

HDRI Coloured

Usually, an HDRI depicts a multi-coloured scene used as a source of light and is shown as backdrop. An HDRI can also be monochrome providing white light. Sometimes, a colour hue would be better and Bryce can do it.

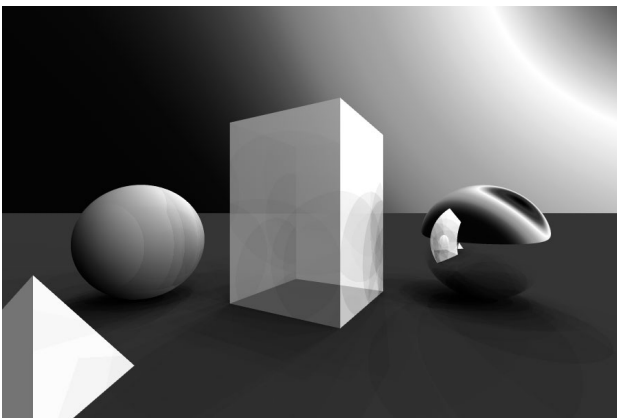
Coloured Backdrop and Light from a colourless HDRI

Sometimes, a neutral white HDRI is used to provide omnidirectional ambient light or a special one with a particular light distribution pattern like those made from IES photometric maps.

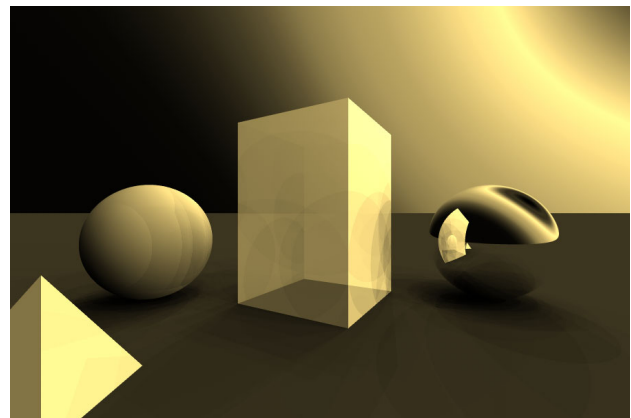
There are moments when we would like to have that neutral white light shine with a particular colour temperature or just any uniform colour. The HDRI can always be given a colour hue in an external program but instead of creating the same HDRI with several colours, this can be done directly in Bryce.

There are two aspects to an HDRI: the backdrop and the light. The backdrop is somewhat easier because it can be disabled and the sky can be used. The light temperature is a bit more elaborate.

A filter could be put in front of the camera; a 2D-Face with some transparent colour that does not cast and receive shadows. The camera looks through this filter and everything it sees has this colour hue and the scene looks like a coloured monochrome image.



Monochrome white HDRI.



Yellow filter in front of camera.

As the example above shows, the yellow filtered result is as much monochrome as the unfiltered white one. The filter in front of the camera is not the solution, the HDRI backdrop and the light the HDRI casts on the scene should be coloured separately and leave the rest of the scene as it is — apart from the light in which the HDRI bathes the objects

The sphere at left and the pyramid have white *Diffuse* at 100% *Diffusion*; the sphere at right is fully reflective: a mirror ball. The cube has the same material as the sphere and pyramid at left but is additionally 50% transparent. The ground plane has 25% white *Diffuse* and does not cast shadows. The HDRI used is *Bollard_H* made from the *Bollard.ies* file and it is the only light source. It is at Yaw 60°, Pitch 65° and Roll 330°.

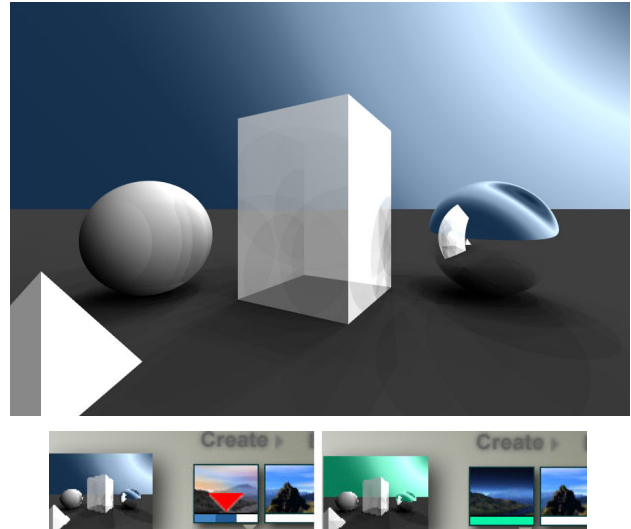
Colouring the Backdrop

This colours the backdrop only, not the light from the HDRI. There are two methods how to accomplish this.

Using the Sky Colour

Set Sky & Fog mode in the main GUI to either *Atmosphere Off* and set the colour, or use *Custom Sky* and set the *Sky Colour* (centre swatch) as appropriate.

In the *Sky Lab*, IBL tab, enable *Use as backdrop*. Select *Blend with sky* and enable *Use sky color*. With *Transparency*, the HDRI and sky colour can be mixed. If *Transparency* is at 0, only the white colour of the HDRI is visible, if it is set to 100, only the sky colour is visible. Note that every time the backdrop mode drop down is opened, *Use sky color* is disabled!



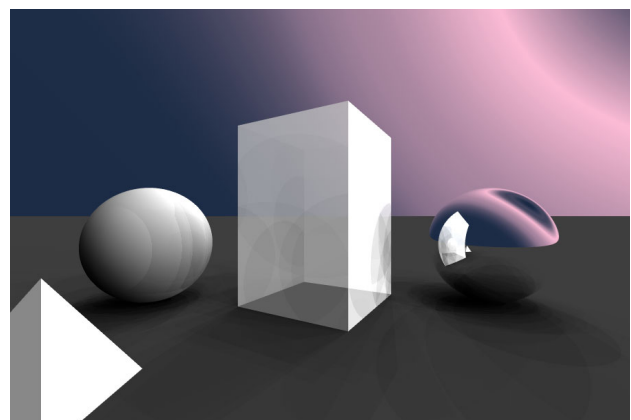
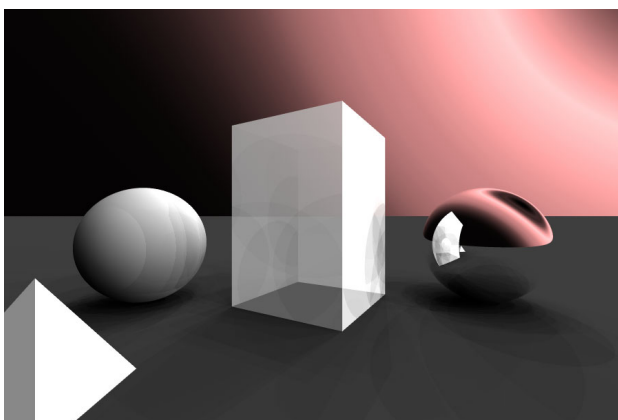
At left, the relevant settings in the Sky Lab, IBL tab; at right the resulting render with only the backdrop blue coloured. The Sky colour is set to RGB (Red, Green, Blue) 35, 91, 148. Transparency is set to 50%, so half of the sky is combined with half of the HDRI backdrop. The small pictures at lower right show where the sky colour can be set; left *Custom Sky*, right *Atmosphere Off*.

Using a Sphere as Filter

Create a sphere surrounding the scene, or make it maximal size $X=Y=Z=102,400$ BU. Reset the material to default and set all *Value* controls to 0.

Give *Transparent* a colour or set a dot in *Transparent* and use a procedural or a picture. A picture should be mapped as *Spherical*.

In the *Materials Options*, disable *Cast*, *Receive* and *Self Shadows*; set *Transparency* to 100%.

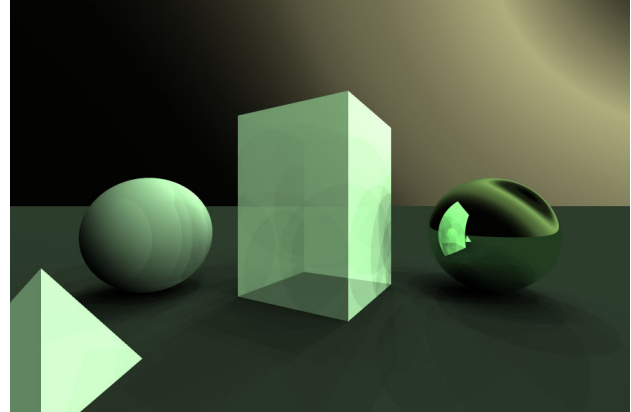
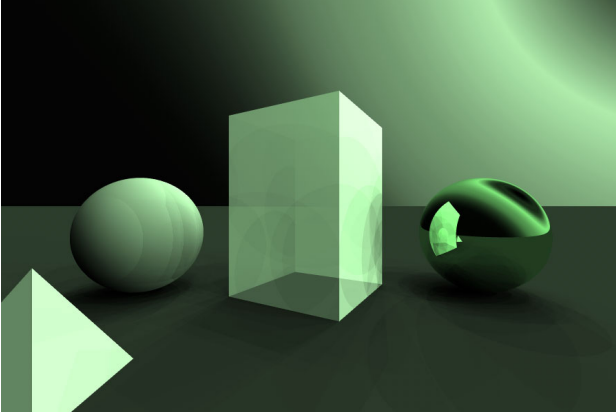


Transparent colour for the sphere was set to RGB 243, 156, 156. The light is still white but the backdrop is red. At right, the sky colour was additionally enabled and the IBL *Transparency* was set to 75%, so there is 75% blue sky colour and 25% HDRI backdrop. *Intensity* had to be adjusted from 5 at left to 14 at right.

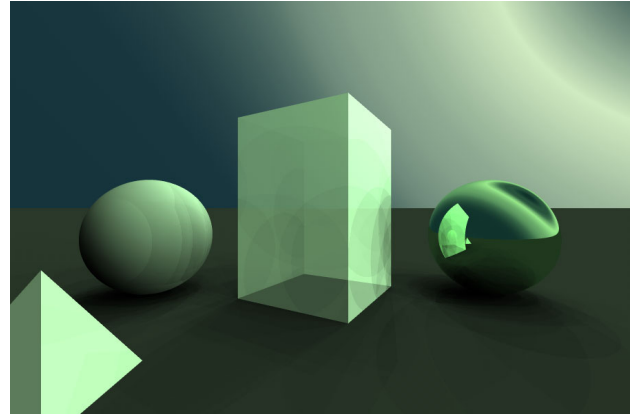
Colouring the Light

This colours the light from the HDRI. Only the colour temperature can be set, no multi-coloured texture. Use a fully coloured HDRI (e.g. an outdoor one) if you need different colours shining from different angles.

Create a sphere surrounding the scene as described above under *Using a Sphere as Filter* with this exception: instead of setting the *Transparent* colour (set it to white), set the colour for *Volume*. You can set the *Transparent* colour as well but that colour will only affect the backdrop and will be modified by the light; *Volume* colour affects the light from the HDRI.



Above at left the result using RGB 188, 255, 185 for *Volume*. Above at right, *Transparent* was set to RGB 255, 185, 185 instead of white and we get a yellowish backdrop, red is mixed with green. At right, the blue sky (RGB 35, 91, 148) was added on top of it, which modifies the backdrop even further.



You would usually rather give *Transparent* the same colour as *Volume*, or set it to white or the sky colour and use the sky colour.

If there are black or very dark parts from the HDRI visible as backdrop, the *Transparency* colour or sky colour may have to be adjusted. You may also want to set Haze and Sun colour to match the HDRI light temperature.

NOTE: Whenever a new HDRI is loaded, *Use as backdrop* is reset to *Blend into background* and *Use sky color* is disabled. Clouds will be distorted by the sphere filter, if a vertical infinite plane is used instead of a sphere behind the scene or at maximal distance the clouds will also be distorted.

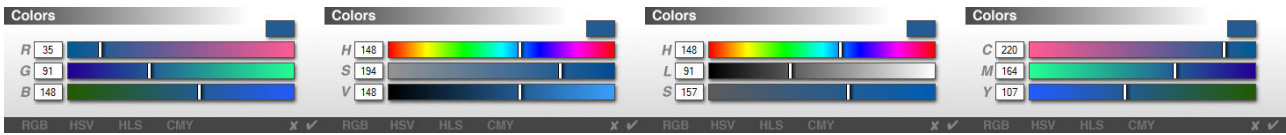
Light and Brightness Adjustment

Obviously, when some sort of a filter is between the light source and/or the backdrop, light from the HDRI and the backdrop brightness will decrease. This has to be compensated with the colour of the filter, *Intensity* and *HDRI Effect*, even *Sun* and *Haze* colour, if used.

RGB — HSV — HLS — CMY

Bryce knows four colour models that can be selected by holding down the [Alt] key and clicking on any colour swatch.

From left to right: RGB (Red Green Blue), HSV (Hue Saturation Value), HLS (Hue Luminosity or Level Saturation) and CMY (Cyan Magenta Yellow). All models show the same colour.



Some like to adjust a bit here and there with the colour picker accessible by holding down the [Ctrl] key and clicking on any colour swatch, and see what happens. Others would prefer to know exactly how much to increase light to get the same result as before the modification.

Numeric Adjustment

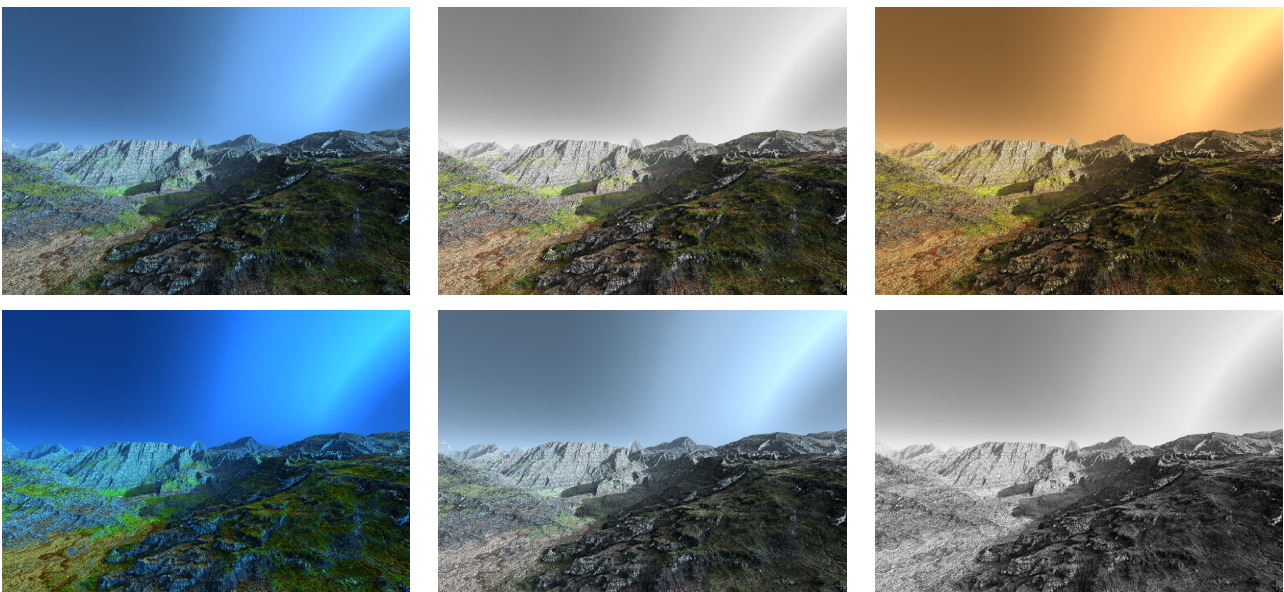
For precise numeric adjustments, the HSV colour model is the most suitable because *Value* can be adjusted and saturation of the final colour stays the same. If *Luminosity* in the HLS model is used, the saturation increases, which is not desired. Of course, the RGB model is also suited but all three colours have to be adjusted by the same ratio, not only one value as is the case with the HSV model.

If the colour *Value* for *Transparent* is halved, *Intensity* must be doubled to get the same backdrop brightness. If the colour *Value* for *Volume* is halved, *HDRI Effect* must be doubled. If colour *Value* for *Transparency* and *Volume* are both halved then *Intensity* must be doubled twice (quadrupled) and *HDRI Effect* doubled.

As far as *Transparency* for the *Blend with sky* option is concerned, it also works linear. If set to 25, 25% of the sky colour is mixed with 75% of the HDRI backdrop, 75 means 75% of the sky colour and 25% of the HDRI contribute to the backdrop.

Simple Examples

Three simple examples in the upper row: the colours for all coloured items (sky, haze, transparent and volume) are set the same. At left, a cool image with HSV 147, 73, 245; for the neutral centre image S was set to 0 and for the warm right one H was set to 25.



The lower row uses the render from top left and has at left the saturation also for the terrain doubled; centre halved and right set to 0 resulting in a monochrome render.