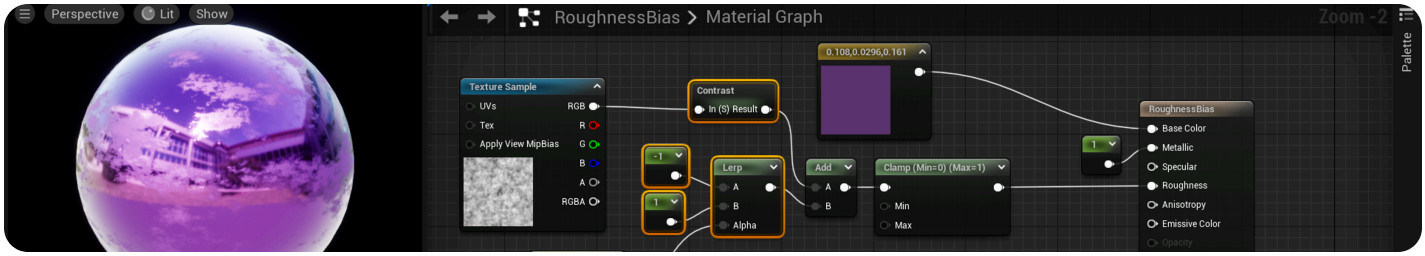
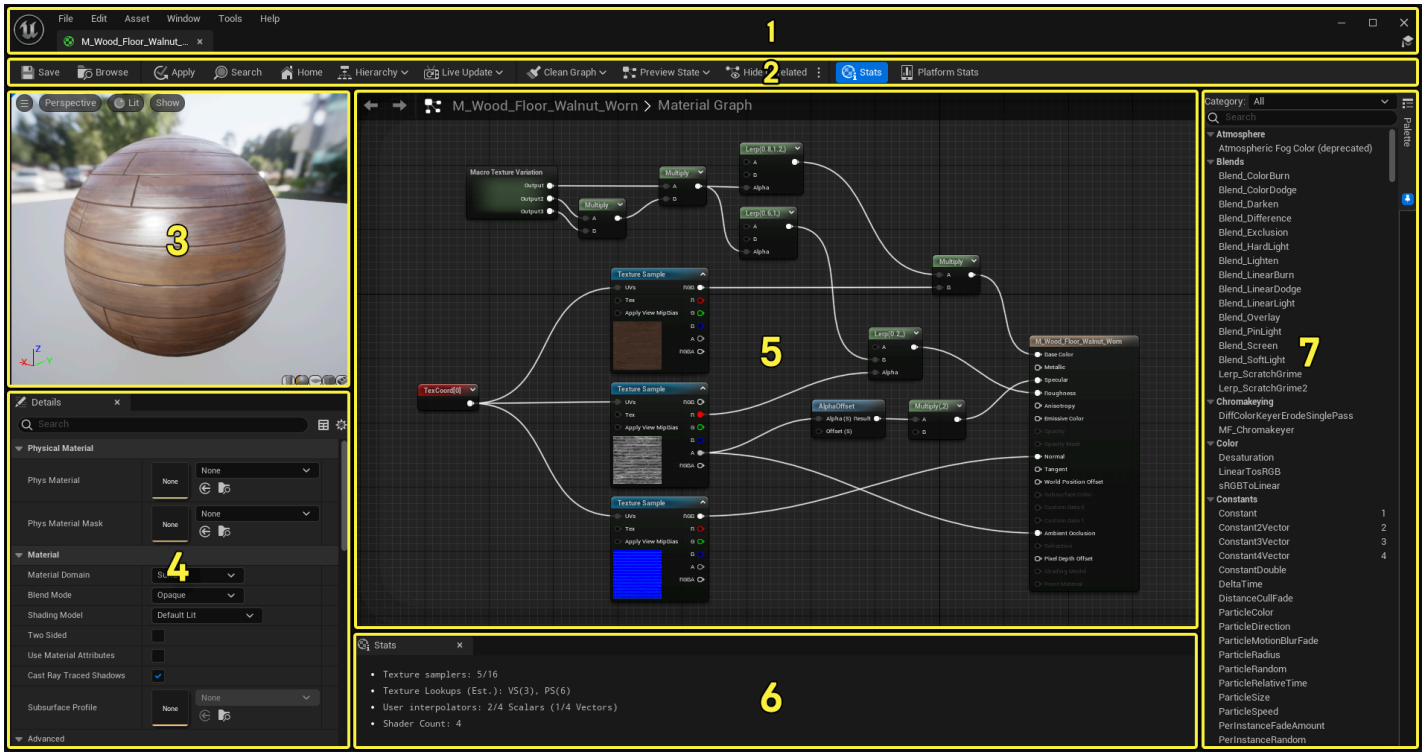
Material Editor UI

A breakdown of the Material Editor user interface.



The Material Editor UI consists of a menu bar, a toolbar, and the five main regions shown below.



Number	Description
1	Menu Bar
2	Toolbar
3	Viewport Panel
4	Details Panel
5	Material Graph Panel
6	Stats Panel
7	Palette Panel

- You can close any panel by clicking the small "X" in the upper-right corner of the tab. You can also hide any panel by right-clicking on the tab, and then clicking **Hide Tab** in the context menu that appears. To once again display a panel that you have closed, click that panel's name in the **Window** menu.
- Pressing **F1** displays the Unreal Engine Materials documentation.

Menu Bar

File

- **Open Asset** - Opens the Global Asset Picker to quickly find an asset and open the appropriate editor.
- **Save All** - Saves all unsaved levels and assets for your project.

- **Choose Files to Save** - Brings up a dialog box that allows you to choose which levels and assets you want to save for your project.
- **Save** - Saves the asset you are currently working on.
- **Save As** - Saves this asset under a different name.

Edit

- **Undo** - Undoes the most recent action.
- **Redo** - If it was the last action taken, this option redoes the most recent Undo.
- **Undo History** - Shows the history of the Undo actions.
- **Editor Preferences** - Gives you a list of options, any of which open that part of the **Editor Preferences** window, where you can modify your Unreal Editor preferences.
- **Project Settings** - Gives you a list of options, any of which open that part of the **Project Settings** window, where you can modify various settings for your Unreal Engine project.
- **Plugins** - Opens the Plugins Browser tab.

Asset

- **Find in Content Browser** - Locates and selects the current asset in the **Content Browser**.
- **Reference Viewer** - Launches the reference viewer showing the selected assets' references.
- **Size Map** - Displays an interactive map showing the approximate size of this asset and everything it references.
- **Audit Assets** - Opens the Asset Audio UI and displays information about the selected assets.
- **Shader Cook Statistics** - Opens the Shader Cook statistics UI.

Window

- **Graph** - Toggles the **Graph** panel display.
- **Viewport** - Toggles the **Viewport** panel display.
- **Details** - Toggles the **Details** panel display.

- **Palette** - Toggles the **Palette** panel display.
- **Find Results**- Allows you to search for items in the Material Graph.
- **Preview Scene Settings** - Opens a tab that allows you to change the **Material preview** viewport options.
- **Parameters**- Toggles displaying the **Materials** global parameters.
- **Custom Primitive Data**- Opens a tab that displays all parameters in the current Material with Custom Primitive Data enabled.
- **Layer Parameters**- Displays all Material Layers added to the current Material.
- **Platform Stats** - Toggles displaying the **Material** cost per platform.
- **Stats** - Toggles the **Material** cost.
- **Shader Code -** Toggles displaying the **Material HLSL** code for the selected platform.
    - **HLSL Code** - Toggles displaying the **HLSL** code.
        - **Desktop** - Toggles displaying the **HLSL** code for the various desktop renders.
            - **DirectX SM5** - Toggles displaying the **HLSL** code for **Windows SM5**.
            - **DirectX SM6** - Toggles displaying the **HLSL** code for **Windows SM6**.
            - **DirectX ES 3.1** - Toggles displaying the **HLSL** code for **ES 3.1**.
            - **Vulkan SM5** - Toggles displaying the **HLSL** code for **Vulkan SM5**.
            - **Metal SM5** - Toggles displaying the **HLSL** code for **Metal SM5**.
            - **OpenGL SM4** - Toggles displaying the **HLSL** code for **OpenGL SM4**.
        - **Android** - Toggles displaying the **HLSL** code for the various **Android** renders.
            - **Android GLES 3.1** - Toggles displaying the **HLSL** code for **Android GLES 3.1**.
            - **Android Vulkan** - Toggles displaying the **HLSL** code for **Android Vulkan**.
            - **Android Vulkan SM5** - Toggles displaying the **HLSL** code for **Android Vulkan SM5**.
        - **iOS** - Toggles displaying the **HLSL** code for the various **iOS** renders.
            - **Metal SM5** - Toggles displaying the **HLSL** code for **Metal**.
            - **Metal MRT** - Toggles displaying the **HLSL** code for **Metal MRT**.
- **Cinematics** - Open the Cinematics Sequence Recorder, Takes Recorder, or Takes Browser in a new window.
- **Content Browser** - Opens the **Content Browser** in a separate window.
- **Virtual Production** - Open the LIve Link streaming manger tab.
- **Reset Layout** - Resets your layout to a default arrangement. Requires the editor to restart after saving your changes and creating a backup of your settings.

- **Save Layout** - Saves the current layout of the panels as the new default layout.
- **Remove Layout** - Removes the current layout.
- **Enable Fullscreen** - Enables fullscreen mode for the application, expanding across the entire monitor.

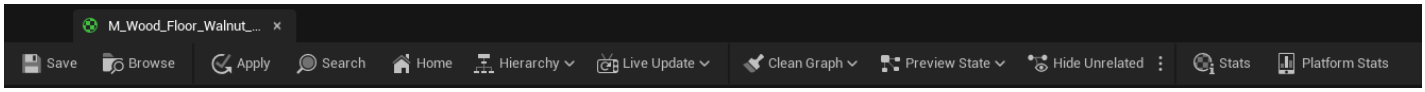
Tools

- **New C++ Class** - Adds C++ code to the project. This code can only be compiled if you have Visual Studio installed.
- **Generate Visual Studio Project** - Generates your C++ code project in Visual Studio.
- **Find in Blueprints** - Find references to functions, events and variables in all Blueprints.
- **Cache Statistics** - Displays statistics about the Derived Data Cache.
- **Class Viewer** - Displays all classes that exist in this project.
- **CSV to SVG** - Opens a tool for generating vector line graphs from comma-separated value files generated from CSV profiles.
- **Localization Dashboard** - Opens the localization dashboard for this project.
- **Merge Actors** - Opens the Merge Actors dialog.
- **Project Launcher** - Opens the Project Launcher tab.
- **Resource Usage** - Displays derived data resource usage breakdown.
- **Session Frontend** - Opens the session frontend tab.
- **Struct Viewer** - Displays all structures that exist in this project.
- **Virtual Assets** - Displays statistics about any virtual assets within this project.
- **Debug** - Debugging tools for Blueprints, collisions, Niagara and more.
- **Profile** - Open the Profile Data Visualizer or the Trace Data Filtering tab.
- **Audit** - Open the Asset Audit window or the Material Analyzer.
- **Platforms** - Open the Device Manager or Device Profiles UI.
- **Source Control** - Connect to Source Control, view changelists, or submit content.
- **Run Unreal Insights** - Run the Unreal Insights standalone application.

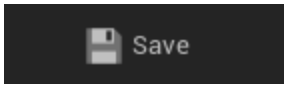
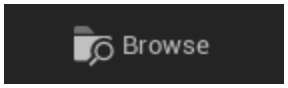
Help

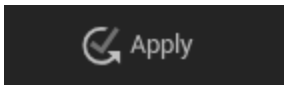
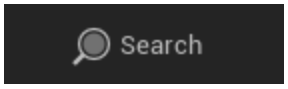
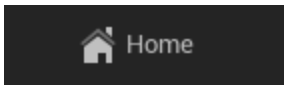
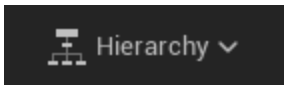
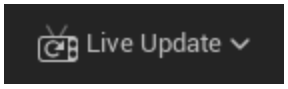
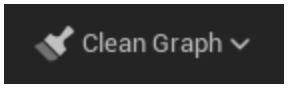
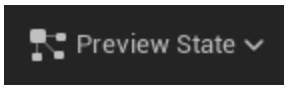
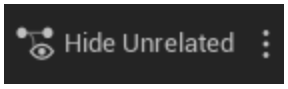
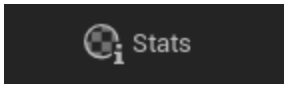
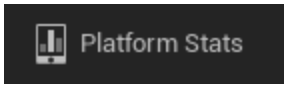
- **Material Editor Documentation** - Opens a browser window and navigates to the documentation about this tool.
- **Documentation Home** - Opens a browser window and navigates to the documentation home page.
- **Online Learning** - Opens a browser window and navigates to the Unreal Online Learning home page.
- **Forums** - Go to the Unreal Engine forums to view announcements and engage in discussions with other developers.
- **Answer HUB** - Go to the AnswerHub to ask questions, search existing answers, and share your knowledge with other Unreal Engine developers.
- **Support** - Opens a browser window to the Epic Pro Support forum page where you can ask a question about the Unreal Engine.
- **Report a Bug** - Opens a browser window and navigates to the Unreal Engine Bug submission form.
- **Issue Tracker** - Opens a browser window and navigates to a searchable database of Unreal Engine issues and fixes.
- **About Unreal Editor** - Displays application credits, copyright information, and build information.
- **Credits** - Displays application credits.
- **Visit UnrealEngine.com** - Navigates to UnrealEngine.com where you can learn more about Unreal Technology.

Toolbar

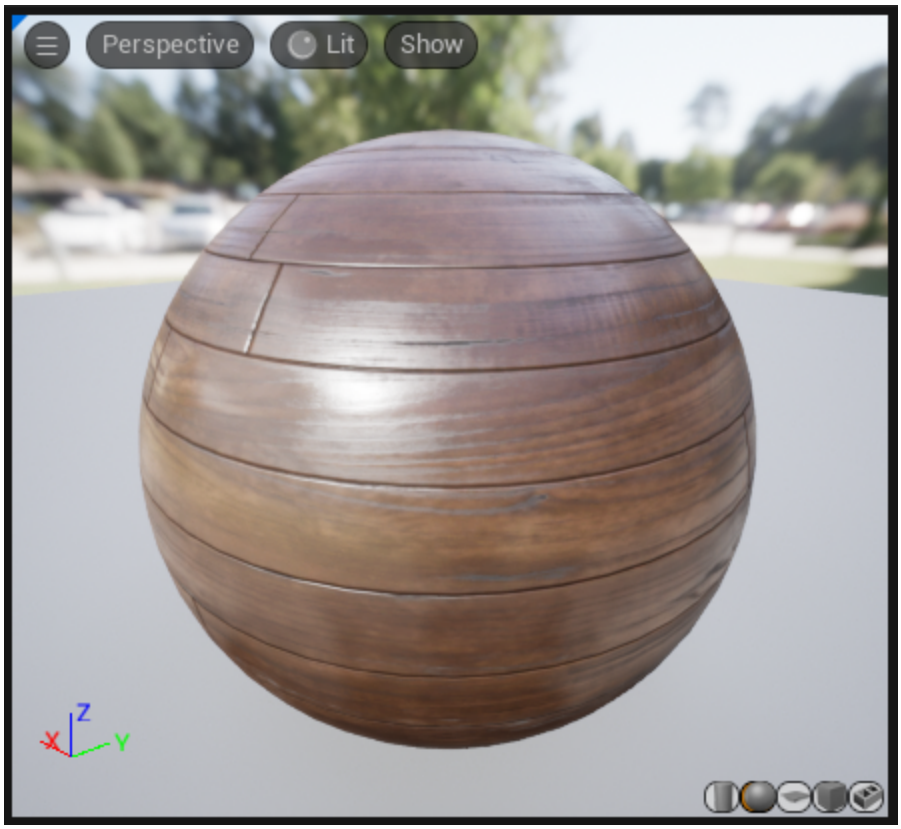


The following table lists the options in the Toolbar and what they do.

Icon	Description
	Saves the current asset.
	Finds and selects the current asset in the Content Browser.

Icon	Description
	Applies any changes made in the Material Editor to the original Material and any uses of that Material in the world.
	Finds expressions and comments in the current Material.
	Centers the Main Material node in the **Material Graph** panel.
	Displays a list of all Material Instances using the current Material as a parent.
	Toggle which elements in the Material Editor UI will update in realtime.
	Deletes any Material nodes that are not connected to the Material.
	Preview the graph state for a given feature level, Material quality, or static switch value.
	Hides all nodes that are not related to the selected nodes.
	Shows or hides Material statistics in the **Stats** panel.
	Toggles the window that shows Material stats and compilation errors for multiple platforms.

Viewport Panel



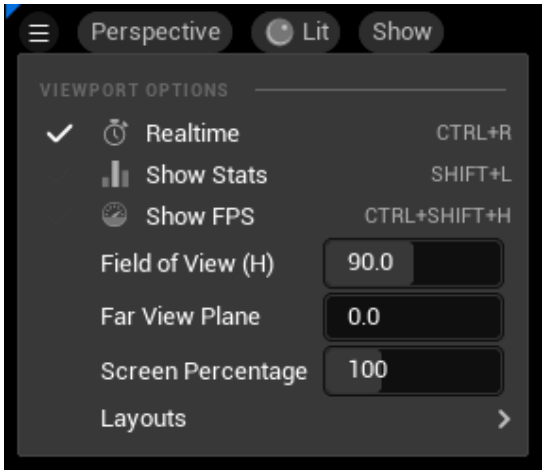
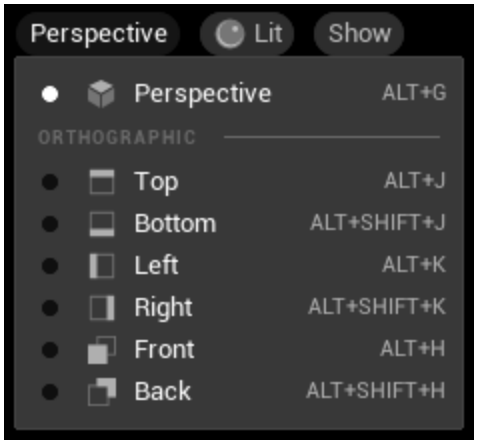
The **Viewport** panel displays the Material that you are currently editing.

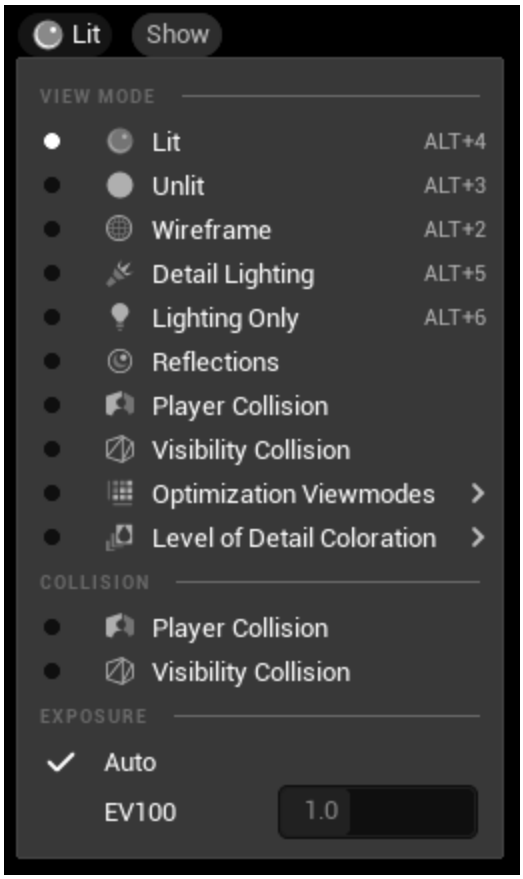
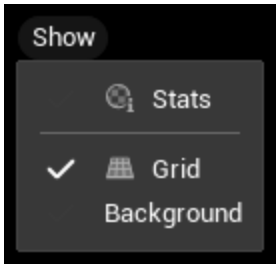
You can navigate in the **Viewport** panel by using the options in the following table.

Action	Description
Drag with the left mouse button	Rotate the mesh.
Drag with the middle mouse button	Pan
Drag with the right mouse button	Zoom
Hold down **L** and drag with the left mouse button	Rotate the light direction.

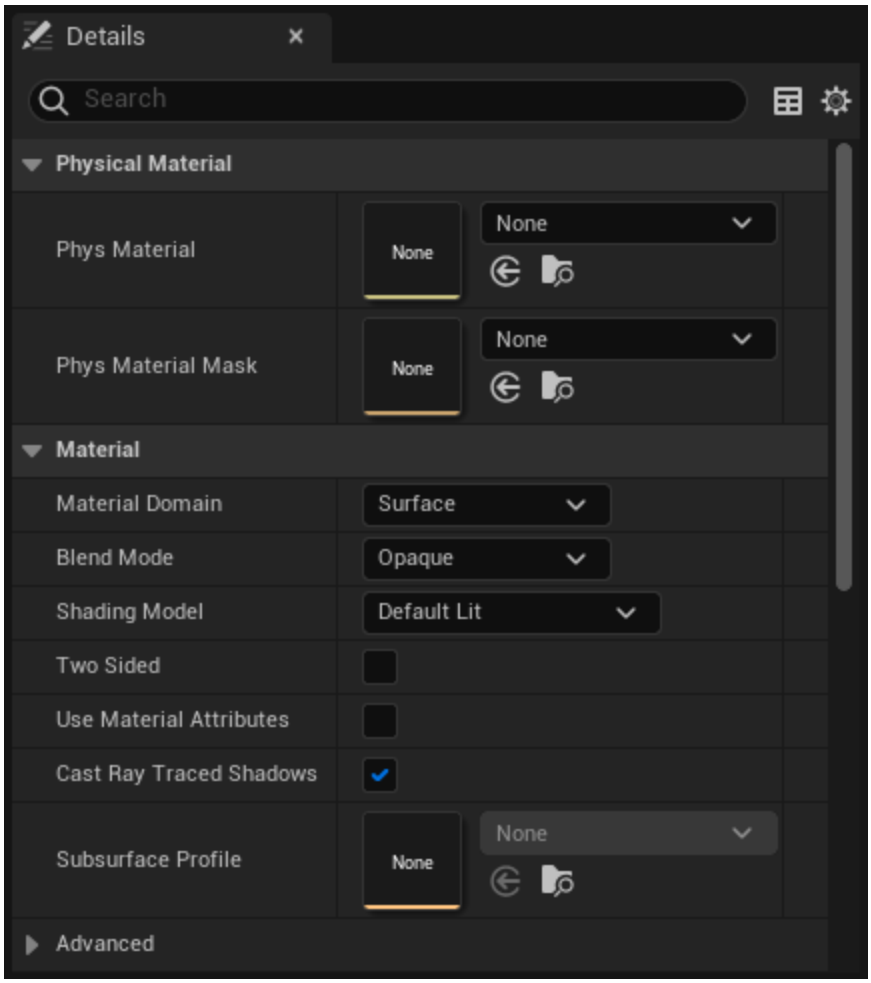
You can change the viewport preview mesh using the associated toolbar controls (the five shape buttons in the bottom-right corner of the viewport). To use a custom preview mesh, select a **Static Mesh actor** in the Content Browser and click the **brick** icon in the viewport. The viewport mesh is saved with the Material so that the next time the Material is opened in a Material Editor, it will display the same mesh.

This table details the options available in the Material Editor preview viewport:

Icon	Description
	Shows the result of your current Material on the respective primitive shape in the **Preview** panel.
	Toggles the Material **Viewport Options**
	Changes the type of **Viewport** that is used.

Icon	Description
	Changes the type of lighting the **Viewport** is using.
	Enables additional options to the Material Viewport.

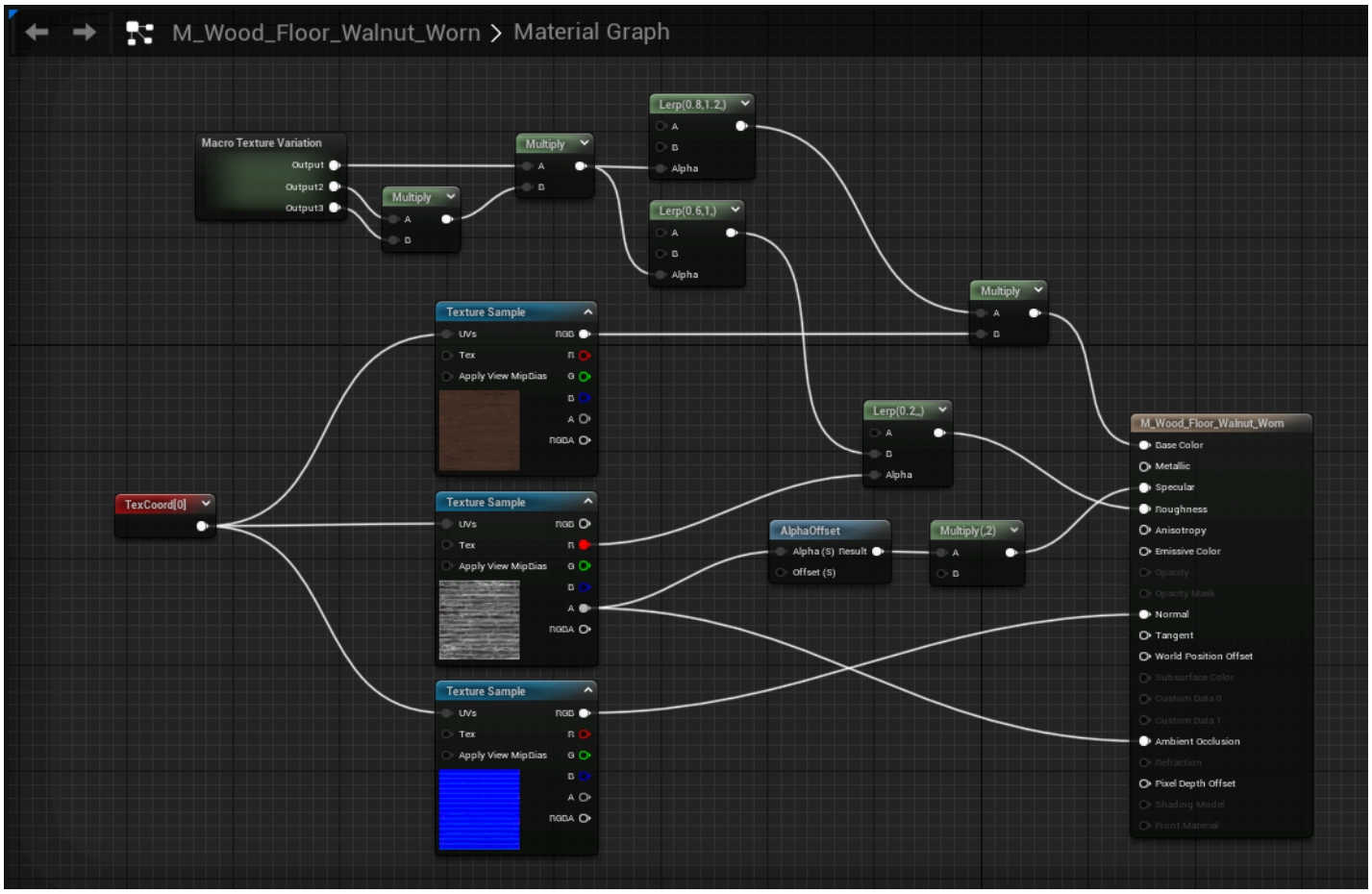
Details Panel



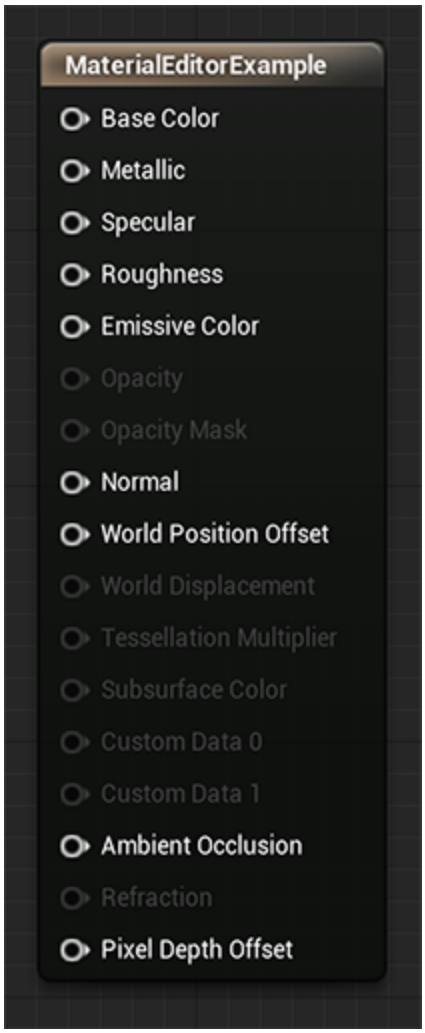
This panel contains a property window for all currently selected Material expression and function nodes. If no nodes are selected, the base properties of the Material are displayed.

See Material Properties for descriptions of all Material properties.

Material Graph Panel

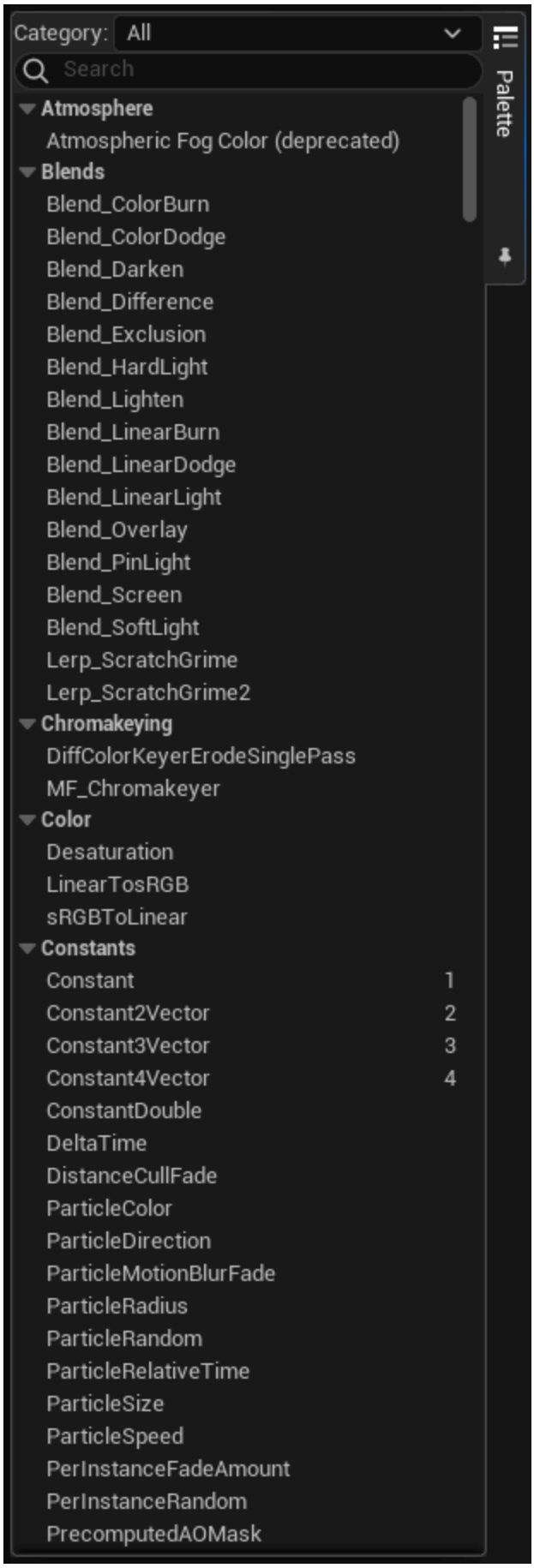


This panel contains a graph of all Material expressions that belong to this Material. By default, each Material contains a single base Material node. This node has a series of inputs, each associated with a different aspect of the Material that other Material nodes can connect to.



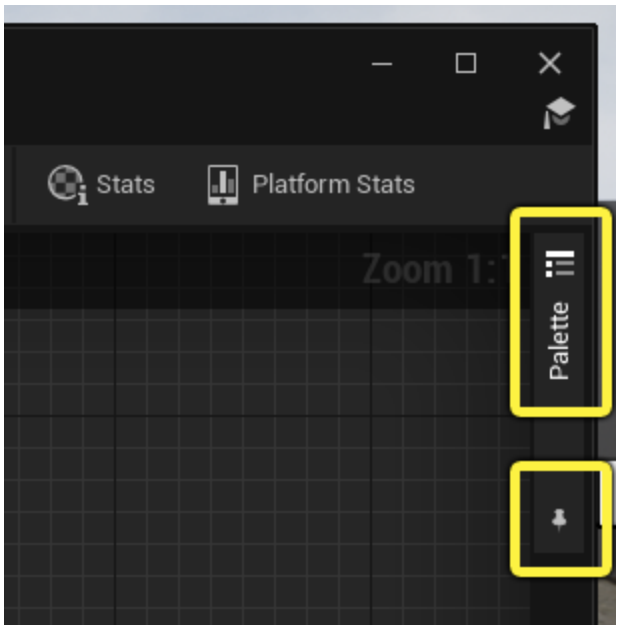
See Material Inputs for descriptions of the various inputs on the Main Material node.

Palette Panel



The **Palette** panel contains a categorized list of all the Material nodes you can drag into your Material. To place a new Material node, drag it from the Palette into the **Material Graph** panel.

The Palette is hidden by default. Click the **Palette** tab in the upper-right corner of the Material Editor to display the Palette. Click the **Pin** icon if you want the Palette to remain visible while you work.



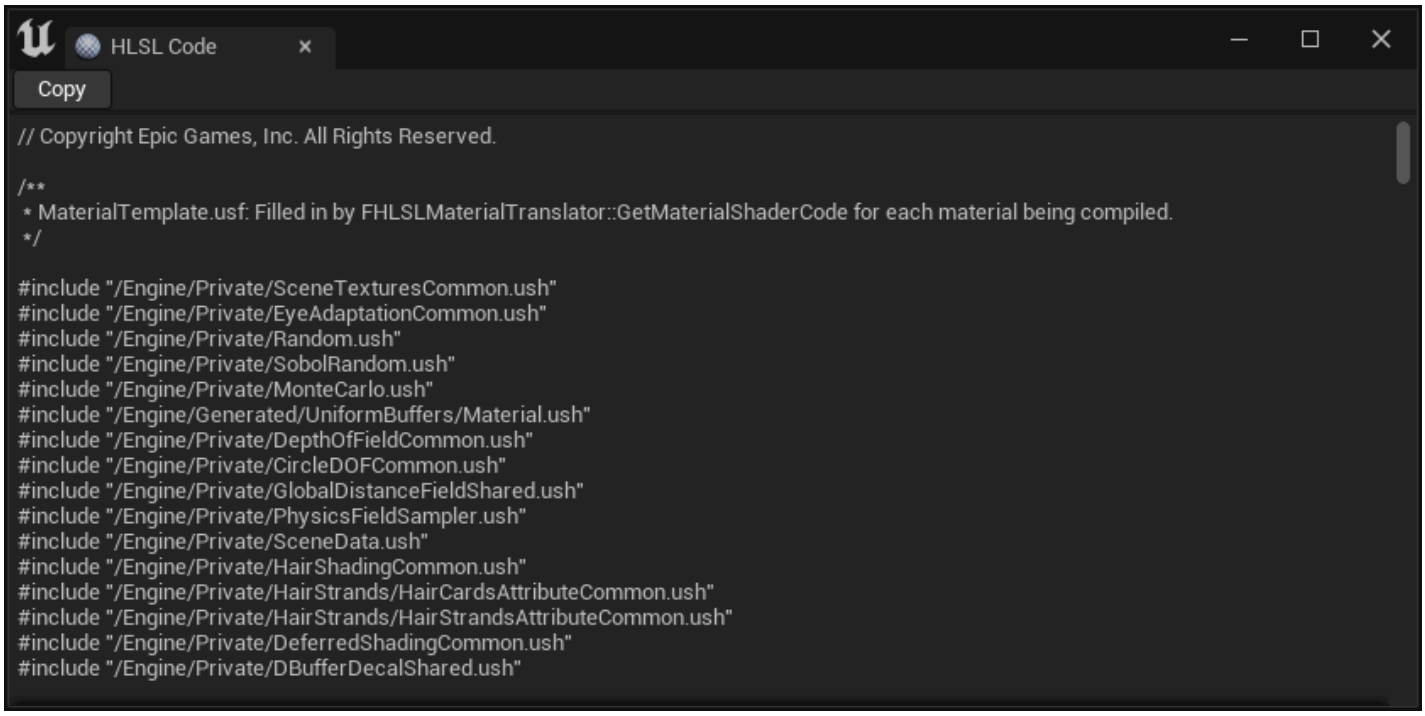
> You can filter the Material nodes listed in the **Palette** panel by choosing either **Expressions** or **Functions** in the **Category** drop-down list.

For more information about Material functions, see Material Functions.

Stats Panel

The number of shader instructions used in the Material as well as any Compiler Errors are displayed in this panel. The fewer the number of instructions, the less costly the Material. Material expression nodes that are not connected to the base Material node do not contribute to the instruction count (cost) of the Material.

HLSL Code Panel

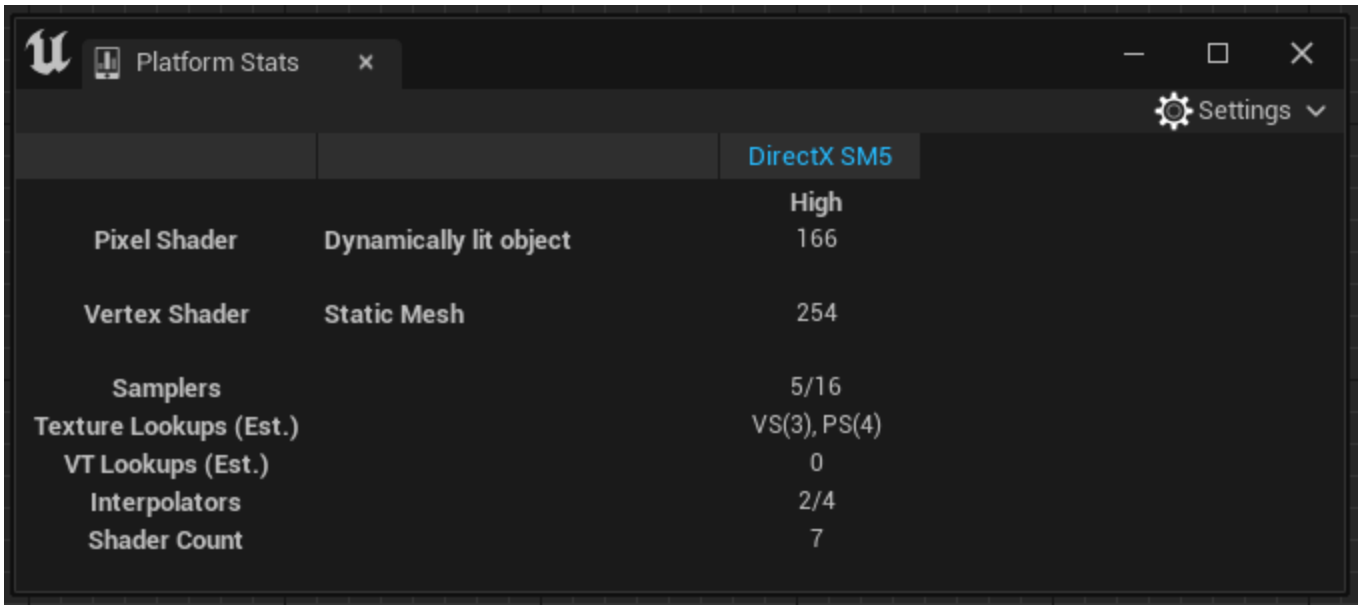


This panel shows the **High Level Shader Language** (HLSL) code that is generated by the current Material. Be aware that this is not an editor; you will not be able to change the HLSL code. Rather, this is merely a viewer to allow you to visualize the code defined by your Material network.

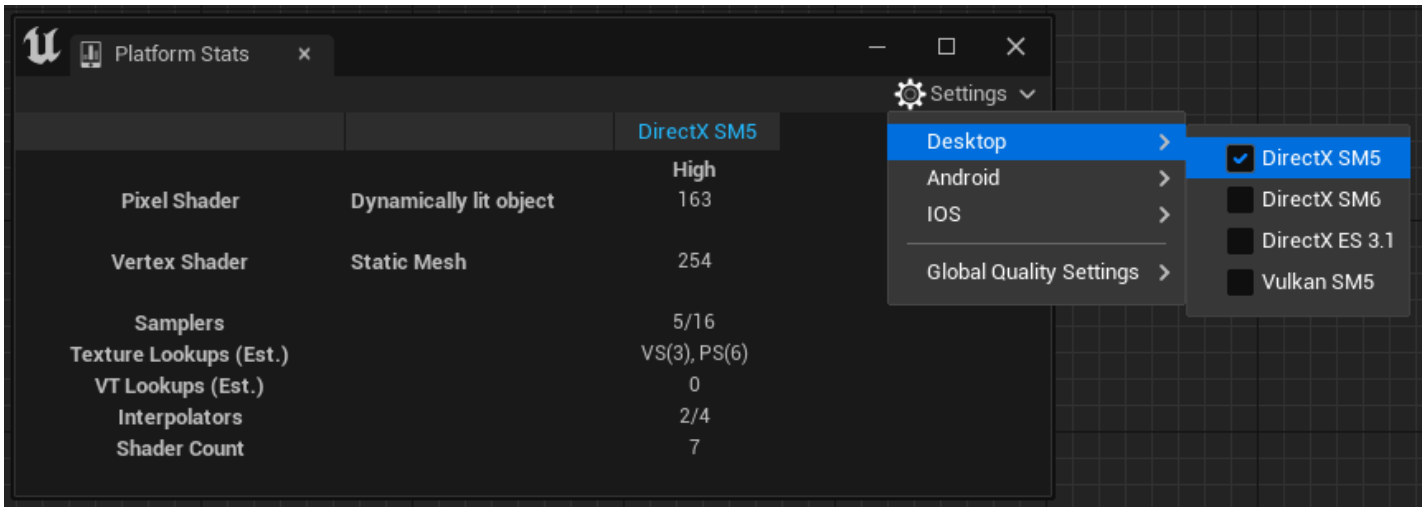
> By default the **Code View** panel is not visible. To display the **Code View** panel, open the **Window** menu and click on **HLSL Code**.

Platform Stats

You can view the cost of your Material on various platforms by clicking on the **Platform Stats** icon.

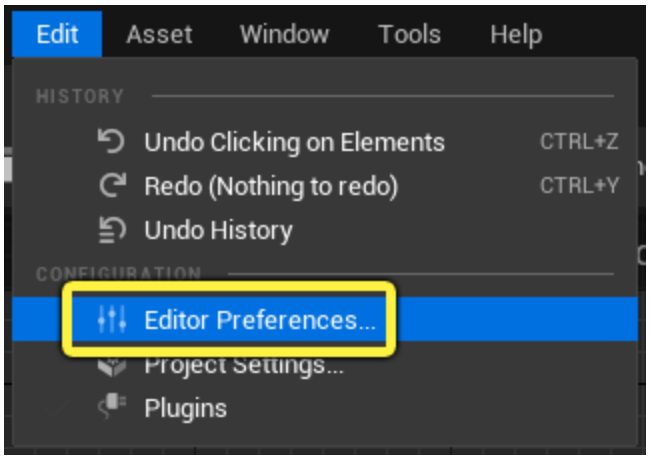


You can view stats for each rendering API Unreal Engine suports by clicking on the **Settings** option and then selecting the renderer you want to see stats for.

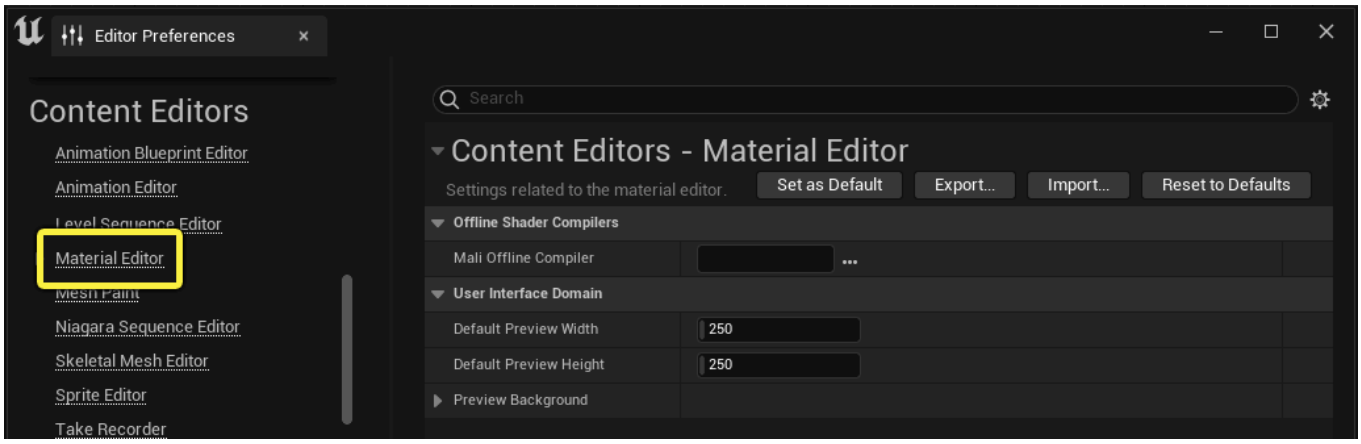


In order to see stats for **Android** you will need to first install **Mali Offline Compiler** by doing the following:

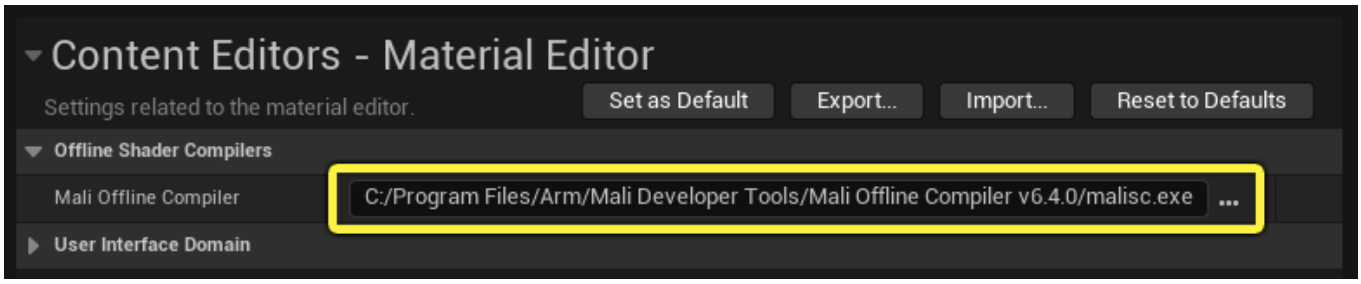
1. Download and install the Mali Offline Compiler.
2. After installing the Mali Offline Compiler go to **Edit** \> **Editor Preferences** in the menu bar.



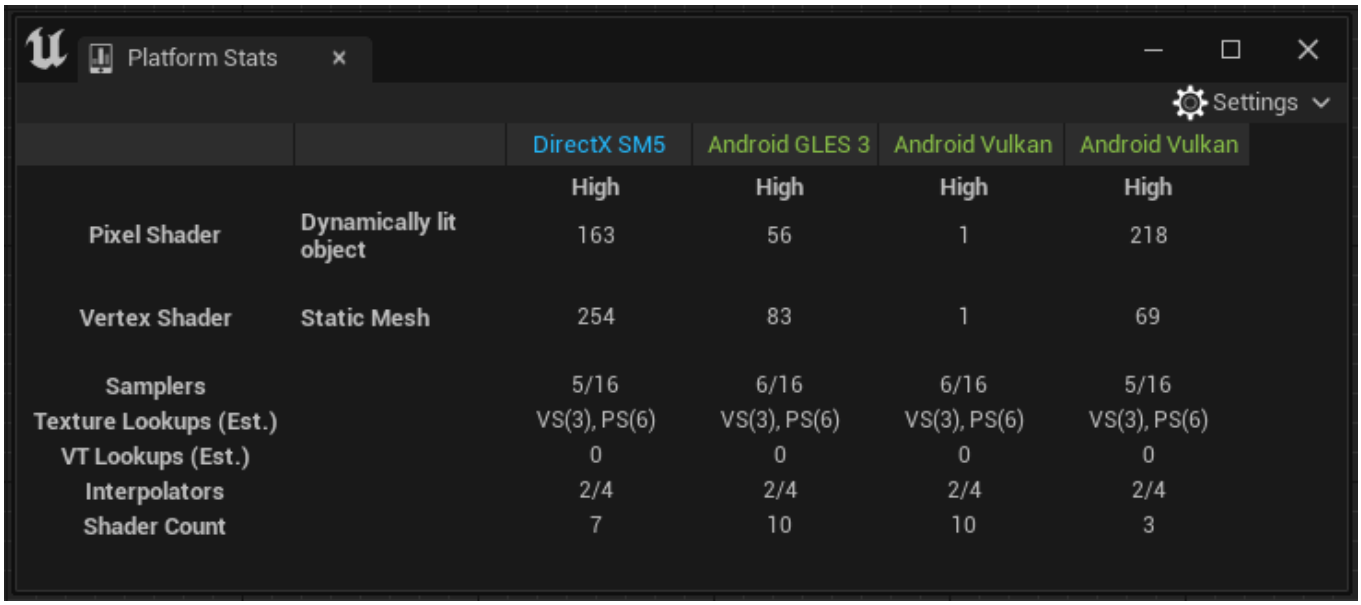
3. Under **Content Editors** select **Material Editor**



4. Click the **three dots** to the right of the **Mali Offline Compiler** option, and then locate the **malisc.exe** file that was installed with the Mali Offline Compiler. The default file path is shown below.



5. After the previous steps are complete, you can see stats for the various Android renderers supported by Unreal Engine.



You cannot see the Android Platform stats without installing the Mali Offline Compiler.

Graph Controls

Controls in the Material Editor generally match the controls of other tools in the Unreal Editor. For example, you can navigate the Material Expression graph as with other node-based object editors (Blueprints). You can orient the Material preview mesh as per other mesh tools.

Mouse Controls

Control	Action
RMB drag on background	Pan Material expression graph
LMB drag on background	Box select
Rotate Mouse Wheel	Zoom in and out
LMB + RMB drag	Zoom in and out

Control	Action
LMB click on object	Select expression/comment
Ctrl + LMB on object	Toggle selection of expression/comment
LMB click + drag	Move current selection/comment
Ctrl + LMB drag	Box select (add to current selection)
LMB drag on connector	Create connection (release on connector)
Ctrl + LMB drag from connection	Move connection (release on same type connector)
Shift + single-click LMB on connector	Marks the connector. Performing the action again with a connector marked will create connection between the two connectors. This is a quick way of making connections over large distances.
RMB on background	Bring up **New Expression** menu
RMB on object	Bring up **Object** menu
RMB on connector	Bring up **Object** menu
Alt + LMB on connector	Break all connections to connector
Ctrl + LMB on connector	Add a new node along connector

Keyboard Controls

Control	Action
Ctrl + B	Find in Content Browser
Ctrl + C	Copy selected expressions
Ctrl + S	Save Material
Ctrl + V	Paste
Ctrl + D	Duplicate selected objects
Ctrl + Y	Redo
Ctrl + Z	Undo
Delete	Delete selected objects
Spacebar	Force update all Material expression previews
Enter	(same as clicking apply)

Hotkeys

You can use hotkeys to place commonly used Material expression types. Hold down the hotkey and **left-click** to drop in the node. The hotkeys are as follows:

Hotkey	Expression
A	Add
B	BumpOffset

Hotkey	Expression
C	Comment
D	Divide
E	Power
F	MaterialFunctionCall
I	If
L	LinearInterpolate
M	Multiply
N	Normalize
O	OneMinus
P	Panner
R	ReflectionVector
S	ScalarParameter
T	TextureSample
U	TexCoord
V	VectorParameter
1	Constant

Hotkey	Expression
2	Constant2Vector
3	Constant3Vector
4	Constant4Vector
Shift + C	ComponentMask