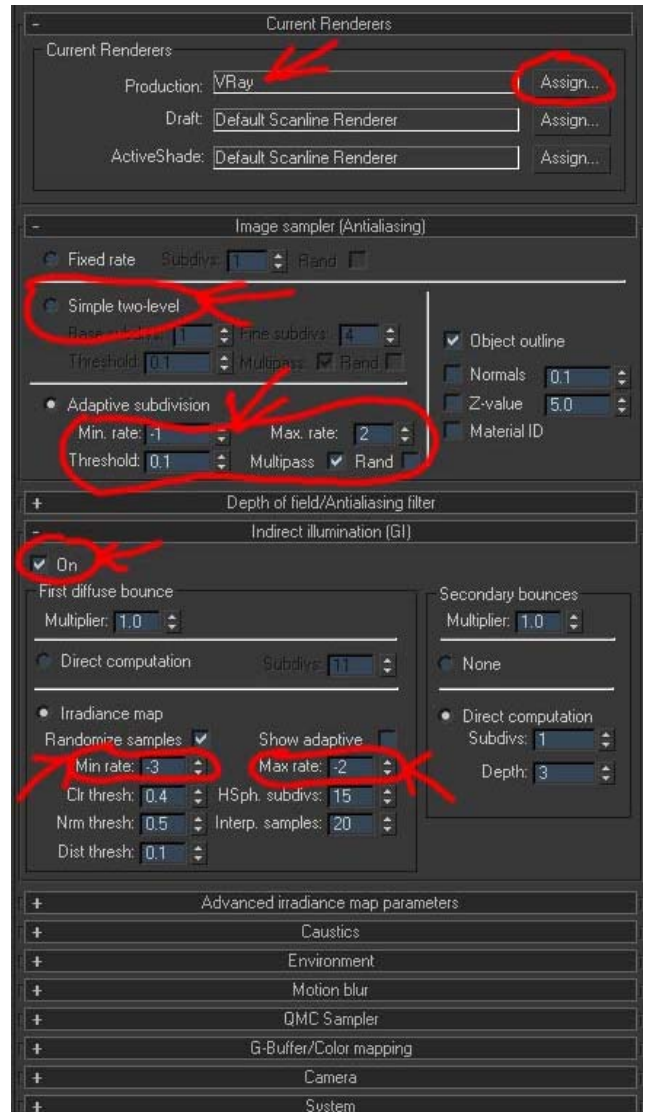


Image 01

Standard Environment Mapping

Go to *Render>Environment* or just press 8. In the *Environment Map* slot click where you see *None* (Image 02). Then browse to the location of HD008LL.hdr and select it. Then press *Setup* (Image 03).

A new window will pop up and we get a histogram of the luminosity values of the selected image.(img05.jpg) Under it we find *White Point* value, controlled by a spinner. This *White Point* controls the luminosity, actually the range of light values the image can take. As I said earlier, Max doesn't use floating point images so with this setup window we are actually converting floating point images to standard images. It does that by setting a *White Point*, which is the point with the highest luminosity value. Any value after the *White Point* is considered as being pure white. It's also known as the clamping value or point.

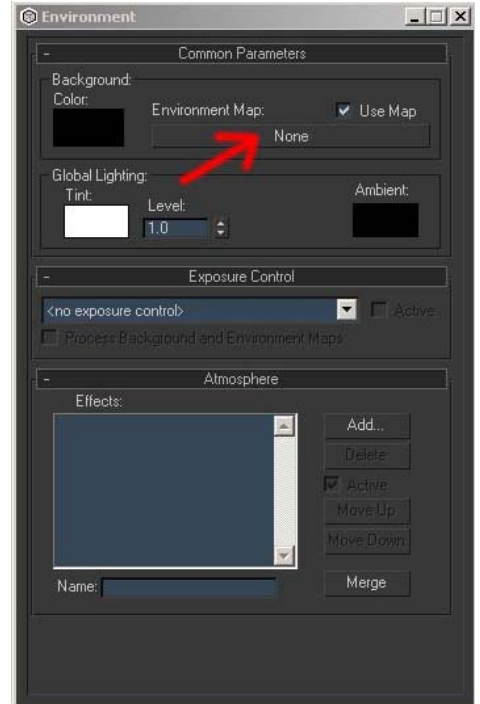


Image 02

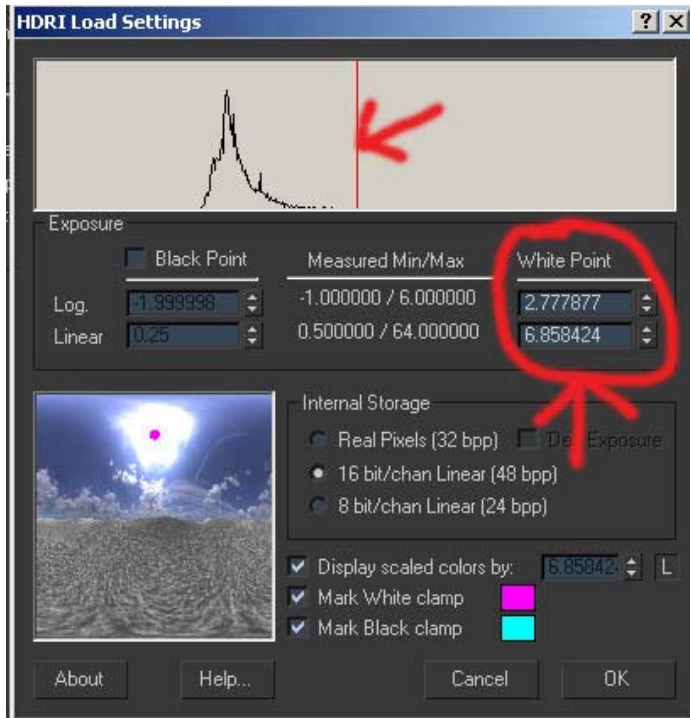


Image 05

Notice there are two values for the *White Point*. One is *Log.*, the logarithmic value and the *Linear* one. We increase the spinner until the vertical red line is at the end of the histogram values. Now look at the *Linear* value. Write it down somewhere. Press *Ok* then *Open*.

Open the *Material Editor*, open the *Environment Map* you've just created. Open the *Output* slot and under *RGB Level* input the *Linear* value you wrote earlier. From the image you can see I used a higher level. That is because through trial and error I decided the image looked better like this..

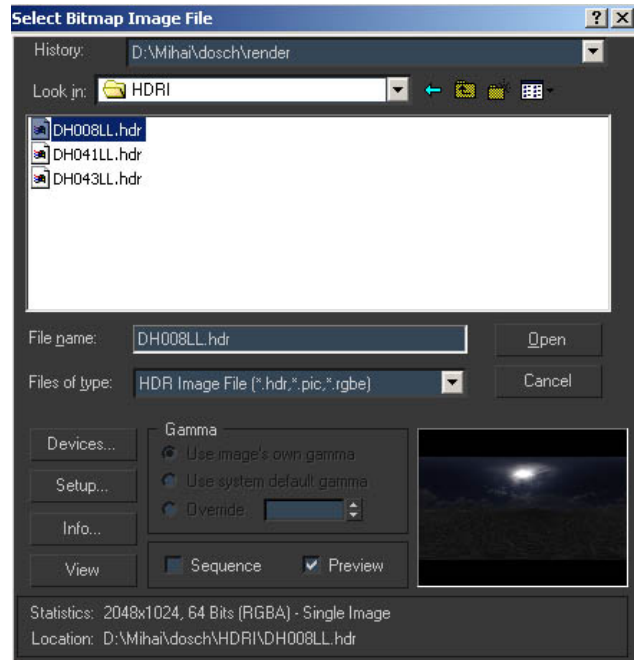


Image 03

Now hit render. And you should be left with something like this (Image 06).



Image 06

Vray Environment Mapping w. VrayHDRI

Go to *Render>Environment* or just press **8.**, click on the *Environment Map* slot. then in the *Material/Map Browser* click *None*. Now click **F10** or *Rendering>Render*. Scroll down to the *Environment* tab and check the 2 *Override Max's* at *GI Environment* (Image 07). Now click the first slot that has *None* on it. In the *Material/Map Browser* choose *VrayHDRI*. Now drag and drop this map into the *Material Editor*. Then click the *Browse* button next to the *HDR Map* slot and choose *DH008LL.hdr* (Image 08). Make sure *Spherical Environment* is selected as the *Map Type*. Now go back to the *Render Settings* and in the *Environment* tab copy the map from the *GI Environment (skylight)* to the *Reflection/Refraction etc environment* slot. (Image 09)

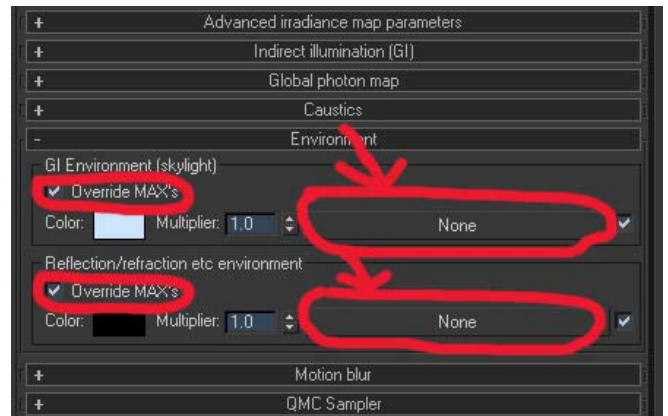


Image 07

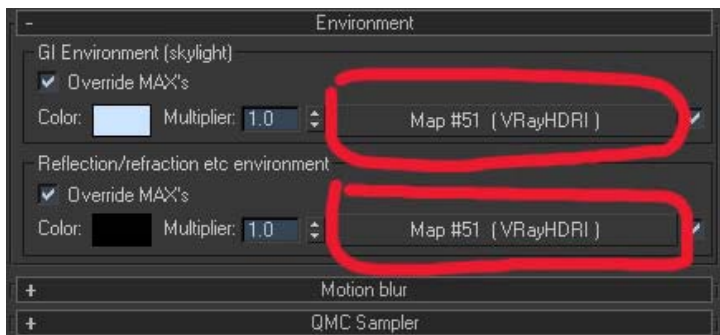


Image 09

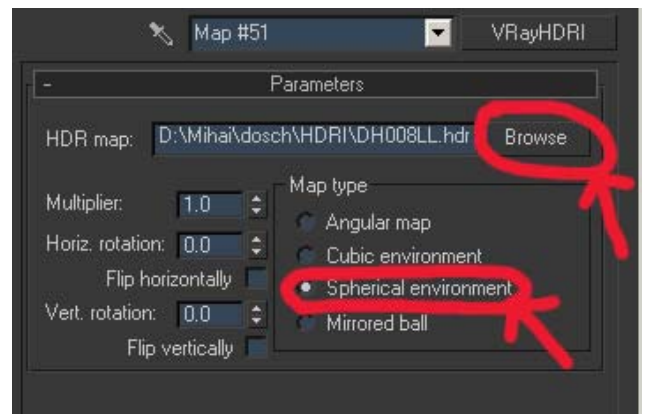


Image 08

Again hit render. This is what you'll get (Image 10). There are subtle differences. None too obvious though.

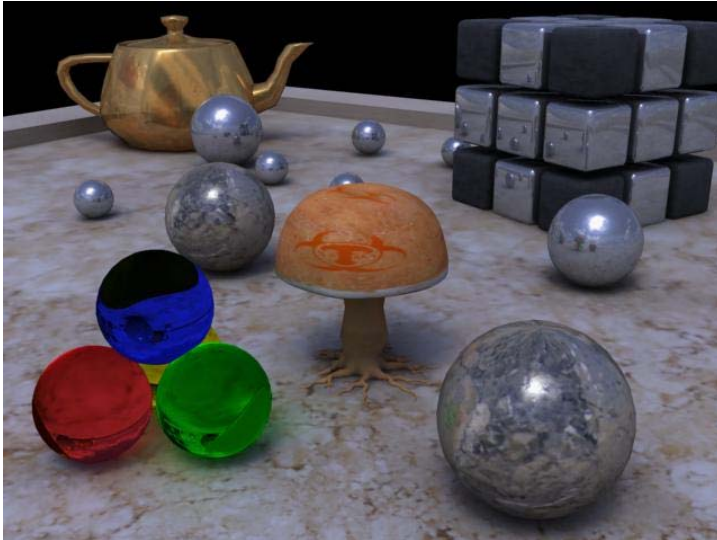


Image 10

Vray Environment Mapping w. HDRI Bitmap

The process is only different from the latter because instead of the VrayHDRI map u use a standard Bitmap and redo the process of setting it up from the **Standard Environment Mapping**.

This is the result (Image 11)

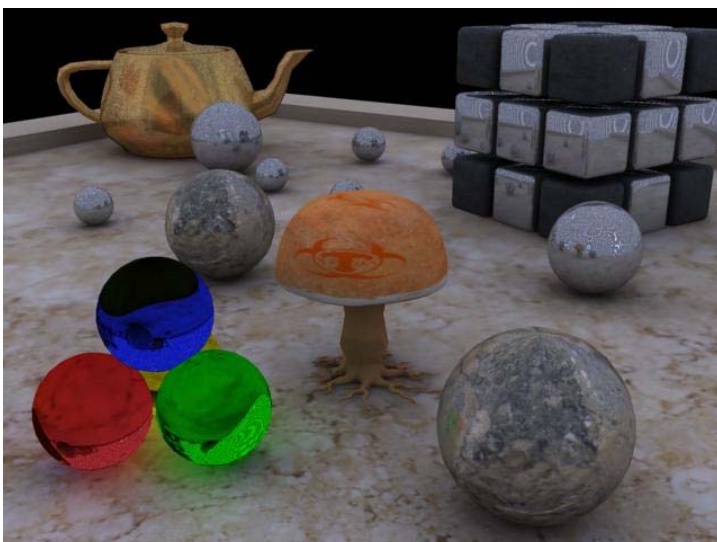


Image 11

Brazil r/s

Let's *File>Open* *hdri101_brazil.max*. All materials have been assigned to the objects. I tend to use the material specific to the renderer I am using. Thereby all materials used were Brazil Basic Mtl.

Press **F10** or *Renvering>Render* and go to the *Brazil : Image Sampling* tab. Now for the test renders click on P1, which is the recommended lowest setting. Now for the final rendering you will choose P3. That is almost always enough for the anti-aliasing. (Image 12)

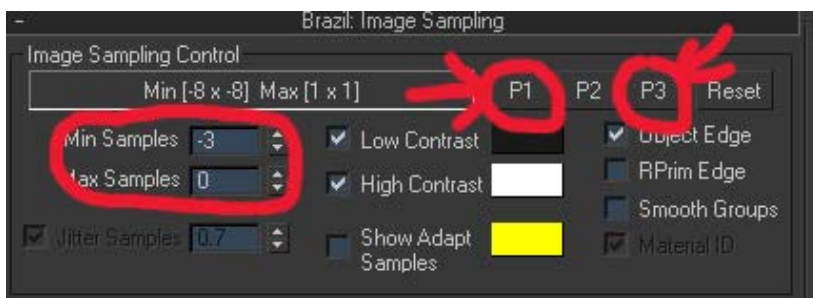


Image 12

Now go to the *Brazil : Luma Server* tab. Check *Skylight* in the *Direct Illumination* section and *Enable* and *Skylight* in the *Indirect Skylight* section (Image 13). If you don't click on them you will have no GI. And here's a sample of what you would get (Image 14).

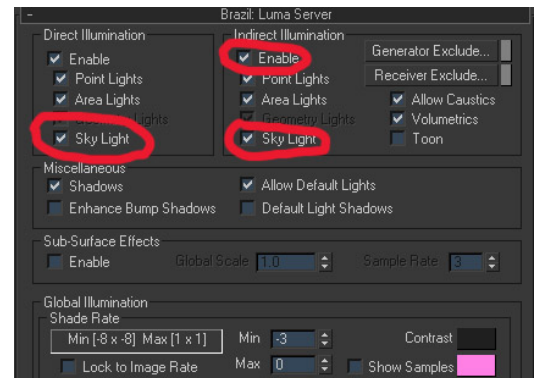


Image 13

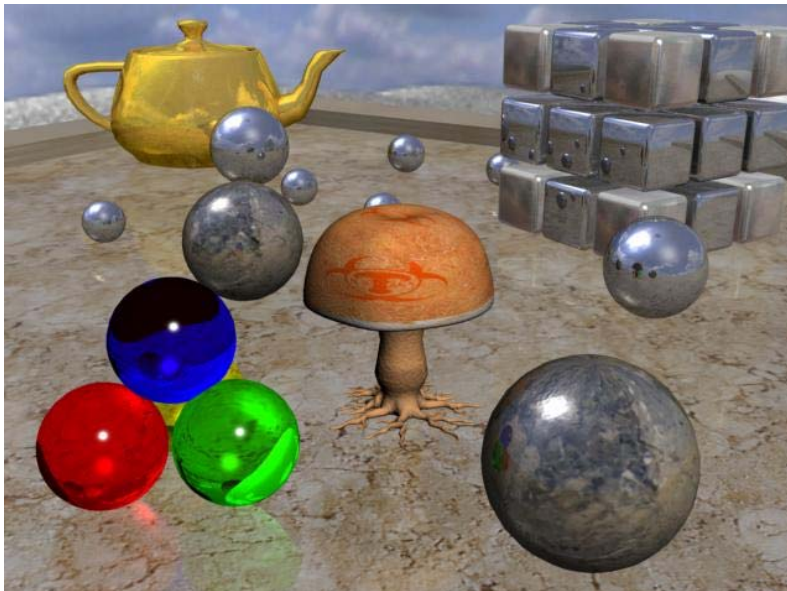


Image 14

Environment Mapping

Mapping the environment is very straightforward. We have here also two ways of mapping. *Standard Enviroment* or *Brazil Environment*.

Standard Environment Mapping

Go to *Render>Environment* or just press 8. In the *Environment Map* slot click where you see *None* (Image 15). Then browse to the location of *HD008LL.hdr* and select it. Then press *Setup* (Image 16).

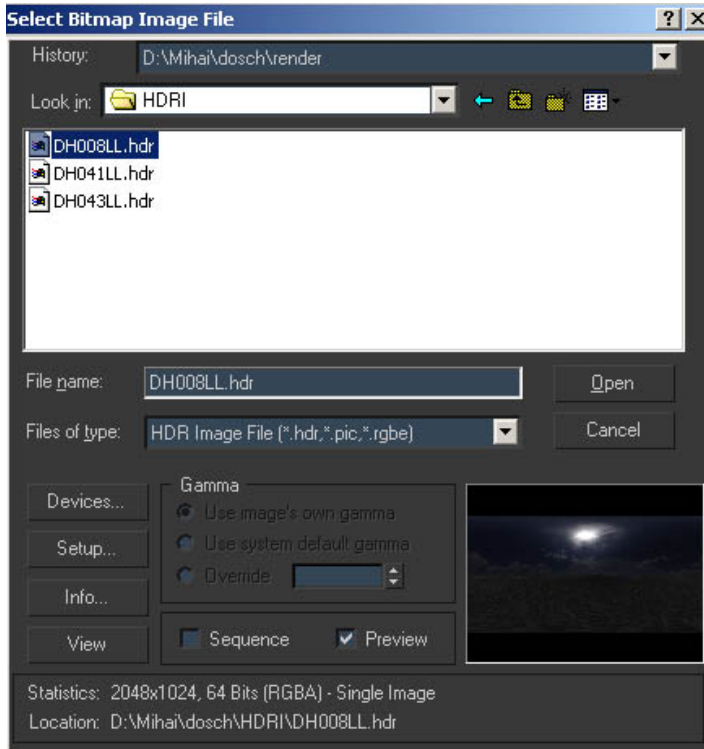


Image 16

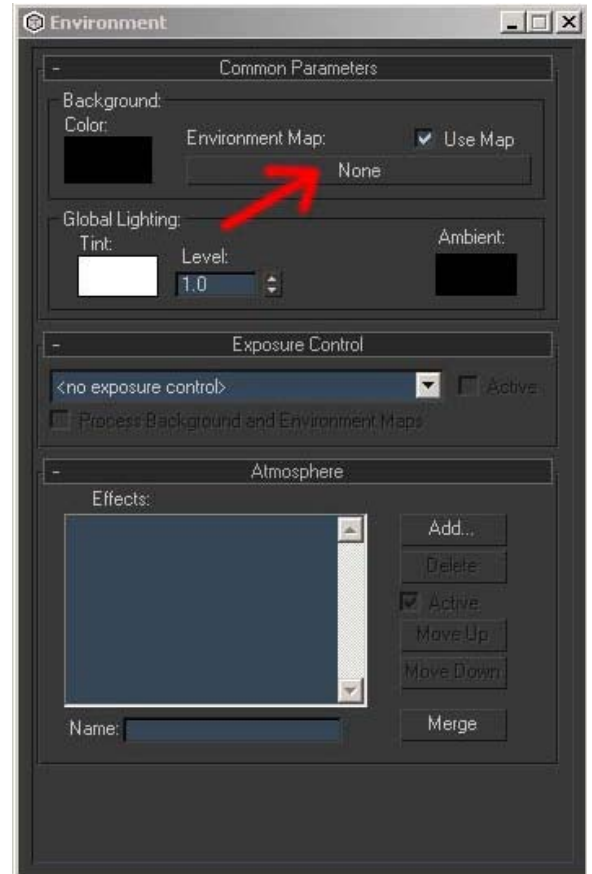


Image 15

A new window will pop up and we get a histogram of the luminosity values of the selected image. (Image 17)

Under it we find *White Point* value, controlled by a spinner. This *White Point* controls the luminosity, actually the range of light values the image can take. As I said earlier, Max doesn't use floating point images so with this setup window we are actually converting floating point images to standard images. It does that by setting a *White Point*, which is the point with the highest luminosity value. Any value after the *White Point* is considered as being pure white. It's also known as the clamping value or point.

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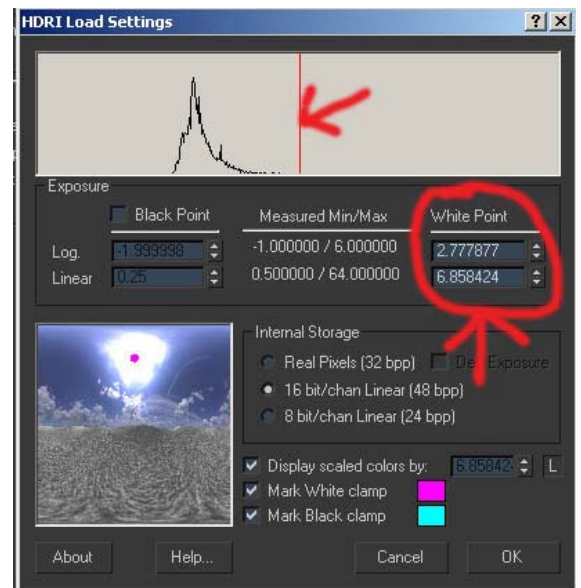


Image 17

But if you're going to use this one make sure *Use Environment Settings* is checked in the *Skylight* section (Image 18).

When you hit render with full quality this is what your going to get.(Image 19)



Image 18

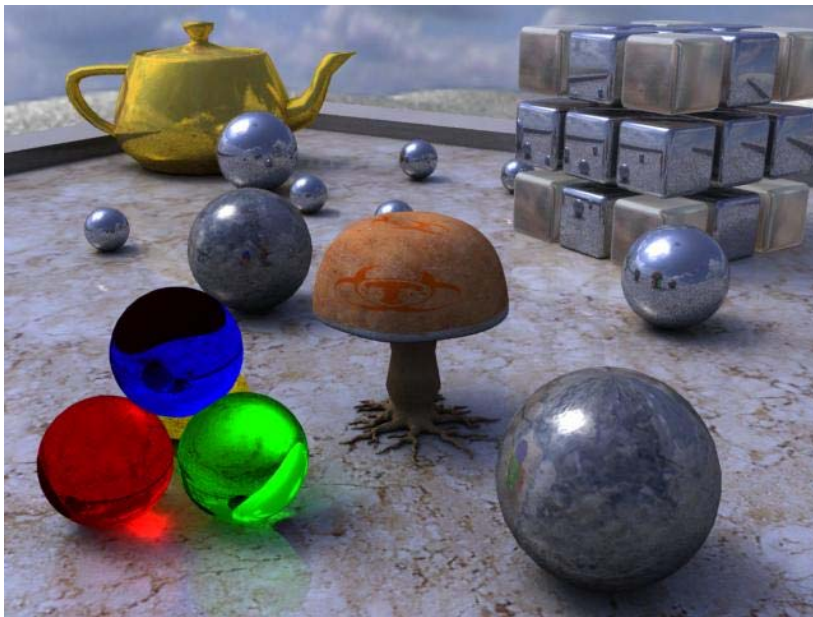


Image 19

Brazil Environment

In the *Skylight* section(img18.jpg) make sure *Use Environment Settings* is unchecked. and now clicking on the map slot you simply redo all the process from the *Standard Environment* technique. Remember the mantra: bitmap - setup - lin value in the output slot.

Pressing render will get you this.(Image 20)

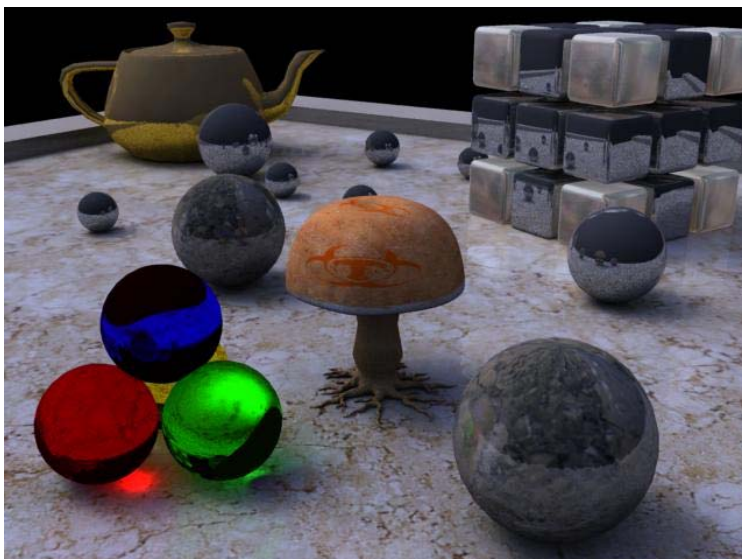
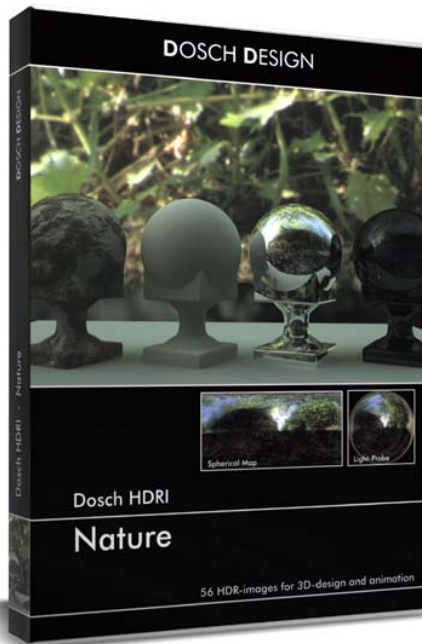


Image 20

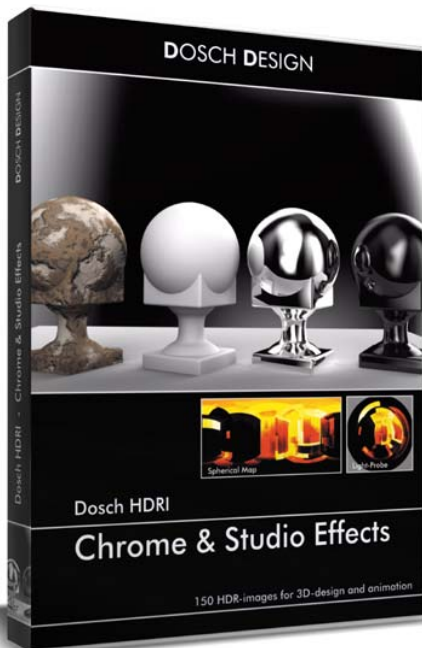
HDRI products from Dosch Design:



Dosch HDRI: Nature



Dosch HDRI: Skies



Dosch HDRI: Chrome & Studio Effects



Dosch HDRI: Extreme Hires

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