

The Importance of Shadow Color (Hair and All)

This guide is made for anyone looking to make their cards stand out more, or just haters of the color blue. It's mostly aimed at newer Koi users, but there's a few things the average player may not know as well. You'll need to know the very basics of Material Editor, like what it is, how to open it, and how to click buttons. Material Editor will also be shortened to either MatEdit or ME, so don't get confused if you see those.

This guide will be split into two main parts: Hair, and Clothing/Accessories. The more important of the two is the Hair part, as it is much simpler, less time-consuming to do, and is more impactful on the look of a character. Clothing/Accessories are not as important but will really help make your card look that much better. I recommend doing both for consistency sake, but you can skip the latter if you don't feel the need.

Introduction

So what's the deal with shadow colors? What even is that?

Quite simply, shadow color is a setting in MaterialEditor that, as the name suggests, affects the color of the shadows on an object in Koi.

Why do some anons make such a big fuss over it?

By default, the most common Koikatsu and Koikatsu Sunshine shaders default to having a blue-tinted shadow. If you examine our lovely Chika model here, you can see it most prominently in the hair, especially at the tips of her hair. You can also see it on her white dress shirt.



While this is not much of an issue here, since we all love Chika as she is, the same can't really be said about other characters. Take this girl, for example. Notice how her blonde hair has a blue tint to it.



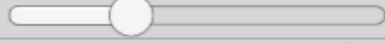
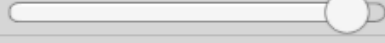
Many people are used to this look and don't mind it, and that's fine, but it also is commonly associated with lazy card makers who couldn't be bothered to change it. Blue shadows on blonde hair like this is the most egregious example.

The blue shadows also change how lighting affects the object. If you take your character into Studio, no matter what your shadow or light settings are, the shadows will always have a blue tint to them by default, which can look weird and mess with the coloring you're going for. This is a Studio-only feature, so this doesn't apply to you Free-H players.

Alright, I understand blue shadow lore. How can I change it?

It's really easy to change the shadow color. If you don't know, you can open Material Editor by simply pressing the blue "Material Editor" button in practically any tab. This applies to hair, clothes, individual accessories, even the face and body. MatEdit is capable of a lot, but this guide is just going to focus on shadow colors for the most part.

I'll use Chika's front hair as an example for what the MatEdit UI will look like.

Color:	R	0.6904762	G	0.4949586	B	0.3205782	A	1		Reset
Color2:	R	0.6285715	G	0.476688	B	0.462449	A	1		Reset
Color3:	R	0.7887006	G	0.8095238	B	0.7565193	A	1		Reset
LineColor:	R	0.2904761	G	0.2082239	B	0.1348639	A	1		Reset
ShadowColor:	R	0.8304498	G	0.8662278	B	0.9411765	A	1		Reset
rimpower:									0.2	Reset
rimV:									0	Reset
ShadowExtend:									0.3	Reset
SpecularHeight:									0.95	Reset

This will be the main value you'll be editing throughout this guide. Don't worry about any other options for now. You'll see the RGB value for the shadow color (and alpha but it doesn't do anything). To make things easier for us, ME comes with a handy color picker located to the right of those values. It'll open up the color window like when you're changing colors on clothes. It might be hidden by the ME UI, so just drag it out of the way if you need to. Changing this color in the color picker will update the color in realtime, which is quite helpful for seeing the new look. You can also change the values in the text boxes manually if you want.

Hair

So what do I change my shadow colors to then?

Now here's some important info to know before we continue:

Shadow color for hair **acts differently** from shadow color for clothes or accessories.

This is because of the shaders they use. Hair, by default, uses the "main_hair" shader (or main_hair_front, but they're essentially identical and have no difference for what's covered in this guide), while most clothing items use either "main_opaque" or "main_alpha", and accessories often use "main_item". How are they different?

As an example, we'll set our shadows for our hair and clothes here to a completely black value (or 0,0,0). You'd think the shadows would be a complete black color, right?



Well, the clothes look less blue and the hair is really dark now. It's kind of a cool look, though. So what?

Take a look at what changing the value to completely white (or 1,1,1) does right below it and see the differences.



You may notice that the clothes look nearly identical, with the most notable change being that the shadows on the blazer are darker and more blue now. But now the hair doesn't even have shadows at all!

That's because the hair shader uses an additive method of applying shadows; if the color value is white, it adds nothing, thus giving us shadowless hair. Vice versa, if it's a black color, it adds nothing but black, which gives us our solid black shadows.

This is the big difference between hair and clothes/accessories.

Also, if you were wondering about the blue spot on Chika's head, that's just the hair's root color. You can see this in the Hair tab by checking the "Enable root and tip color adjustment" box. Hair is split by base, root, and tip colors, and Chika's root color is darker than her base while her tips are a bright pale greenish color. As you can see, changing the shadow colors does not affect the hair's colors directly. Just to show you, here's Chika's head if the root color was the same as her base.



We'll move away from clothes for now and just stick with hair. The question you might be asking is "What color should I change my shadow colors to?"

You might have heard someone somewhere say to set your hair shadow color to a value of 0.9, 0.9, 0.9. This, however, is not the best advice.

While it is more personal opinion, or just whether you don't care too much, 0.9x3 is not a good option for hair shadows. Hair shadow colors should be unique to the character's hair color, and always setting them to 0.9 removes that uniqueness you can achieve.



It's definitely better than blue shadows, but you might notice some desaturation with certain hair colors, making it appear more pale than they should. See here on Chika where it looks okay on her brown hair, but looks a bit too dark and muted on the lighter tips.

You could consider this shadow color method a quick band-aid if you don't care.

The best option, in my opinion, is a shadow color that matches the color of the hair. The way to do this is to open the color picker for shadow color, press the "Get color from desktop" button, and click somewhere on the hair, preferably where the base color of the hair is. You can also copy the color of the hair to one of your custom color slots and pull it from there if you want the exact color.

This will set the shadow color to the same color as the hair (and takes Koikatsu's color filter into account). It won't be perfectly blended into the hair since, remember, it's an additive shadow, and is more like applying that color *on top* of the base color. As such, we'll need to do some adjustments.

From here, you can change the hue, saturation, and brightness sliders to get a better result. I personally don't touch the hue and just mess with the saturation and brightness. Depending on the character, going with a darker and more saturated color may be a better fit than a brighter and less saturated one, or vice versa.

Now look at the difference between the three hairs.



The hair on the left has a more saturated look compared to the others, as well as better matching the overall color of the hair. The hair in the middle is okay, but it tends to look more dull than the first. And of course, the right hair is a blue hue that clashes with the hair color. Put your feelings for Chika aside for this one.

Pause. What if I don't really like the first look?

That's fine. I find a hair shadow that matches the hair color to be a better look than any other, but if you like the second look, or you enjoy the blue shadows, then by all means do what you think looks the best. Keep in mind that the left picture is the color I chose, and yours won't look exactly like it.

And remember, it's your card! You know your card better than anyone else. Maybe a completely black shadow is what you want, or you want a red shadow to show some sort of "evil aura", I don't know. Whatever your reasoning, you do what you want.

Hold on, the card I'm editing doesn't have any hair in the Hair tab! They're all accessories.

Hair accessories are identical to hair in terms of function and details, so there is no special exception between them and hair in the Hair tab. They will all have the "main_hair" shader already (unless changed manually), so all you have to do is combine the two methods we've gone over.

Here are a few girls with the Base color edit method applied. Clothes are default shadows so just focus on hair. All hair for each card was the exact same blue shadow color before, too.

Check out that blonde girl's hair from earlier; it looks much better without all the blue!

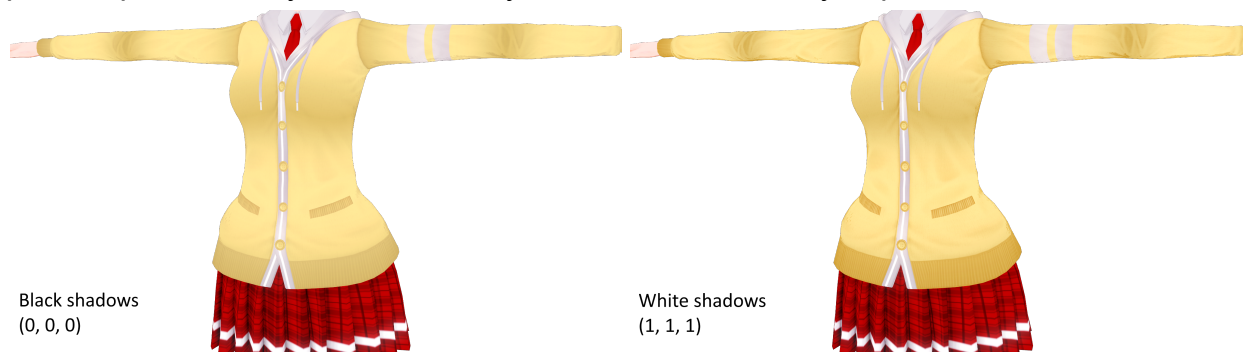


Clothing

Okay! So now with the hair done, what about clothing and accessories? As I said earlier, this part is more optional than hair, but it will add a lot more consistency to your outfit as well as removing that blue tint from everything.

Now unlike hair, we're not going to be taking the color of the base item and making it the shadow color. That would take way too long, and you'd have to change it manually every time you changed the colors of the item.

Instead, we're going to change the shadow color to a neutral value. That means all three RGB values are equal to each other. As said earlier, shadow color doesn't really matter for the shaders clothes and accessories use, so as long as they're all equal, the shadows won't have a colored tint to them. Do note that there's very little difference between black shadows and white shadows here, and even less so in between. I'll provide pictures for you to see and you can decide which you prefer.



White shadows tend to draw more from the object's color, which gives a more saturated look. Black is more subtle and muted by comparison.

If you don't like the look of the shadows on your item, play around with the ShadowExtend setting, which you can find in ME in the big list here:



And don't bother with ShadowExtendAnother, it's not the same and likely does nothing for your item.

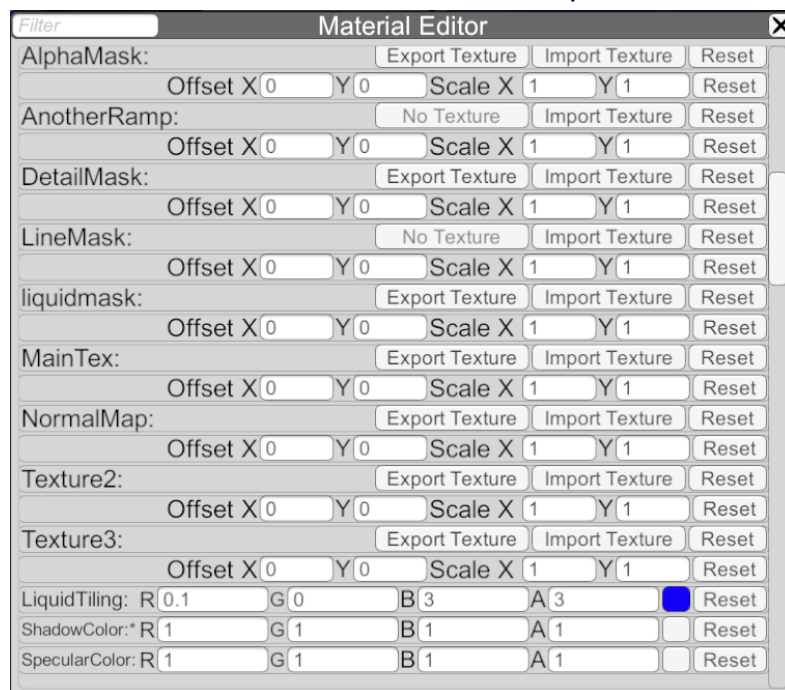
ShadowExtend goes from 0-1 on the slider, but you can increase or decrease it past that if you type in the value manually. I wouldn't recommend it though because you'll get some really ugly looking shadows.

The shadows draw from your item's DetailMask and NormalMask textures, so if your item doesn't have one, ShadowExtend may not work.



But wait, do I have to go through and change the shadow color for every single piece of clothing and accessory? That's going to take forever!

Don't worry, MatEdit comes with a nice feature that lets you copy all edits of an item that you can paste to any other item. How to do this is to find a clothing piece or accessory with **no edits to them**. Here is an example:



It's important that you do this because all edits will be saved to the clipboard, including things like texture or color value changes, and we only want the shadow color edit to be copied. If you do copy edits like texture edits, you will paste that texture over the next item, and that will cause all sorts of problems.

The best way is to make sure whatever it is you're copying has no "*" next to any option besides shadow color. If you want, you can quickly create an accessory (like a hairpin since that's simple), change the shadow color, and then copy the edits. You can delete it after you've saved the shadow color edit. Once you've got it, go ahead and start pasting the edit to everything you want.

Note: This also works for hair accessories! Change the shadow color of one hair piece, make sure it's the only edit to copy, and then paste it to every other hair piece on the outfit.

What if my clothing piece or accessory has multiple parts to it?

If one item happens to have multiple parts to it, such as using the Uniform style or Sailor style tops that let you change the inner and outerwear, the only thing you need to do is paste the edits to every part. You'll just have to scroll through the ME menu to paste it to everything. You might have to change the emblem shadow color manually if you have one since it's lowercase "shadowcolor" and doesn't get the paste (ignore it if you don't have an emblem, even if the option for it is still there). The same applies to anything else that has multiple parts, such as certain hair accessories.

This is really tedious. Do I have to do this for every outfit?

You may not like this answer, but yes, you will have to do this for every outfit your card has if you want it to be consistent. If your card uses hair accessories, the edits will need to be pasted to every accessory on every outfit, too.

It's not all bad, though. There are shortcuts.

If your card's hair is in the same accessory slots throughout all the outfits (like slots 1-10 are dedicated to the hair), simply change one outfit's shadow colors on those pieces, and then copy all of them to the other outfits using the Copy Accessory feature. ME changes are copied over between outfits, so you really only need to do the one slot.

Be mindful about copying accessories, though. You might accidentally copy over the wrong accessory because the slots have been moved. Trust me, you don't want to copy a bunch of hair over top of some outfit accessories. There's no way to undo a copy, so I recommend saving your card frequently, which goes without saying, but it will save you a major headache if you goof up and replace an outfit's accessories with the wrong one.

Note: this also applies to any regular accessories or clothing items. So if you have an accessory in one slot (i.e. horns or a body/face piercing) that is identical and in the same slot in another outfit, you can copy that one too. Same for clothing if you happen to have duplicate outfits.

This still sounds too fucking tedious.

Unfortunately, that's just the way it is. It's not too time-consuming once you get into the rhythm of copy-pasting, but it's definitely not very exciting.

If this doesn't sound like something you want to subject yourself to, just focus on the hair only and ignore the clothes and other accessories. Hair is the most important shadow color to change on a card, but anything else isn't necessary and is more for just elevating the quality of your card.

Bonus

I'm willing to sink some time into changing colors. Is there anything else I can change?

Actually, there are a few things you can do on top of everything else. The first one is useful for those making applicable cards, but the other two are hardly noticeable outside of specific situations. Do them if you don't mind the couple extra clicks.

If you're making a cute catgirl, lovable wolfgirl, or any other character that may have animal parts, chances are you're using ears and/or tail accessories. While all of these accessories use the `main_item` shader as usual, I actually recommend changing them to the `main_hair` shader. The reason for this is to better match your ears/tail to your girl's hair. Their hair is basically their fur, right? It should match accordingly.



Change the shader of those items to the hair shader, and then copy the hair shadow color to them. Now, those accessories should match the hair better than before.

If the shader was `main_item`, it won't need any more changes beyond that. If you change the shader and something about it breaks (like if the texture disappears or the color goes away), simply hit the Reset button next to the shader dropdown. Don't worry about trying to change it if this happens because it's not worth trying to fix.

Did you know eyebrows also have a shadow color? They do! And they also have a default blue shadow, but it's hardly ever noticeable due to how the eyebrow shader works. In certain scenarios, usually in Studio, the only time you'll ever really see a shadow on an eyebrow is at really sharp angles. It's hard to replicate, but take my word for it that it's not very pretty when it happens.

Good thing you can easily fix this by copying the shadow color of the hair to the eyebrows. That way, they'll never look different from the hair based on the lighting. You can find the ME settings for eyebrows by going to the eyebrows tab and clicking the Material Editor button, or by opening the ME menu and searching for "mayu".

Did you also know irises and eyelashes have a shadow color? Yep, they do as well. I would say this one's not really a big deal compared to the eyebrows but I might as well share it. You can change the shadows of these parts by going to the Eyes tab and clicking the ME button, or by searching for "hitomi" and/or "eyeline" in the ME menu.

Here's what white shadows look like vs default when the light is angled off to the side. White shadows keep the color of everything intact no matter the lighting. The eyebrows are set to white for demonstration purposes, but would match the dark tone of her hair if the shadow color was copied over. Black shadows are practically identical between eyebrows and eyelashes, but irises will turn completely black when fully cast in a shadow, which may or may not be an effect you want. The iris shader works similar to the hair shader, so it is completely black when fully shadowed, or no shadow at all with white shadows. If you want an in between where the irises aren't colored but get some visible shadows, setting the shadow color values to around the 0.75-0.9 range works.



And bonus tip for Studio users: you can use this shadow change on the iris to get a "bright eye" effect in scenes. It won't lose any brightness while in a shadow and you don't have to use colored shadows! This doesn't apply to subtract shadows, though.

Final Questions

This shadow isn't changing! What even is this?



That's called Rim lighting, and it's not the same as shadow color, though it does share it's color with that value. If you've never seen this in your game, it's because you have the RimRemover plugin enabled, which tries to turn off all instances of rim lighting in your game. On the other end, if you see this everywhere, it means you either don't have it installed or you have it disabled.

Rim lighting is often seen as a bad look because of how it's implemented in Koi. Even if it has no light source casting a beam to apply the rim lighting, it will still be present. It's also pretty distracting to look at if it's not extremely subtle (which it usually isn't), so many of us just have it turned off through RimRemover.

However, the plugin doesn't remove rim lighting for everything forever. It just sets the rim lighting setting to 0 by default. That means it can still be applied if someone edits the value manually. I've even had rim light applied to objects even without edits, so sometimes it just doesn't give a shit.

I personally don't like rim lighting in Koi, and if you do too, you can easily remove it on an object by setting the rimV value to 0. Rimpower is related, but doesn't do anything as long as rimV is set to 0, so you don't have to mess with it.

Wait, I can't find the shadow color setting! What gives?

Some shaders don't have a shadow color setting. I can't name all of them, but the big ones that you may see yourself are IBL, KKUSS, and KKUTS shaders. If you don't know what those are, these shaders can be seen as alternatives to Koikatsu's base shaders and have different looks in comparison. I won't go into what they are or how they look in this guide, but I will say that if your card has any of these shaders, the shadow color is not something you can change for them. If you've downloaded a card from somewhere that uses these shaders, you're fine and don't need to worry about it. I'll give a quick tip for KKUSS though, since I use that shader on occasion. There's an option called Occlusion that is set to 1 by default. It's very minor, but it appears to give the object a very slight blue tint. If you don't like it, you can remove this by setting it to 0. Here's just a quick example of what I mean.



Congrats! You've now passed the Shadow Colors crash course!



Thanks for reading!

*All cards that aren't Chika were originally made by dididodo for his Default Renewal project on Pixiv. The cards showcased here were slightly edited before this guide, but only minor face and body changes. No changes to the hair were done beforehand.