

## DOSCH DESIGN TUTORIAL

# Using HDRIs in LightWave 7

## A Step-by-Step Guide

Starting with Version 6.5, LightWave can use **HDRIs (High Dynamic Range Images)** for object illumination and scene backgrounds.

The following guide is intended to help users of Dosch HDRIs to use just the right settings in order to arrive at the desired, and indeed optimal results of superior realism.



## Step 1

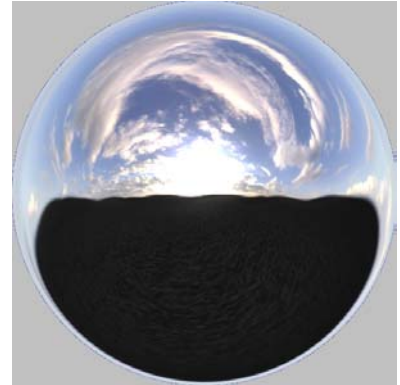
## Selection

LightWave can process HDRI-surroundings images only as LightProbe. LightProbes can be recognized by the square base area of the image with a circle depicting the 360°-environment (sphere).

The HDRI-concept is not to be confused with Mirror-Ball-photos.

If the HDRI is supposed to be used exclusively for illumination, then a LightProbe of 512 pixel edge length is absolutely sufficient. If, however the HDRI is used as a background then a resolution of 2048 Pixel or more should be selected.

With the „**HDRI**“-product line Dosch Design offers a multitude of ready-to-use and high-resolution HDRIs from a variety of theme areas.



## Step 2

## Loading the HDRI

Start the Image-Editor dialog (Ctrl+F4) and load the HDRI into LightWave just like it would be done with a TIFF- or JPG-image. The Image-Editor does not distinguish here between images with high and low dynamic.

The preview however shows only the „normal“ dynamic range of the HDRIs. Even when changing the setting „brightness“ the true dynamic range will not be recognizable.

Please also keep in mind that an HDRI will use 4-times as much memory as a „normal“ image.



## Step 3

## Image World

Select the Backdrop dialog (Strg+F5) in „Scene“ → „Effects“. In menu „Add Environment“ look for the entry „Image World“. Upon selection of „Image World“ the following will show in the window below

„Image World (no image)“

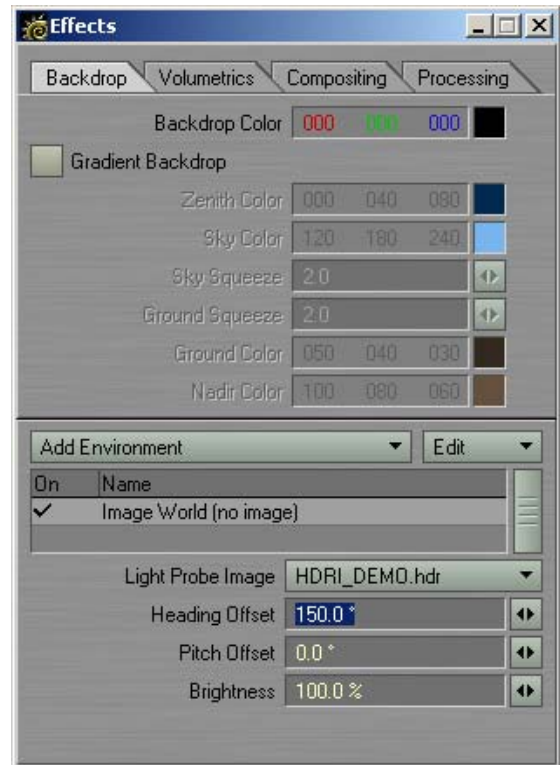
After a double click on this line the parameters of the ImageWorld will appear.

The first property of the ImageWorld is the reference to the HDRI-image. Select the previously loaded LightProbe.

Typically the LightProbes are aligned in such a way that the sun or the main light-source will be positioned front & center, and therefore in +Z-direction. Since most photography or rendering is done with the sun (light-source) behind the camera (rather than into the sun), is it possible to turn the entire environment into the desired direction, using the setting „Heading Offset“. An angle of 150° will result in a positioning of the sun off to the left behind the camera.

If the background or the illumination effect seems to be too bright or too dark, then corrections can be made by using the 4th option, „Brightness“.

The ImageWorld settings can later be called up directly by pressing the *F5*-key.



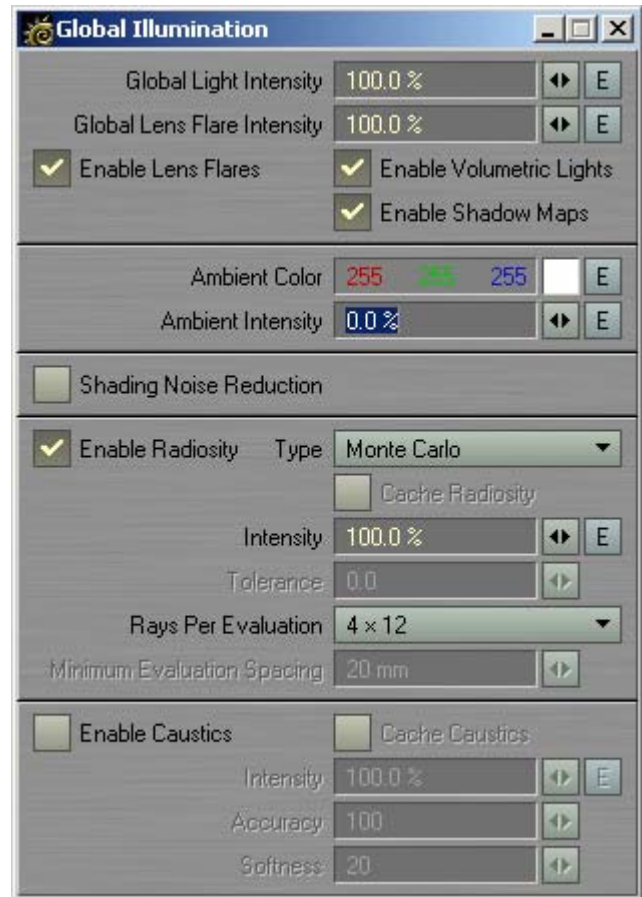
Step 4

### Global Illumination

Under the menu „Lights“ → „Global“ please select the Global-Illumination dialog. Here all settings can be found which determine the realism and the quality of the illumination.

First, please set the „Ambient Intensity“ to zero. The diffuse illumination of the environment is completely controlled by the HDRI-ImageWorld. Additional brightness through the „Ambient Intensity“ would starkly (probably negatively) influence the mood and color properties of the HDRIs.

Turn on the Radiosity-calculations by checking the box at „Enable Radiosity“. All other properties for radiosity remain at their standard setting for now. For the first tries we recommend to use a „Rays Per Evaluation“-setting of „2 x 6“, in order to save processing time. For the final rendering the setting should be increased to „4 x 12“ or higher. A setting that’s too low will result in a final image that is grainy and maybe even blurry.



Step 5

### Light off

In order for the HDRI –and only the HDRI– to control the illumination, all lights (spot, distant, point etc.) have to be turned off. The easiest way would be to set the „Global Light Intensity“ in the Global-Illumination dialog to zero. However, this doesn’t only turn off the light for the renderer, but also for OpenGL – i.e. there would only be black objects in the layout. This is why we recommend the following:

Go to the properties for light sources (L). In the menu „Lights“ → „Properties“ the sub-menu „Affect“ can be found. Turn off the options „Light Affects Diffuse“ and „Light Affects Specular“ for each and every light source. The option „Light Affects OpenGL“ will remain on (checked) and has no effect on the renderer.



## Pointers

A basic element of the preview in the surface-editor dialog are the light sources of the scene. Since those have already been switched off, a black circle will show in the preview. The option „Use Scene Light“ in the „Preview Options“ must therefore be deactivated.

If the illumination of the HDRI seems to be too colorful then the color saturation can be reduced with the „Saturation“-setting in the Image-Editor dialog – this will not affect the color of the object(s).

The HDRI-illumination is only possible in conjunction with Radiosity. If Radiosity is not activated then only the LightWave lights (spot, distant, point etc.) will be operational. The ImageWorld-image will still be available as a background image, however.

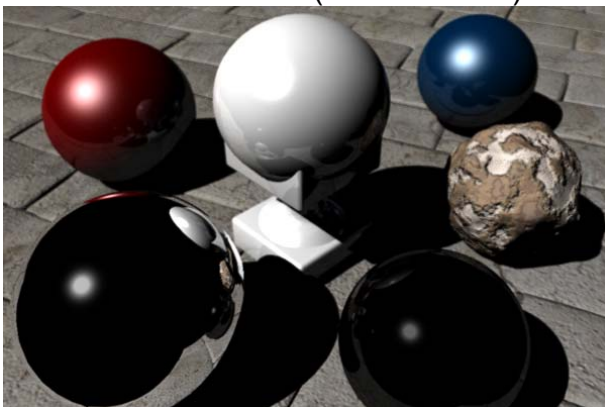
## Compare ... without HDRI vs. with HDRI

In closing we would like to demonstrate the impressive effects of HDRI-illumination with a very simple scene. We've chosen simple shapes.

The standard-illumination scene has a light positioned off to the left behind the „camera“.

The HDRI-scene does not contain a light – It was calculated as an ImageWorld only with an HDRI from the Dosch Design product „**Dosch HDRI: Skies**“.

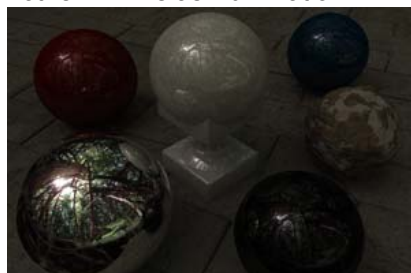
Standard-illumination (without HDRI)



HDRI - illumination



Further renderings of this scene with other HDRIs as illumination:





**HDRI products from Dosch Design:**

Dosch HDRI: Nature



Dosch HDRI: Skies

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Author(s) of this tutorials:  
Jochen Krapf  
Dosch Design Team

Company address:  
Dosch Design GmbH, Gotthard-Schüll-Str. 14, 97828 Marktheidenfeld, Germany.