

**Material  
Merger**

by

10103

# MaterialMerger v1.1

## Manual

## MaterialMerger Version 1.1 – November 2014

### What's new with version 1.1?

Version 1.1 has been updated as a result of customer feedback with requested features and a minor bug fix, as below:

- Fixed halt on error caused by null or corrupt prefab objects in the project
- Settings are now persistent throughout the Unity session
- Added Target Folders option to restrict Material Merger to working on specified folders (works in the opposite way to Protected Folders)
- Added “Clear” button to Protected and Target Folder lists to clear the list if you make a mistake or just want to select different folders from last time (due to settings persistence)
- Material Merger now highlights the material asset in the Project View that the user is being asked for delete confirmation, to improve clarity and ease of identification

Whilst the documentation makes specific reference to the updates above, some of the images used are from version 1.0 so may not exactly match what you see in the latest version. They have not been updated as the differences are so minor as to not cause confusion.

## MaterialMerger Q&A

### What is MaterialMerger?

MaterialMerger is a Unity Editor tool. It allows you to analyse your project and determine which material assets are not being used and – more importantly – which materials can be replaced by other identical materials (or ones which are a close match.) It checks and modifies all renderers attached to prefabs and scene objects (across all scenes in the project, prompting you to save each scene as it goes) so that the duplicate materials can be safely removed, saving you *hours* of development time.

This has the effect of removing materials from your project that are not used or are copies of other materials. These duplicate materials can cause unnecessary bloat in your project with an excessive amount of material assets. MaterialMerger makes your project more streamlined by removing these unnecessary materials and making the various assets make more efficient use of the available materials.

### How do I install it?

Import the asset into your project as you would any other Unity Store asset. Once you've imported MaterialMerger into your project, you will have a folder within your Assets folder called '10103' which contains the necessary files for MaterialMerger to work along with some demo scenes and materials.

- In order to function, the minimum folders required are the **10103/Editor** folder and **10103/Resources** folder. The rest can be safely deleted from your project.

### Is there anything important I need to know before I use MaterialMerger on my project?

Yes! Your project may require some preparation before asking MaterialMerger to optimise your materials depending on how your project works. More information on this later – but in the meantime, the most important thing to remember is to *use MaterialMerger on a **copy** of your project first to make sure you're happy with the results!*

### Is there a video tutorial anywhere?

Of course – go to <https://www.youtube.com/watch?v=iE6WI4WS4G8> to see it.

### MaterialMerger says it doesn't support <insert shader name here>?

I have created MaterialMerger to work with the most common material shaders. There will be some more advanced ones that it won't work with because I haven't gotten around to supporting them yet or I just don't have them myself and am unaware of their properties. Contact me via the website and let me know and I'll look into adding support as quickly as possible.

### What about materials with textures?

MaterialMerger fully supports textured materials and will **not** match two otherwise identical materials if they have different textures assigned or the same texture with different tiling or offset properties.



## So how do I use MaterialMerger?

Open the MaterialMerger window by selecting the menu option under *Tools>MaterialMerger*.

You will see something similar to Figure 1. This is the main window for MaterialMerger and is where you set your options and see the results of using MaterialMerger.

There are a number of options in the main window:

### “Analyse Project”-button

You can use the “Analyse Project”-button at any time to get an overview of your project – how many materials are in the project, how many scenes and prefabs and how many materials could be removed if you use MaterialMerger.

MaterialMerger’s project analysis will also show you which materials would be marked for deletion as they are duplicates and which materials it would use to replace those duplicate materials with.

This option makes no changes to your project and is perfectly safe, so use it to see what changes MaterialMerger would make to your project

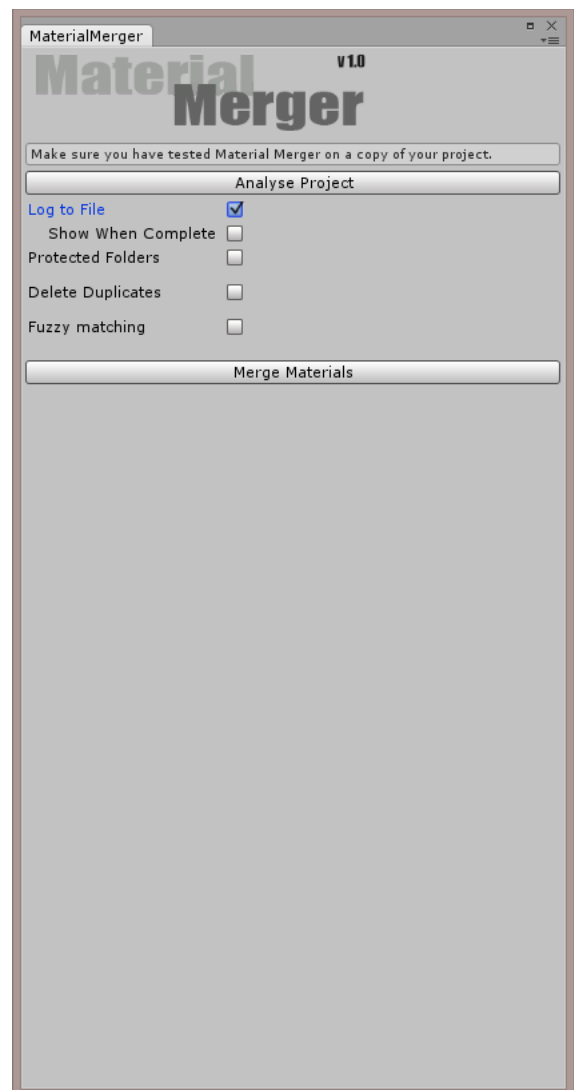
### Log to File

The results of the project analysis are displayed in a box beneath the “**Merge Materials**”-button. This box has a maximum limit of 16,384 characters, so if your project is large or has lots of materials, the output of the analysis may exceed this limit. For this reason, the “**Log to File**” option is checked by default – this causes MaterialMerger to save the log to a text file which is created in your project *Assets/* folder.

### Show When Complete

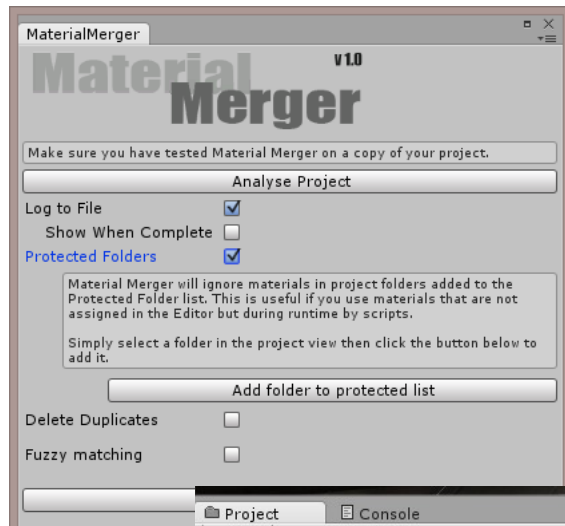
If “**Log to File**” is checked, you will see another checkbox titled “**Show When Complete**” – if this is checked, when MaterialMerger completes its merge operation on the materials in your project and the log file is closed, it will automatically open an Explorer window (on a Windows PC) or its equivalent if you’re using a Mac and highlight the new log file. This makes it much easier to open and view the log file at the end of the operation to see exactly what has been done.

This option also works when you click “**Analyse Project**”, so there’s no reason to miss any information as a result of analysing a large project.



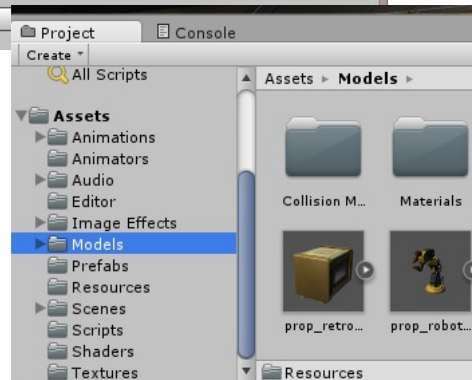
## Protected Folders

MaterialMerger will remove unused materials. If you have unassigned materials in your project that are later assigned to renderers at runtime by scripts, then you will need to tell MaterialMerger to ignore these materials, *otherwise it will remove them!*



You can tell MaterialMerger to ignore the contents of certain folders within the project hierarchy by adding them to the list of Protected Folders. Obviously this will require a little preparation on your part before using MaterialMerger – you will need to move all unassigned materials that you wish to keep into their own project folder/s and then add the folder/s to the **Protected Folders list**.

**How to**  
Check the  
this function  
you want  
folder in the  
then clicking  
MaterialMerger window (Figure 4).



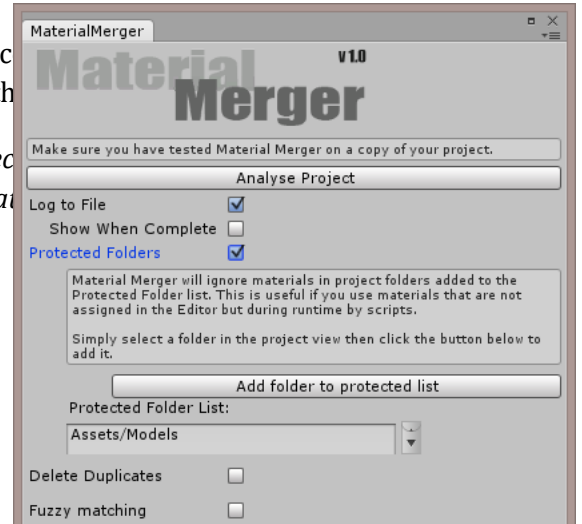
### protect a folder:

**Protected Folders** checkbox to activate (Figure 2), then add the project folders MaterialMerger to ignore by selecting a *Unity Editor Project View* (Figure 3) and on “**Add folder to protected list**” in the

## Updated in v1.1

You can add as many folders as you need to this list. Once the "Protected List" button will appear, allowing you to clear the

*You can click the "Analyze Project"-button to see the effect of the protected folder list and to confirm that you have set up Ma*



### **Targeted Folders – new feature in v1.1!**

Targeted Folders work in exactly the opposite way to Protected Folders. Perhaps you have a lot of additional packages in your project, each with their own materials that you want to avoid messing up. Maybe you only have one asset folder full of the materials you want Material Merger to streamline.

In either case, using the Targeted Folders feature allows you to specify a single folder, or a limited number of specific folders for Material Merger to work on. It will not touch any materials in any other folder if this option is used.

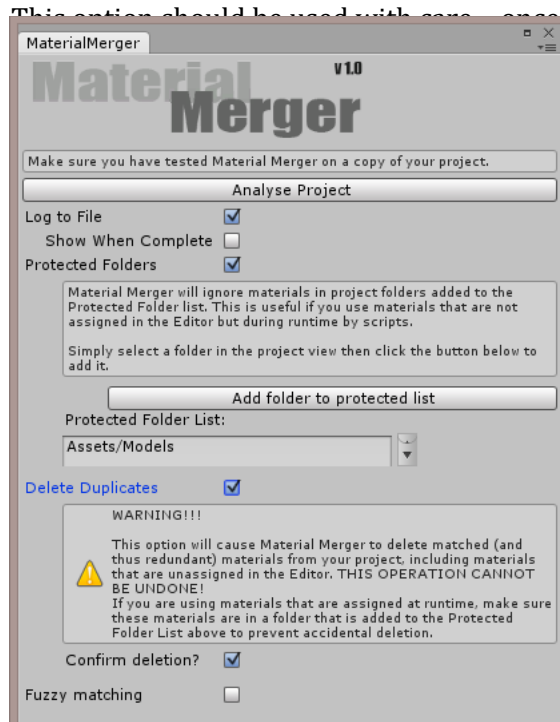
Specifying which folders to target is exactly the same process as for Protected Folders on the previous page.

**Note: You cannot select Protected Folders AND Targeted Folders at the same time. Material Merger can only use one method or the other to decide which materials to leave and which to compare.**



## Delete Duplicates

If this box is checked, MaterialMerger will delete all of the unused and duplicate materials it has found at the end of the merge operation across all scenes in the project.



Once a material is deleted, there is no getting it back. For your project to protect unassigned materials that you are detailing the **Protected Folders** option.

your project so that no permanent damage is caused if you did not want deleted.

to ensure that you are happy with all the materials remaining after running MaterialMerger with the **Delete Duplicates**

option checked by default and provides some protection against accidental deletion of materials that you want to keep. With this box checked, MaterialMerger will delete a material if it is not in the Protected Folder List. Be warned though – if there is a large number of materials, this could slow down the process considerably.

If you have set up your project correctly with ALL the unused materials that you want to keep in folders in the Protected Folders List, then this option can be unchecked for automated deletion of unused material assets.

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With each confirmation request before deleting a particular material, the material asset in question will be highlighted in the Project Window so you can see exactly which asset Material Merger is referring to for extra clarity.

## Fuzzy Matching

This checkbox determines the method MaterialMerger uses to find duplicate materials that can be removed from the project. **Fuzzy Matching** is unchecked by default which causes MaterialMerger to use *strict matching*.

MaterialMerger compares the properties of two materials – in the case of a diffuse shader material it will compare their Red, Green and Blue properties for similarities. It will also compare Alpha and Specularity for shaders that use those properties, as well as comparing textures for materials that have them. In the case of *strict matching*, those properties must all be exactly the same for MaterialMerger to consider both materials as a match (and thus one of them being redundant.)

However, if you check the **Fuzzy Matching** box MaterialMerger will perform a fuzzy search against all materials, introducing a margin of variability that allows it to match two materials with differing shades of red colour, for example. You may have a number of materials, all of slightly different shades of a particular colour that you would be happy for MaterialMerger to replace with one material of a similar shade.

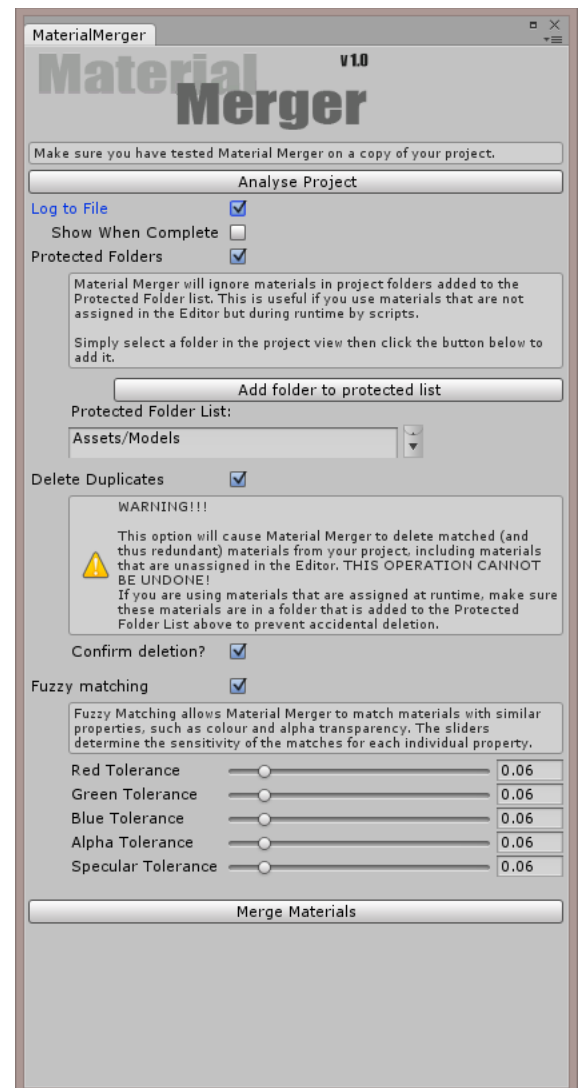
To determine how much tolerance MaterialMerger has to match materials, you set the tolerance values using the sliders for each individual property. The values range from 0, which means the property of the material being compared must be an exact match, to 0.5 which means that as long as the property on the material being compared is within half of its maximum range to the original material, it will be matched.

For example – if the Red Tolerance slider is set to 0.5, materials with a Red property within 128 of the first material's Red property will be considered a match (the colour property ranges from 0-255, so if material A had a Red value of 40, material B had a red property of 120, they would be matched.)

In the figure above, the tolerances for all properties are set to 0.06 – this equates to a value of around 30 for the colour properties, so R, G, B values within 30 of each other would be matched.

ALL of the properties have to be a match before the materials are considered a match.

If you increase the tolerance of the properties too much, MaterialMerger will match materials that don't look remotely similar – oranges and yellows will be merged, greens and blues etc. so



experiment with these settings to find the right values, checking the results using the “**Analyse Project**” button.

### **Commit the Changes**

Finally, clicking the “**Merge Materials**”-button will cause MaterialMerger to go to work on your project using the settings you have selected as described previously.

MaterialMerger will look at all the materials in your project and work out which ones match other ones, either using *strict matching* or *fuzzy matching* depending on your selection. It will then go through all the prefabs in your project and all the objects in the current scene, re-assigning materials on renderers to replace the duplicate materials. You will then be given the option to save changes to the current scene before the next one is loaded and the process repeated.



### Save Changes To Scene?

If you don't save changes, none of the material re-assignments will be committed and MaterialMerger will move on to the next scene (if there is more than one scene), losing all the changes it has made.

If you have selected **Delete Duplicates**, this will cause an issue when the duplicate materials are deleted as the replacement material assignments won't have been saved and you will end up with a lot of objects that have no materials. It is therefore essential that you save changes on each scene if you are going to be deleting duplicate materials at the end.



### Questions? Problems? Requests?

If you have any questions about MaterialMerger, are having trouble using it or have found a bug or just have a request for new features (new shader support especially) then don't hesitate to contact me:

E-mail: [support@10103.co.uk](mailto:support@10103.co.uk)

WWW: [Visit the MaterialMerger web page](#)