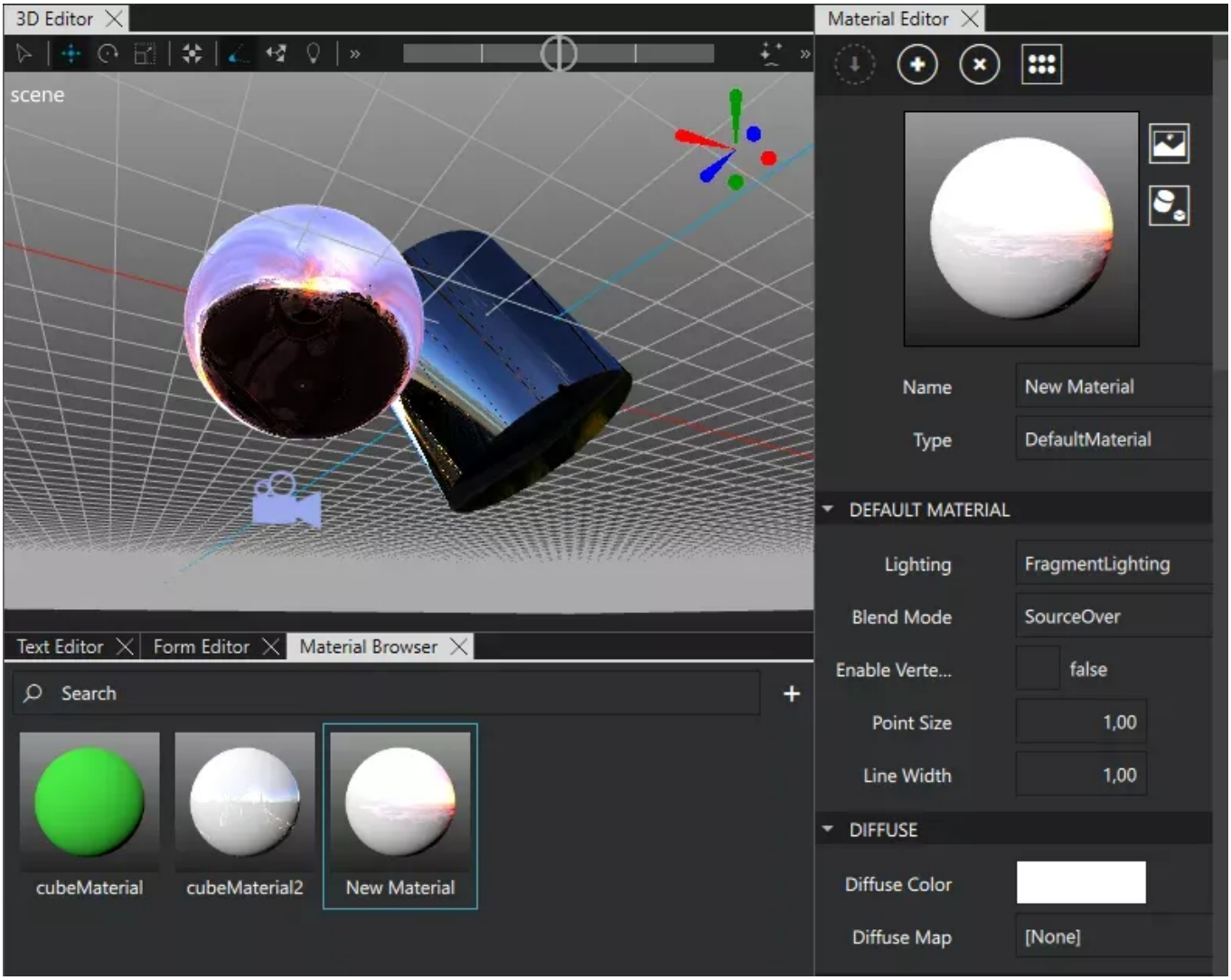
材质编辑器和浏览器

在**"材质编辑器"和"材质浏览器"**视图中，可以创建和管理材质。



创建材质

要创建新材质，请执行下列操作之一：

- 在**"材质浏览器"**中，选择"+"。
- 在**"材质编辑器"中**，选择"+。

要编辑材质，请在"**材质浏览器**"中选择该材质，然后在"**材质编辑器**"中编辑其属性。如果"**材质编辑器**"已关闭，请通过以下方式之一将其打开：

- 在"**导航器**"**中**，右键单击指定了材质的对象，然后选择"**编辑材质**"。
- 在"**材质浏览器**"中，双击材质。

为对象指定材质

要将材质指定给项目中的 3D 对象，请将材质从"**材质浏览器**"拖动到"**导航器**"或 3D 视图中的对象。

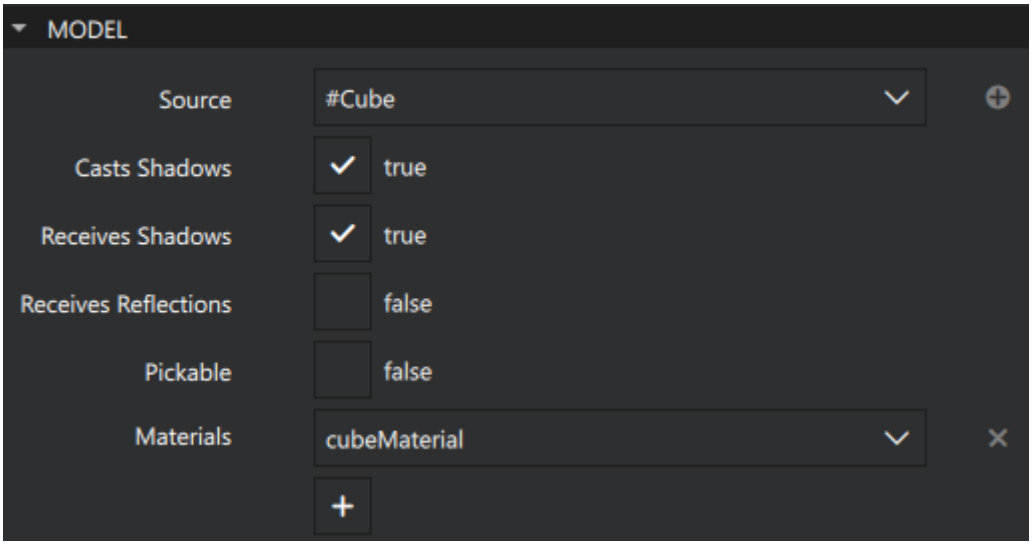
此外，还可以先在"**导航器**"或 3D 视图中选择对象，然后执行下列操作之一：

- 在"**材质浏览器**"中，在材质上单击鼠标右键，然后选择"**应用于所选**"。如果已为对象指定了任何材质，则可以选择是替换材质还是向对象添加其他材质。
- 在"**材质编辑器**"**中**，选择 "  "。这将替换已指定给对象的任何材质。

从对象中删除材质

要从对象中移除指定材料：

1. 在"**导航器**"**中**，选择对象。
2. 在"**属性**"中，选择✕材料旁边的"

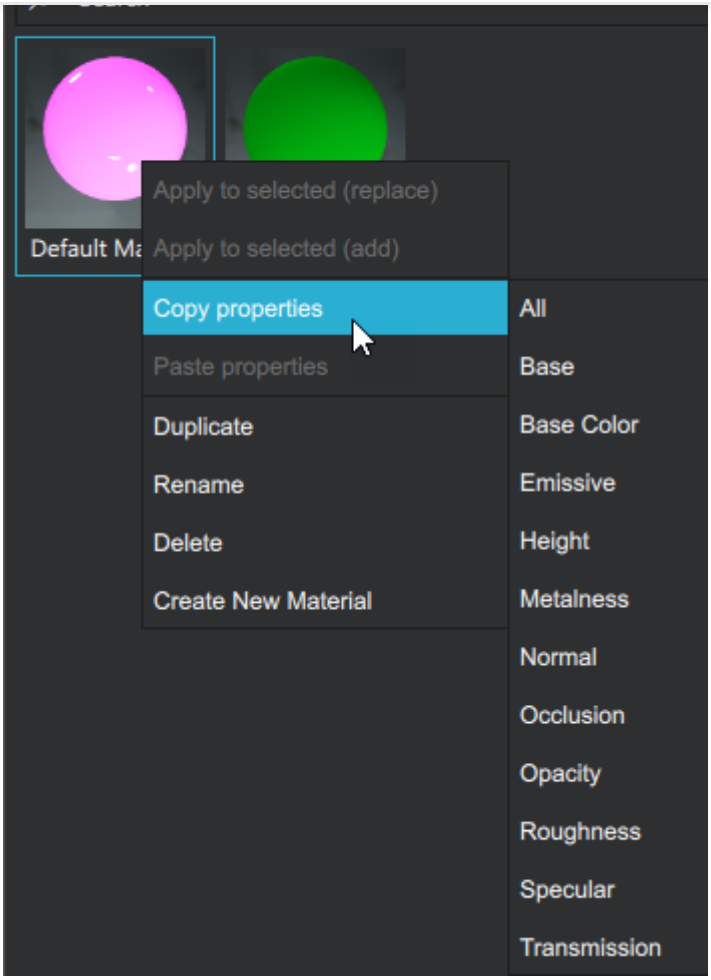


Copying and Pasting Material Properties

You can copy properties from one material to another. You can choose if you want to copy all properties or certain property groups.

To copy material properties from one material to another:

- In **Material Browser**, right-click the material that you want to copy properties from.
- Select **Copy properties** and then **All** or a property group.



- Right-click the material that you want to copy the properties to.
- Select **Paste properties**.

> **Note:** You can't copy material properties between materials of different material types.

Using Texture Maps

In Qt Design Studio you can add many different texture maps to your material.

To add a texture map to a material:

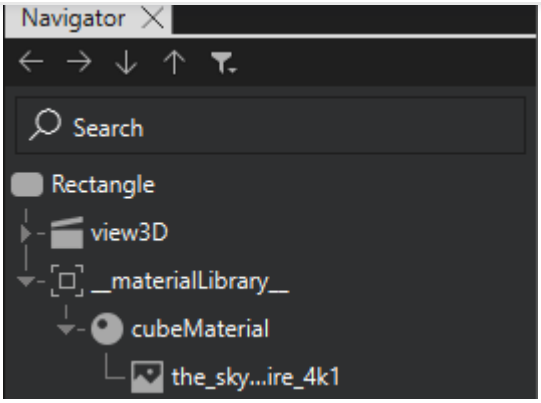
1. Select the material in **Material Browser**.
2. From **Assets**, drag an image to the correct map field in **Material Editor**. For example, to add a diffuse map, drag the image to **Diffuse Map** in **Material Editor**.

Using a Reflection Map for Environmental Mapping

To use a texture for environmental mapping, you need to set the mapping mode to *environment*.

To add a reflection map for environmental mapping to a material:

1. Select the material in **Material Browser**.
2. From **Assets**, drag an image to **Reflection Map**.
3. In **Navigator**, select ▼ and then clear **Show Only Visible Components**. Now the texture you just added to the



4. In **Navigator**, select the texture.
5. In **Properties**, set **Texture Mapping** to **Environment**.

Blending Colors

To determine how the colors of a model blend with the colors of the models behind it, set the **Blend mode** property. To make opaque objects occlude the objects behind them, select **SourceOver**.

For a lighter result, select **Screen** to blend colors using an inverted multiply or **ColorDodge** to blend them by inverted division. Color dodge produces an even lighter result than screen.

For a darker result, select **Multiply** to blend colors using a multiply or **ColorBurn** to blend them by inverted division, where the result also is inverted. Color burn produces an even darker result than multiply.

The screen and multiply modes are order-independent, so select them to avoid *popping*, which can happen when using semi-opaque objects and sorting the back and front faces or models.

For a result with higher contrast, select **Overlay**, which is a mix of the multiply and screen modes.

Lighting Materials

To set the lighting method for generating a material, use the **Lighting** property. Select **Fragment lighting** to calculate diffuse and specular lighting for each rendered pixel. Some effects, such as Fresnel or a bump map, require fragment lighting.

To skip lighting calculation, select **No lighting**. This is very fast and quite effective when using image maps that do not need to be shaded by lighting.

To set the base color for the material, use the **Diffuse Color** property. You can either use the color picker or specify a RBG value. Set the diffuse color to black to create purely-specular materials, such as metals or mirrors. To apply a texture to a material, set it as the value of the **Diffuse map** property. Using a texture with transparency also applies the alpha channel as an **Opacity map**. You can set the opacity of the material independently of the model as the value of the **Opacity** property.

Self-Illuminating Materials

To set the color and amount of self-illumination for a material, use the **Emissive color** and **Emissive factor** properties. In a scene with black ambient lighting, a material with an emissive factor of 0 is black where the light does not shine on it. Setting the emissive factor to 1 shows the material in its diffuse color instead.

To use a Texture for specifying the emissive factor for different parts of the material, set the **Emissive map**

Using Highlights and Reflections

You can control the highlights and reflections on a material by setting the properties in the **Specular** group. You can use the color picker or set a RGB value to specify the color used to adjust specular reflections. Use white for no effect.

To use a color texture to modulate the amount and the color of specularity across the surface of a material, set the **Specular map** property. Set the **Specular amount** property to specify the strength of specularity. This property does not affect the specular reflection map, but it does affect the amount of reflections from a scene's light probe.

> **Note:** Unless your mesh is high-resolution, you may need to use fragment lighting to get good specular highlights from scene lights.

To determine how to calculate specular highlights for lights in the scene, set the **Specular model**. In addition to the default mode, you can use the GGX or Ward lighting model.

To use a Texture for specular highlighting on a material, set the **Reflection map** property. When the texture is applied using environmental mapping (not UV mapping), the map appears to be reflecting from the environment as you rotate the model. Specular reflection maps are an easy way to add a high-quality look at a relatively low cost.

To specify an image to use as the specular reflection map, set the **Light probe** property.

Crisp images cause your material to look very glossy. The more you blur your image, the softer your material appears.

To decrease head-on reflections (looking directly at the surface) while maintaining reflections seen at grazing angles, set the **Fresnel power** property. To select the angles to control, set the **Index of refraction** property.

To control the size of the specular highlights generated from lights and the clarity of reflections in general, set the **Specular roughness** property. Larger values increase the roughness, while softening specular highlights and blurring reflections. To control the specular roughness of the material using a Texture, set the **Roughness map property**.

Simulating Geometry Displacement

Specify the properties in the **Bump/Normal** group to simulate fine geometry displacement across the surface of the material. Set the **Bump map** property to use a grayscale texture for the simulation. Brighter pixels indicate raised regions.

To use an image for simulation, set the **Normal map** property. The RGB channels indicate XYZ normal deviations.

The amount of displacement is controlled by the **Bump amount** property.

Bump and normal maps do not affect the silhouette of a model. To affect the silhouette, set the **Displacement map** property. It specifies a grayscale image used to offset the vertices of geometry across the surface of the material. The **Displacement amount** property specifies the offset amount.

Specifying Material Translucency

Set the properties in the **Translucency** group to control how much light can pass through the material from behind. To use a grayscale texture, specify it as the value of the **Translucency map** property.

To specify the amount of light wrap for the translucency map, set the **Diffuse light wrap** property. A value of 0 does

source, set the **Translucency falloff** property.

Culling Faces

Set the **Culling mode** property to determine whether the front and back faces of a model are rendered. Culling modes check whether the points in the polygon appear in clockwise or counter-clockwise order when projected onto the screen. If front-facing polygons have a clockwise winding, but the polygon projected on the screen has a counter-clockwise winding, the projected polygon is rotated to face away from the camera and is not rendered. Culling makes rendering objects quicker and more efficient by reducing the number of polygons to draw.

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