3D Materials

Qt Design Studio provides a set of pregenerated **Qt Quick 3D** materials. If the 3D materials are not displayed in **Components**, you can add the **QtQuick3D.Materials** module to your project, as described in Adding and Removing Modules. However, since using the pregenerated 3D materials may cause performance issues, we advice you to use **Principled Material**, **Default Material**, or **Custom Material** instead. For more information, see Materials and Shaders and Creating Custom Materials.

> **Note:** The **QtQuick3D.Materials** module is not available in **Qt 6**. To use the pregenerated **Qt Quick 3D** materials, you need to select **Qt 5** as the **Target Qt Version** when creating your project.

To apply a 3D material to a component, you should first delete the default material and then drag-and-drop a new material from **Components** > **Qt Quick 3D Materials** > **Qt Quick 3D Materials** to a model component in Navigator. The materials you add to the model are listed in the model component's Properties view. You can apply the same material to another component as well. Again, delete the default material first. You should then select the component and go to the **Properties** view. Find the **Materials** property, select the + icon, and choose the new material in the dropdown menu.

Each material has its own set of properties that can be used to further define the appearance of the material. For each material the **Environment Map** property specifies whether or not environment mapping is used for specular reflection. Use the **Texture** property to select a texture for the environment map. The **Shadow Map** property determine whether or not shadow mapping is used for generating realistic shadows. You can also select a **Texture** for shadow mapping.

Custom Material

You can use the Custom Material component available in **Qt Quick 3D Effects** > **Custom Shader Utils** as the base component for creating custom materials used to shade models. For more information, see Custom Effects and Materials and Custom Shaders.

Metal Materials

The following describes properties of the metal-based materials, which include **Aluminum**, **Aluminum Anod Emis**, **Aluminum Anodized**, **Aluminum Brushed**, **Aluminum Emissive**, **Copper**, and **Steel Milled Concentric**.

Color

Set the surface tint of the material by specifying the **Metal Color** and **Base Color** properties. Use the **Emission Color** property to set the color of the glow for emissive materials. You can either use the color picker or specify an RBG

Reflection

Use the properties under the **Reflection** tab to specify the reflective qualities of the material. For more information on the various material properties related to reflection, see Using Highlights and Reflections.

- Use the **Map Offset** and **Map Scale** properties to define offset and scale for the reflection map. You can also define a texture for the reflection map by using the **Texture** property, and set a the tiling repeat for it by using the **Tiling** property.
- To further define the reflective qualities of the material, you can also set the **Stretch** and **Texture** properties of **Reflection**, or define a numerical value for **Reflectivity**.
- Set the **Fresnel Power** property to decrease head-on reflections (looking directly at the surface) while maintaining reflections seen at grazing angles.

Roughness

Use the **Roughness** properties to determine how light behaves when it comes in contact with material. With zero roughness, light bounces off a material, which makes it appear glossy. Increased roughness causes the light reflected off the material to scatter, which results in a matte appearance.

- The **Map Offset Map Scale** and **Texture** specify the quality of roughness applied to the material.
- Use the numerical **Roughness** property to define how glossy or matte the material appears.

Emission

Use the properties under the **Emission** tab to specify the emissive qualities of the material. For more information on properties related to emission, see Self-Illuminating Materials.

- The **Intensity** property determines the quantity of light the surface of material emits.
- The **Map Texture** property defines a texture for emissive map, while the **Mask Texture** defines a texture for emissive mask. Use the **Mask Offset** to set the mask offset for the emissive map.

Bump

Specify the properties under the **Bump** tab to simulate fine geometry displacement across the surface of the material. Use the **Amount** property to set the quantity of displacement, and the **Texture** property to define a texture for the bump map. For more information, see Simulating Geometry Displacement.

Properties of the Steel Milled Concentric Material

Another metal, the **Steel Milled Concentric** Material has certain properties that the other materials do not possess:

- The **Anisotropy** property stretches the highlight, which simulates minuscule scratches. You can also use a **Texture** property to define a texture for the anisotropy map.
- The **Index of Refraction** defines how much a ray of transmitted light is bent when it reaches the surface of the material.

Under the **Textures** tab:

- The **Tiling** property to set the tiling repeat of the texture maps.
- Use the **Diffuse** property to set a texture for the diffuse map, and the **Anisotropy** property to set a texture for the anisotropy map.

The following describes properties related to glass-based materials, which include **Glass**, **Frosted Glass**, **Frosted Glass Single Pass**, and **Glass Refractive**.

Color

Set the surface tint of the material by specifying the **Glass Color** property. You can also specify the **Band Light Color** for the **Frosted Glass** material.

Use the **Glass Color** and **Band Light Color** properties to set the color properties for glass-based materials.

General

- Set the **Fresnel Power** property to decrease head-on reflections (looking directly at the surface) while maintaining reflections seen at grazing angles.
- Use the **Roughness** property to determine how light behaves when it comes in contact with material. With zero roughness, light bounces off a material, which makes it appear glossy. Increased roughness causes the light reflected off the material to scatter, which results in a matte appearance.
- The **Reflectivity** property specifies how much light is reflected from the material.
- The **Index of Refraction** defines reflectivity by determinining how much a ray of transmitted light is bent when it reaches the surface of the material.
- The **Refract Depth** property sets the refraction depth for the material.
- Use the **Minimum Opacity** property to determine the minimum level of opaqueness for the material.
- The **Blur size** property sets the amount of blurring behind the glass.

Bump

For frosted glass materials, specify the properties under the **Bump** tab to simulate fine geometry displacement across the surface of the material:

- Use the **Scale** and **Bands** properties to define the scale and number of the Bump Bands.
- The **Strength** property sets the glass bump map strength.
- Use the **Internal** property to specify whether the bump map should only be used for internal lighting.
- The **Texture** property to define a texture for the bump map.
- The **Coordinates** property sets the bump coordinates of the refraction.

For more information, see Simulating Geometry Displacement.

Random Gradient Mapping

For frosted glass materials, you can also specify **Random Gradient Maps** by using properties **1D**, **2D**, **3D** and **4D**. Each of the properties defines a texture map used to create the random bumpiness of the material.

Band Light

The outlook of the **Frosted Glass** material can be further defined by specifying the **Band Light** properties:

- The **Fallof** property sets the light intensity falloff rate.
- The **Angle** property sets the angle of the light source to which the band is perpendicular.
- You can also set the **Brightness** of the band light

Noise

For the **Frosted Glass Single Pass** material you can specify the noise quality by defining the noise **Scale** property and setting the noise **Coordinates**.

Plastic

The following describes properties for the available plastic materials, which include **Plastic Structured** and **Plastic Struct Emissive**.

Color

Use the **Diffuse Color** to set the color that the material reflects when illuminated by direct light.

The **Emission Color** defines the color of emission for the **Plastic Struct Emissive** material.

General

Plastic materials share some of the properties with glass materials. For descriptions of **Roughness** and **Index of Refraction** properties, see general properties for glass materials.

- The **Texture scaling** property determines how fast a material is repeated on a surface.
- The **Bump Factor** property sets the strength of bumpiness for glass materials.

Random Gradient Mapping

See Random Gradient Mapping for Glass Materials.

Emission

The properties of emission for glass materials are similar to those of metal materials. For decription of emission properties, see emission properties for metal materials.

Paper Materials

The following describes properties for the available paper materials, which include **Paper Artistic** and **Paper Office**.

Color

Set the surface tint for the **Paper Office** material by specifying the **Paper Color** property.

Transmission

Specify the **Transmission** settings to define the outlook of light passing through the material. The **Transmission Weight** property specifies how much light scatters through the surface of the material, while the **Reflection Weight** sets the luminance of highlights and reflections.

General

- The **Translucency Falloff** sets the point of decline for translucency of the material

- For the description of **Texture Tiling** properties, see tiling for metal materials.

Diffuse Map

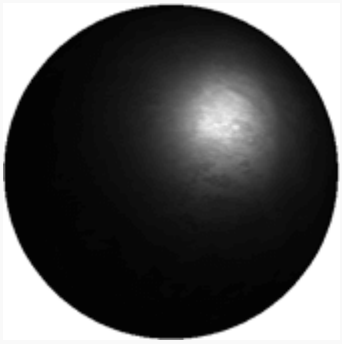
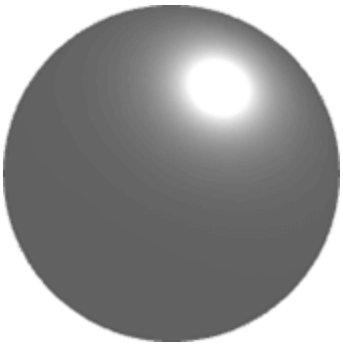
Use the **Light Wrap** property to set the diffuse light bend of the material. The **Texture** property defines a texture for the diffuse map.

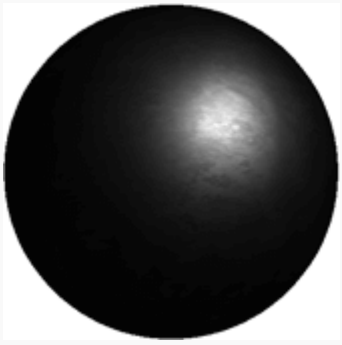
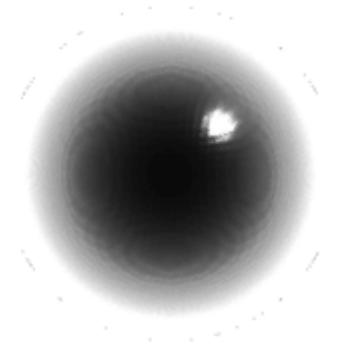
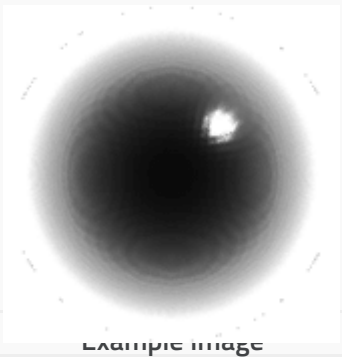
Bump

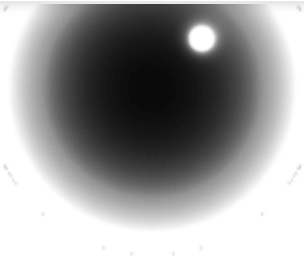
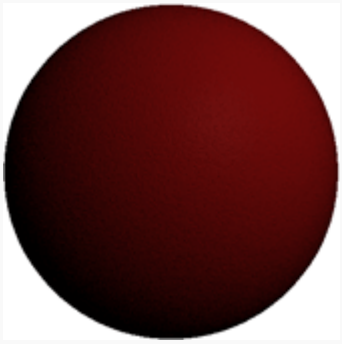
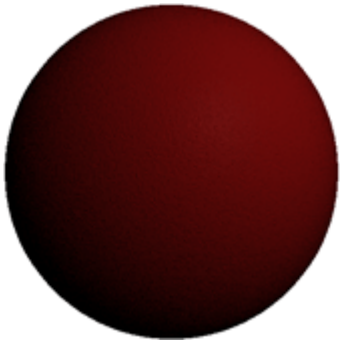
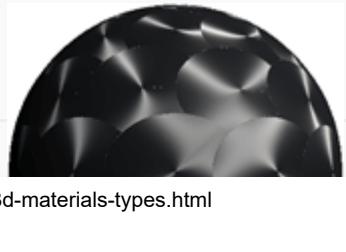
For the description of **Bump** properties, see properties for metal materials.

Available Materials

See the following table for available materials.

Material	Example Image	Description
Aluminum		A material with the appearance of aluminum.
Aluminum Anod Emis		Anodized aluminum with emissive properties.
Aluminum Anodized		Anodized aluminum.
Aluminum Brushed		Brushed aluminum.
Material		Description

		
Aluminum Emissive		Aluminum with emissive properties.
Copper		A material with the appearance of copper.
Glass		A material with the appearance of glass.
Frosted glass		Frosted glass.
Frosted Glass Single Pass		A single-pass frosted glass.
Material	**Example image**	**Description**

		
Paper Artistic		A paper material with an artistic finishing.
Paper Office		A paper material with an office-style finishing.
Plastic Struct Emissive		A red structured plastic material with emissive properties.
Plastic Structured		A red structured plastic material.
Steel Milled Concentric		A milled concentric steel material.
Material		**Description**

‹ Textures

3D Effects ›