

# Material Timeline

This is a *Unity Timeline* extension to animate and blend material properties. It consists of two custom tracks:

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Track	Description
Material Track	Change properties of a material directly, changing it everywhere in the scene.
Renderer Track	Overwrite a selection of a renderer's material slots, changing only one specific object. <i>Material Property Blocks</i> are used, so instancing isn't broken.

## 1. Installation

Make sure you enabled the *Unity Timeline* package in the Package Manager. Place this package inside your project's *Packages* or *Assets* directory.

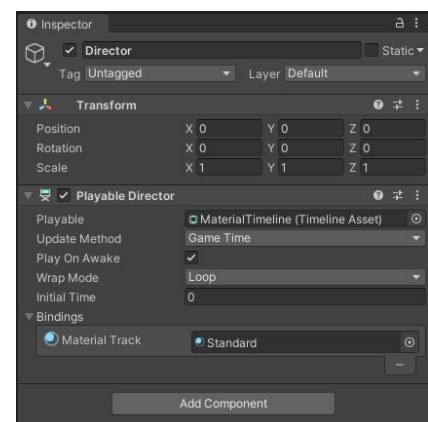
### 1.1 Use texture blending

This package ships a shader to blend textures, named *TextureBlend*. To tell Unity to include it in builds, even if no scene has a dependency to it, add it to the list of always included shaders under *ProjectSettings > Graphics*. Without this shader the package functions normally, but textures are switched instead of blended.

## 2. Getting started

### 1.1 Create a track

- In the project view, create a Timeline asset via right click > *Create > Timeline*.
- Add a *Playable Director* component to an object in the scene. Reference your asset in the director. (1)
- Open the Timeline window under *Window > Sequencing* or by double-clicking the asset.
- In the upper left corner of the window, click the plus icon and choose to create a Material or Renderer track. (2)

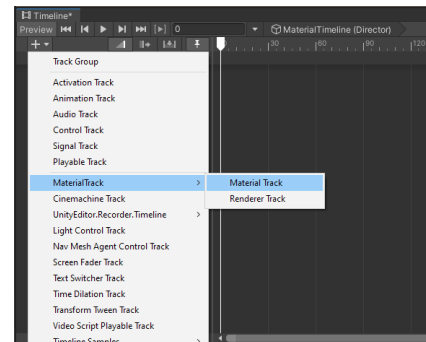


(1) *The Playable Director component*

## 2.2 Link a target

- Reference the material or renderer you want to animate in the newly created track. You can only choose materials that are editable. For example, you can't edit materials defined inside obj or fbx files.

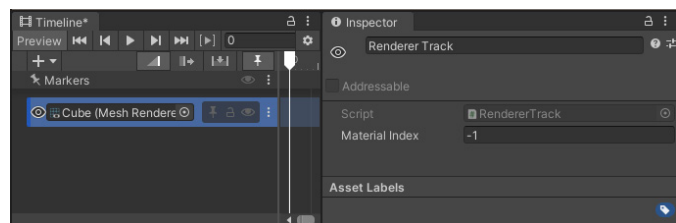
Renderer tracks have an additional property called *Material Index*, which specifies which material of the referenced renderer to animate. Insert a negative number to make the track animate all materials of the renderer. (3)



(2) Creating a track

## 3.3 Set up a clip

- Right click in the track layer and choose *Add Material/Renderer clip*.
- In the inspector window, use the *Property* dropdown to select the material property this clip should manipulate. (4)
- Dependent on the type of the chosen property, you can set the value of this property in the field(s) below.

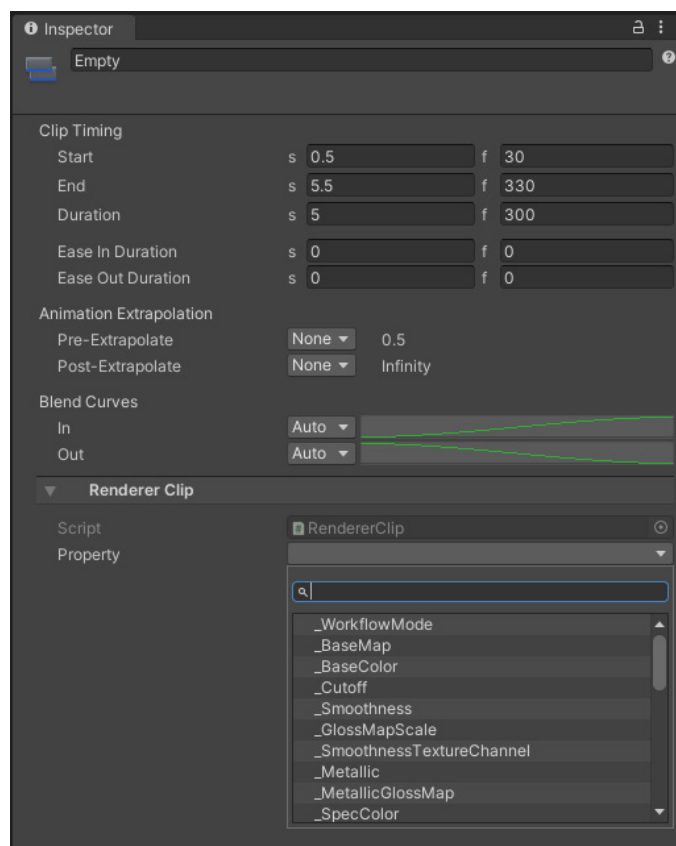


(3) Renderer Track linked to a Mesh Renderer

You can also enable the *Material mode*, which overrides all properties of the track's material with the one referenced in the clip. This way, you can blend between entire materials. This is only supported in *Material Tracks*.

## 4.4 Blend & Override clips

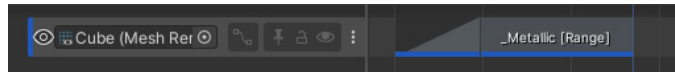
Blending is done by editing the *Ease In/Out Duration* of the clip. This makes the clip blend with the target material. For example, if the original base color of the material is white, and the clip overwrites it with red, you can animate the color from white over pink to red.



(4) Choosing a material property to animate

You can also blend two clips with each other, by dragging one clip over the other. If both manipulate the same property, their blended value is applied to the target material. If they manipulate different material properties, they are successively blended with the target material.

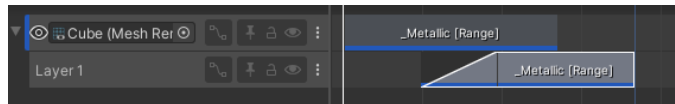
If you wish to change several material properties at once, you can create a *Layer*. For that, right click the track and choose *Add Layer*. Properties of higher layers are applied first.



(5) *Clip with Ease-In, blends with target*



(6) *Two clips blend together*



(7) *Lower layer overrides upper one*

### 3. Feature List

	Material Track	Renderer Track
Layers (a.k.a. Override Tracks)	yes	yes
Clip extrapolation	yes	yes
Set/Blend Float/Range/Color/Vector	yes	yes
Set/Blend* Texture2D/RenderTexture	yes	yes
Set Texture Tiling/Offset	yes	yes
Set Texture3D	yes	yes
Blend Texture3D	no	no
Set CubeMap	yes	yes
Blend CubeMap	no	no
Overwrite with entire Material**	yes	no

\* See *Use texture blending* for how to activate this feature.

\*\* Just uses `Material.Lerp` internally, so it's not able to blend textures.