

⋮

Stackable	Yes (64)
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In *Bedrock Edition* and *Minecraft Education*, bone meal, ink sacs, lapis lazuli, and cocoa beans can generally substitute for white dye, black dye, blue dye, and brown dye, respectively, in crafting recipes and for use in dyeing items or mobs. However, they have other important uses that aren't related to color, and are therefore not considered true dyes. They are mentioned in this article only in regard to their use as dyeing agents; see their individual articles for complete information about them.

Substitution rules for different Billerstaff editions:



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 - Crafting
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 - Dyeing shulker boxes
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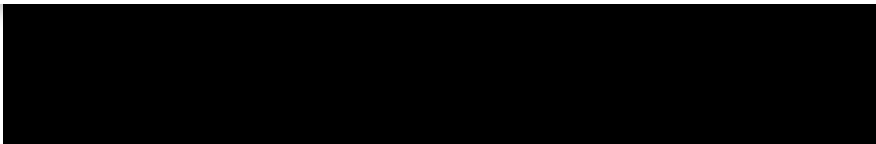
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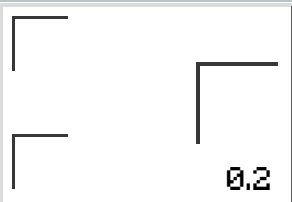
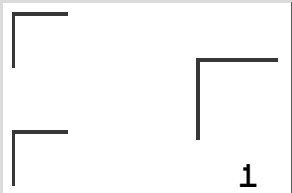


Obtaining

Dyes can be produced by crafting them from plants (mainly flowers), by crafting dyes of different colors together, by smelting plants, or by trading with a [wandering trader](#).

Crafting

Smelting

Name	Ingredients	Smelting recipe [hide]
Lime Dye	Sea Pickle + Any fuel	
Green Dye	Cactus + Any fuel	

Trading

[Wandering traders](#) can sell 3 dyes for an [emerald](#). In *[Bedrock Edition](#)*, they can also sell 3 lapis lazuli, bone meal, cocoa beans, or ink sacs for one emerald.

Apprentice-level cleric [villagers](#) sell one lapis lazuli per emerald.

Chest loot

Item	Structure	Container	Quantity	Chance
<i>Java Edition</i>				
Blue Dye	Trail ruins	Suspicious gravel	1	4.4%
Green Dye	Village	Desert house chest	1	14.3%
Orange Dye	Trail ruins	Suspicious gravel	1	4.4%
Light Blue Dye	Trail ruins	Suspicious gravel	1	4.4%
Yellow Dye	Trail ruins	Suspicious gravel	1	4.4%
	Village	Mason's chest	1	20.8%



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Blue Dye	Trail ruins	Suspicious gravel	1	4.3%
Green Dye	Village	Desert house chest	1	14.3%
Orange Dye	Trail ruins	Suspicious gravel	1	4.3%
Light Blue Dye	Trail ruins	Suspicious gravel	1	4.3%
Yellow Dye	Trail ruins	Suspicious gravel	1	4.3%
	Village	Mason's chest	1	20.8%
White Dye	Trail ruins	Suspicious gravel	1	4.3%

Other

Ink sacs can also be created using 1 iron, 1 sulfur, and 4 oxygen in the [compound creator](#).

[Bedrock Edition and Minecraft Education only]

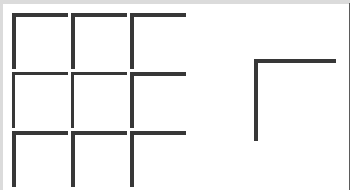
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Usage

Similar to their use in crafting, [bone meal](#), [ink sacs](#), [lapis lazuli](#), and [cocoa beans](#) can be substituted for the corresponding dye in any of the following usages unless otherwise specified.*[Bedrock Edition only]*

Dyeing wool and mobs

Players can dye wool by placing [wool](#) and any dye in a crafting grid.

Ingredients	Crafting recipe
Any Wool + Matching Dye	

Dyes can be used on sheep to change the color of the wool. Shearing a colored sheep drops the corresponding color of the wool, and the sheep retains the color when the wool regenerates. [Breeding](#) colored sheep produces a lamb colored as one of the parent sheep, or a color resulting from the combination of both parents' color. The color combining follows the same rules that dyes use – red and yellow sheep produce an orange lamb, but a blue and yellow sheep cannot create a green lamb. The unlimited reproduction of colored sheep makes



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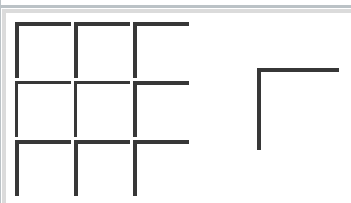
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than just dyeing wool directly.

Dye can also be used on a tamed [wolf](#) or [cat](#) to change the color of its collar from the default red to the color of the dye.

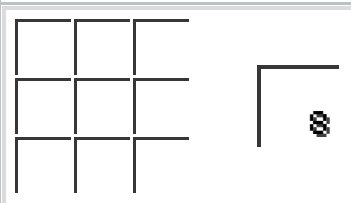
Dyeing carpets

Carpets can be dyed.

Ingredients	Crafting recipe
Any Carpet + Matching Dye	

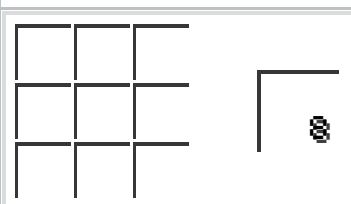
Dyeing terracotta

[Terracotta](#) can be dyed by placing 8 blocks around a dye on a crafting table.

Ingredients	Crafting recipe
Terracotta + Matching Dye	

Creating concrete powder

Dyes can also be used to craft [concrete powder](#), which can then be set into their respective [concrete](#) blocks (they cannot be dyed directly).

Ingredients	Crafting recipe
Sand + Gravel + Matching Dye	

Staining glass

[Stained glass](#) can be stained by placing 8 blocks of glass around a dye on a [crafting table](#). Just like regular glass, stained glass can be crafted into stained glass panes. The recipe for this is the same as with regular glass.

Name	Ingredients	Crafting recipe	[hide]
			



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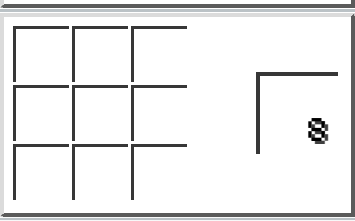
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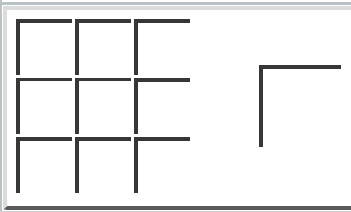


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Stained Glass Pane	Glass Pane + Matching Dye	

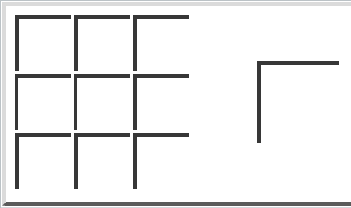
Dyeing shulker boxes

Shulker boxes are generated in a light shade of purple (like the purpur block), but can be dyed any color. They can also be re-dyed as often as desired.

Name	Ingredients	Crafting recipe
Shulker Box	Any Shulker Box + Matching Dye	

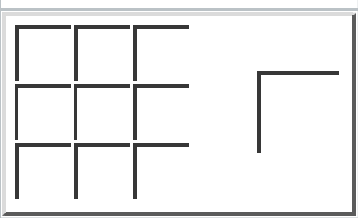
Dyeing beds

Players can dye beds by placing a bed and any color dye in a crafting grid.

Ingredients	Crafting recipe
Any Bed + Matching Dye	

Dyeing candles

Players can dye candles by placing an undyed candle and any color dye in a crafting grid.

Ingredients	Crafting recipe
Candle + Matching Dye	

Banner patterns

Main article: [Banner § Patterns](#)

Dyes are used in most banner patterns to determine the pattern and color displayed.



can be dyed by:

- Crafting
dyes with a
piece of
leather
armor or
leather
[horse armor](#). A graph showing all combinations of two dyes on a [tunic](#).

[[Java Edition](#) only]

- Dousing the leather armor or leather [horse armor](#) in a [cauldron](#) to which dyes have been added.[[Bedrock Edition](#) only]

There are 5,713,438^[1] (34.1% of sRGB) colors leather armor can be, as it is possible to put more than one dye on the crafting bench alongside the leather armor. Armor can be dyed multiple times with previous colors affecting the final outcome. Colored armor can be reverted to their original color using a [cauldron](#) with undyed water.

The game has a specific formula for calculating the color of dyed armor: each color, in the RGB color model, has a red value, green value, and blue value. For each dye in the crafting grid, and the armor itself (if it is already dyed), the red, green, and blue values are added to running totals. In addition, a running total of the highest value (be it red, green, or blue) is also kept. After this, each total is divided by the number of colors used. This effectively produces the average red, green, blue, and maximum values. The maximum value of the average RGB values is also calculated. Finally, each average RGB value is multiplied by the average maximum value and divided by the maximum of the average RGB values. The modified average RGB values are then used as the final color. This procedure can be summed up with the following equations:

```
for each color (all "total" variables
start at 0 before counting):
totalRed = totalRed + redValue
totalGreen = totalGreen + greenValue
totalBlue = totalBlue + blueValue
totalMaximum = totalMaximum +
max(redValue, greenValue, blueValue)
numberOfColors = numberOfColors + 1

averageRed = totalRed /
numberOfColors
averageGreen = totalGreen /
numberOfColors
averageBlue = totalBlue /
```




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Helium +
Lead

Creating glow sticks

Dye can also be used to craft glow sticks.

[Minecraft Education only]

Ingredients	Crafting recipe
Polyethylene + Hydrogen Peroxide + Matching Dye + Luminol	

Dyeing water inside cauldrons

Water can be dyed in a cauldron by holding any dye in the hand and pressing use on a cauldron filled with water.*[Bedrock Edition only]*

Signs

Dye can be used on a [sign](#) or a [hanging sign](#) to change the text color. In *Bedrock Edition*, [ink sacs](#) cannot be used for this purpose; black dye must be used to change the text to black.

Trading

Apprentice, journeyman and expert-level shepherd [villagers](#) buy any of the 12 dyes for an [emerald](#).

Color values

The "color codes" are used to determine the color imparted on sheep, wolf and cat collars, firework stars, [beacon](#) beams, and dyed leather armor. The hex value is shown in the extended tooltips of dyed leather armor; however, to set the color using an NBT data tag in a [command](#), the decimal value must be used instead. The color values for firework stars are slightly different from the ones listed below, and use [these values](#) instead.

Description	Color Code	
	Dec	Hex
White	16383998	<input type="checkbox"/> #F9FFFE
Light gray	10329495	<input type="checkbox"/> #9D9D97
Gray	4673362	<input type="checkbox"/> #474F52
Black	10080001	<input type="checkbox"/> #1D1D21



Red	11546150	<input type="checkbox"/> #B02E26
Orange	16351261	<input type="checkbox"/> #F9801D
Yellow	16701501	<input type="checkbox"/> #FED83D
Lime	8439583	<input type="checkbox"/> #80C71F
Green	6192150	<input type="checkbox"/> #5E7C16
Cyan	1481884	<input type="checkbox"/> #169C9C
Light blue	3847130	<input type="checkbox"/> #3AB3DA
Blue	3949738	<input type="checkbox"/> #3C44AA
Purple	8991416	<input type="checkbox"/> #8932B8
Magenta	13061821	<input type="checkbox"/> #C74EBD
Pink	15961002	<input type="checkbox"/> #F38BAA

Sounds

Java Edition:

Sound	Subtitles	Source	Description	Resource location	Translation key	Volume	Pitch	[Collapse] Attenuation distance
	Dye stains	Blocks	When dye is used on a sign	<code>item.dye.use</code>	<code>subtitles.item.dye.use</code>	1.0	1.0/0.9/0.95/1.1	16
	Dye stains	Players	When dye is used on a sheep	<code>item.dye.use</code>	<code>subtitles.item.dye.use</code>	1.0	1.0/0.9/0.95/1.1	16

Bedrock Edition:

Sound	Source	Description	Resource location	Volume	[Collapse] Pitch
	Sound	When dye is used on a sign	<code>sign.dye.use</code>	1.0	1.0
	Blocks	When dye is added to a cauldron	<code>cauldron.adddye</code>	0.1	1.0
	Blocks	When armor is dyed using a cauldron	<code>cauldron.dyearmor</code>	0.1	1.0
	Blocks	When dye is removed from armor using a cauldron	<code>cauldron.cleanarmor</code>	0.1	1.0

Achievements

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PS4	Other	Achievement	In-game description	requirements (if different)	Game score earned	type (PS4)		
		Rainbow Collection	Gather all 16 colors of wool .	All the colors of wool do not have to be in the inventory at the same time, but must have been picked up by the player at least once.	30G	Silver		
		Tie Dye Outfit	Use a cauldron to dye all 4 unique pieces of leather armor .	—	15G	Bronze		

Video

Note: These videos are outdated, as it does not include details of the [1.7.2](#) update's changes to the dyeing system/production chain.

History

Java Edition Beta



<p>Notch mentions adding a "paint" feature if he can figure out how.</p>		
<p>Shown rose red in development as part of Minecraft: The Story of Mojang.</p>		
<p>Added dyes.</p>		
<p>Leftovers of old textures can be seen in items.png with 100% opacity. The white dye texture was reused for Sugar.</p>		
<p>The colors were as follows:[verify]</p>		
Description	Color Code	
	Dec	Hex
White	16777215	<input type="checkbox"/> #FFFFFF
Light gray	10066329	<input type="checkbox"/> #999999
Gray	5000268	<input type="checkbox"/> #4C4C4C
Black	1644825	<input type="checkbox"/> #191919
Brown	6704179	<input type="checkbox"/> #664C33
Red	10040115	<input type="checkbox"/> #993333
Orange	14188339	<input type="checkbox"/> #D87F33
Yellow	15066419	<input type="checkbox"/> #E5E533
Lime	8375321	<input type="checkbox"/> #7FCC19
Green	6717235	<input type="checkbox"/> #667F33
Cyan	5013401	<input type="checkbox"/> #4C7F99
Light blue	6724056	<input type="checkbox"/> #6699D8
Blue	3361970	<input type="checkbox"/> #334CB2
Purple	8339378	<input type="checkbox"/> #7F3FB2
Magenta	11685080	<input type="checkbox"/> #B24CD8
Pink	15892389	<input type="checkbox"/> #F27FA5
<p>Java Edition</p>		
<p>Sheep can now regrow their wool by eating grass. Dyed sheep regrow wool in their new color.</p>		
<p>The texture of cocoa beans has been changed.</p>		
<p>The textures of bone meal, cactus green, cocoa beans and rose red have been changed. The textures have been lowered one pixel.</p>		
<p>Added the ability to dye leather armor and wolf collars.</p>		
<p>Color codes have been changed. The colors of red, brown, blue, purple, cyan, pink, light blue, magenta and orange were adjusted a little vividly.</p>		
<p>Stained clay can now be crafted using dyes.</p>		



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

































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		13w41a	Stained glass can now be crafted using dyes.																																																																																																												
1.8		14w02a	As cleric villagers now sell lapis lazuli, all dyes have become fully renewable.																																																																																																												
		14w30a	Added banners, which can be dyed.																																																																																																												
1.9		15w34a	Added shields, which can be dyed indirectly by applying a matching banner.																																																																																																												
1.11		16w39b	Dyes are now used to change the color of shulker boxes.																																																																																																												
1.12		17w06a	Dyes are now used to craft concrete powder.																																																																																																												
			Color codes have been changed. All colors are adjusted more vividly. The changes were as follows:																																																																																																												
			<table><tr><th>Name</th><th colspan="2">Old Color Code</th><th>Sample</th><th colspan="2">New Color Code</th></tr><tr><th>Color</th><th>Dec</th><th>Hex</th><th></th><th>Dec</th><th>Hex</th></tr><tr><td>White</td><td>16777215</td><td>#FFFFFF</td><td></td><td>16383998</td><td>#F9FFFE</td></tr><tr><td>Light Gray</td><td>10066329</td><td>#999999</td><td></td><td>10329495</td><td>#9D9D97</td></tr><tr><td>Gray</td><td>5000268</td><td>#4C4C4C</td><td></td><td>4673362</td><td>#474F52</td></tr><tr><td>Black</td><td>1644825</td><td>#191919</td><td></td><td>1908001</td><td>#1D1D21</td></tr><tr><td>Brown</td><td>6704179</td><td>#664C33</td><td></td><td>8606770</td><td>#835432</td></tr><tr><td>Red</td><td>10040115</td><td>#993333</td><td></td><td>11546150</td><td>#B02E26</td></tr><tr><td>Orange</td><td>14188339</td><td>#D87F33</td><td></td><td>16351261</td><td>#F9801D</td></tr><tr><td>Yellow</td><td>15066419</td><td>#E5E533</td><td></td><td>16701501</td><td>#FED83D</td></tr><tr><td>Lime</td><td>8375321</td><td>#7FCC19</td><td></td><td>8439583</td><td>#80C71F</td></tr><tr><td>Green</td><td>6717235</td><td>#667F33</td><td></td><td>6192150</td><td>#5E7C16</td></tr><tr><td>Cyan</td><td>5013401</td><td>#4C7F99</td><td></td><td>1481884</td><td>#169C9C</td></tr><tr><td>Light Blue</td><td>6724056</td><td>#6699D8</td><td></td><td>3847130</td><td>#3AB3DA</td></tr><tr><td>Blue</td><td>3361970</td><td>#334CB2</td><td></td><td>3949738</td><td>#3C44AA</td></tr><tr><td>Purple</td><td>8339378</td><td>#7F3FB2</td><td></td><td>8991416</td><td>#8932B8</td></tr><tr><td>Magenta</td><td>11685080</td><td>#B24CD8</td><td></td><td>13061821</td><td>#C74EBD</td></tr><tr><td>Pink</td><td>15892389</td><td>#F27FA5</td><td></td><td>15961002</td><td>#F38BAA</td></tr></table>	Name	Old Color Code		Sample	New Color Code		Color	Dec	Hex		Dec	Hex	White	16777215	#FFFFFF		16383998	#F9FFFE	Light Gray	10066329	#999999		10329495	#9D9D97	Gray	5000268	#4C4C4C		4673362	#474F52	Black	1644825	#191919		1908001	#1D1D21	Brown	6704179	#664C33		8606770	#835432	Red	10040115	#993333		11546150	#B02E26	Orange	14188339	#D87F33		16351261	#F9801D	Yellow	15066419	#E5E533		16701501	#FED83D	Lime	8375321	#7FCC19		8439583	#80C71F	Green	6717235	#667F33		6192150	#5E7C16	Cyan	5013401	#4C7F99		1481884	#169C9C	Light Blue	6724056	#6699D8		3847130	#3AB3DA	Blue	3361970	#334CB2		3949738	#3C44AA	Purple	8339378	#7F3FB2		8991416	#8932B8	Magenta	11685080	#B24CD8		13061821	#C74EBD	Pink	15892389	#F27FA5		15961002	#F38BAA
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			Light blue dye, stained glass, and stained glass panes, did not change colors in this update. This means that they still use old colors. ^[2]																																																																																																												
		17w15a	Dyes can now apply color to white beds.																																																																																																												
1.13		17w47a	The different data values for the dye ID have been split up into their own IDs.																																																																																																												
			Bone meal, ink sacs, cocoa beans and lapis lazuli are no longer considered dyes.																																																																																																												
			Added white, black, brown and blue dyes.																																																																																																												
			"Rose Red", "Dandelion Yellow" and "Cactus Green" have been renamed to "Red Dye", "Yellow Dye" and "Green Dye", respectively.																																																																																																												



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1.14			The textures of light gray, gray, red, orange, yellow, lime, green, cyan, light blue, purple, magenta, and pink dyes, have been changed. The color texture for light blue dye was not changed to reflect the updated colors from 1.12. ^[2]					
	18w44a		The color of the text on signs can now be changed with dye.					
	18w49a		Yellow dyes can now be found in chests in village mason houses.					
	18w50a		Green dyes can now be found in chests in desert village houses.					
	19w05a		Added the wandering trader , which can sell any type of dye.					
	19w11a		All 16 types of dyes can now be bought by shepherd villagers.					
1.16.2	Pre-release 2		Reversed the order of dyes to match other colored items in the Creative inventory . ^[3]					
			Regrouped dyes in the Creative inventory such that white, blue, brown, and black dyes are within and not cocoa beans , ink sacs , lapis lazuli , and bone meal . ^[4]					
1.17	20w45a		Added candles , which can be dyed.					
	21w03a		Added a sound for applying dyes.					
	21w19a		Candles can no longer be dyed.					
	Pre-release 1		Candles can now once again be dyed.					
1.20 (Experimental)	22w42a		The color of the text on hanging signs can now be changed with dye.					
	23w07a		Torchflowers can now be crafted into orange dye.					
			Pink petals can now be crafted into pink dye.					
1.20	23w12a		Pitcher plants can now be crafted into cyan dye.					
			Blue, light blue, orange, white, and yellow dye can now be found in suspicious gravel and suspicious sand in trail ruins .					
	23w14a		Pitcher plants can now craft two cyan dye instead of one.					
	23w16a		Blue, light blue, orange, white, and yellow dye no longer generates in suspicious sand in trail ruins .					
			Due to the split of the archaeological loot tables for the suspicious gravel within the trail ruins ; blue, light blue, orange, white, and yellow dye now are in the common loot.					
Pocket Edition Alpha								
v0.3.0			Added dyes. Only dandelion yellow and lapis lazuli are currently obtainable and have functionality.					
v0.3.2			Cactus green is now obtainable by smelting cacti .					
v0.3.3			Bone meal is now obtainable via crafting .					
v0.4.0			Cyan dye , light blue dye , lime dye , magenta dye , orange dye , pink dye , and purple dye are now obtainable via crafting.					
			Rose red is now obtainable by smelting red mushrooms .					
			All available dyes, excluding bone meal, can now be used to craft their respective wool color.					
	build 1		The texture of cocoa beans has been changed.					





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		Rose red can now be obtained from beetroots .
v0.9.0	build 1	Cocoa beans can now be obtained from cocoa pods .
		The rose has been removed and replaced with a new poppy flower that can be crafted into rose red.
	build 3	All new flowers can now be crafted into dyes. Because of this, many secondary and tertiary dyes are now primary dyes.
		Gray dye and light gray dye can now be obtained in survival .
	build 11	Stained clay can now be crafted using dyes.
v0.11.0	build 1	Ink sacs can now be obtained from squid .
Added the ability to dye wolf collars.		
v0.12.1	build 1	Red mushrooms can no longer be smelted to obtain rose red .
v0.14.0	build 1	Cauldrons now used for leather dyeing, by applying a dye to a water -filled cauldron.
v0.16.0	build 1	Cocoa beans can no longer be crafted.
Pocket Edition		
1.0.0	alpha 0.17.0.1	Added a Dye button for sheep .
		Added shulkers , which can be dyed.
		Added stained glass . Stain glass cannot be crafted , but purple glass generates in end cities .
1.1.0	alpha 1.1.0.0	Dyes can now apply color to a white beds .
		Dyes are now used to craft concrete powder .
		The color palette has been changed.
Bedrock Edition		
1.2.0	beta 1.2.0.2	Dyes can now be used for banner crafting.
		Dyes can now be used to craft firework stars .
		Stained glass is now craftable , using dyes.
1.4.0	beta 1.2.20.1	Lime dye can now be obtained from smelting sea pickles .
		Dyes can now used to craft glow sticks and balloons .
1.8.0	beta 1.8.0.8	Dyes can now be used to dye cat collars.
	beta 1.8.0.10	Added white , brown , black and blue dyes , which can be crafted from lapis lazuli , bone meal , cocoa beans and ink sacs . This, however, the later four still use as dyes. ^[5]
		"Rose Red", "Dandelion Yellow" and "Cactus Green" have been renamed to "Red Dye", "Yellow Dye" and "Green Dye", respectively.
1.9.0	beta 1.9.0.0	Blue and white dye can now be obtained from cornflowers and lily of the valleys .
1.10.0	beta 1.10.0.3	Glass panes and carpets can now be dyed.
		Only a single dye is now required to apply a banner pattern in a loom .
		Various dyes except black dye, white dye, brown dye and blue dye are now sold by wandering traders .
		The textures of bone meal, light gray, gray, ink



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1.11.0

beta 1.11.0.4

Dye can now be [sold](#) to shepherd [villagers](#).

1.16.210

beta 1.16.210.59

The color of the text on [signs](#) can now be changed with dye.

1.16.210.60

The ability to dye the color of the text on [signs](#) was temporarily removed.

1.16.220

beta 1.16.220.50

The color of the text on [signs](#) can now be changed with dye again.

1.17.10

beta 1.17.10.22

Added [candles](#), which can be dyed.

Legacy Console Edition

TU1

CU1

1.0

Patch 1

1.0.1

Added dyes.

TU9

The texture of cocoa beans has been changed.

1.83

Added [white](#), [black](#), [brown](#), and [blue](#) dyes, which can crafted from [bone meal](#), [ink sac](#), [cocoa beans](#), and [lapis lazuli](#).

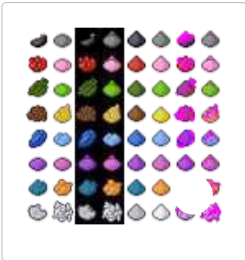
"Rose Red", "Dandelion Yellow" and "Cactus Green" have been renamed to "Red Dye", "Yellow Dye" and "Green Dye", respectively.

The textures of bone meal, light gray, gray, ink sac, cocoa beans, red, orange, yellow, lime, green, cyan, light blue, lapis lazuli, purple, magenta, and pink dyes have been changed.

New Nintendo 3DS Edition

0.1.0

Added dyes from [Pocket Edition v0.15.4 alpha](#).



Pre-release dye textures hidden within [Items.png](#).

Notes

1. Supposed time when fragment was filmed.
Based on modified date of client.jar/gui/trap.png in [Beta 1.2](#).

Gallery





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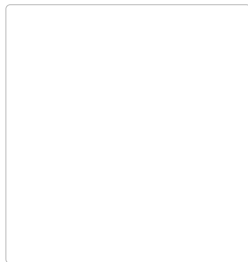
WIKI COM...



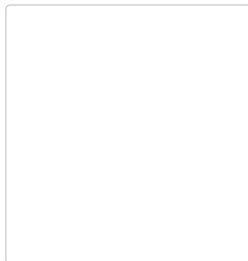
White Dye



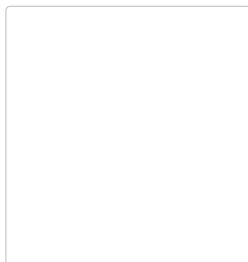
Light Gray Dye



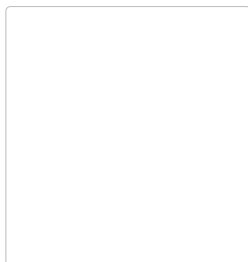
Gray Dye



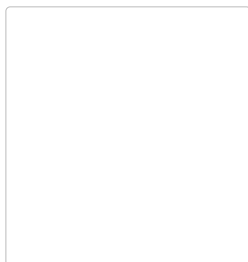
Black Dye



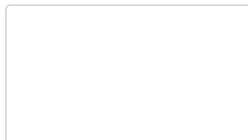
Brown Dye



Red Dye



Orange Dye





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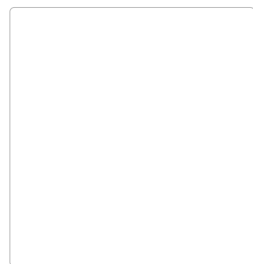
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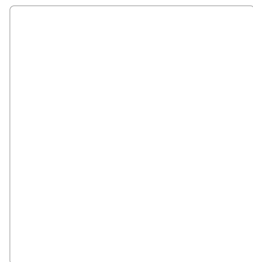
WIKI COM...



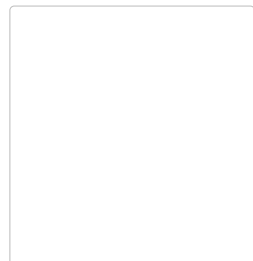
Yellow Dye



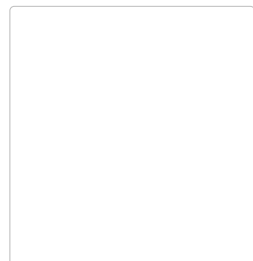
Lime Dye



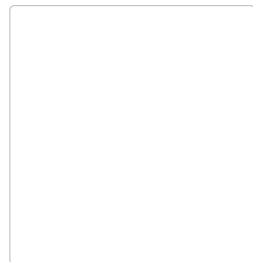
Green Dye



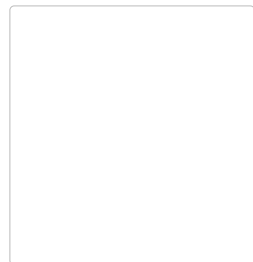
Cyan Dye



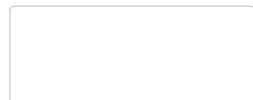
Light Blue Dye



Blue Dye



Purple Dye





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Magenta Dye

Pink Dye

Issues

Issues relating to "Dye" are maintained on the [bug tracker](#). Report issues [there](#) (<https://bugs.mojang.com/issues/?jql=project%20in%20%28MC%2C%20MCPE%29%20and%20%28resolution%20is%20empty%20or%20resolution%20in%20%281%2C%202%2C%206%29%29%20and%20%28summary%20~%20%22Dye%22%29%20order%20by%20resolution%20desc%29>).

Trivia

- Players can obtain each one of every color with 1 cocoa bean, 2 yellow dye, 2 ink sac, 3 green dye, 4 lapis lazuli, 4 red dye, and 6 bone meal (2 bones).
- The dyed sheep breeding behavior mirrors [Lamarck's theory](#), in which the organisms evolve inheriting the external changes and adaptations of the previous generation, transmitting them to their offspring.
- In *Bedrock Edition*, tertiary colors, along with their regular crafting recipes, can be crafted with primary colors. E.g.: Magenta can be crafted with one rose red and two bone meals.
- The colors of the dyes match the chat colors in [color codes](#) except for brown (dye only), light aqua, and gold (color codes only).
- The texture for light blue dye still uses the color from prior to the 1.12 World of Color update.^[2]

References

- <https://anrar4.github.io/DyeLeatherArmor/>
- [MC-214643](#)
[MC-214641](#)





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External Links

- Tools for calculating leather dye combination:
[minecraft.tools](https://minecraft.tools/en/armor.php) (<https://minecraft.tools/en/armor.php>) (webapp); [pyMCDyes](https://github.com/pudquick/pyMCDyes/) (<https://github.com/pudquick/pyMCDyes/>) (open-source Python script, outdated); [DyeLeatherArmor](https://anrar4.github.io/DyeLeatherArmor/) (<https://anrar4.github.io/DyeLeatherArmor/>): a tool for calculating an exact crafting recipe for any sRGB color

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