Lightning Rod   re article feedback

For the artifact in Minecraft Dungeons, *see* MCD:Lightning Rod.

This article needs to be updated.
Please update this page to reflect recent updates or newly available information.
Reason: whether it needs sky access to divert lightning or not needs to be verified.

A **lightning rod** is a block that diverts lightning strikes. Getting struck by lightning causes it to emit a redstone signal and, if it is not waxed, also reduces its level of oxidation.

Contents

Lightning Rod		
Unoxidized Exposed Weathered Oxidized Powered		

Java Edition

Bedrock Edition
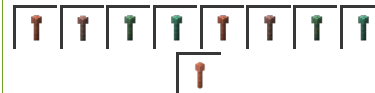
View all renders

Renewable	Yes
Stackable	Yes (64)
Tool	
Blast resistance	6
Hardness	3
Luminous	No
Transparent	Yes
Waterloggable	Yes
Flammable	No
Catches fire from lava	No
Map color (*JE*)	☐ 15 COLOR_ORANGE
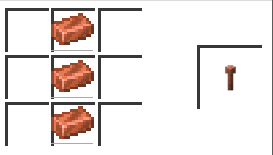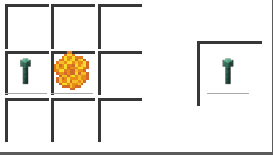
Obtaining

Breaking

A lightning rod must be mined with a stone pickaxe or better, or else it drops nothing.

Block	Lightning Rod
Hardness	3
Tool	⛏
Breaking time (sec)[A]	
Default	15
⛏ Wooden	7.5
⛏ Stone	1.15
⛏ Copper	0.9
⛏ Iron	0.75
⛏ Diamond	0.6
⛏ Netherite	0.5
⛏ Golden	1.25

Legend

- ▫ incorrect tool, drops nothing
- ▫ correct tool, drops nothing or something other than the block itself
- ▫ correct tool, drops the block itself
- *italicized* can be instant mined

1. These durations ignore other influential factors (e.g., Mining Fatigue) and are measured in seconds. For more information, see Breaking § Speed.

Crafting

Name	Ingredients	Crafting recipe	[hide]
Lightning Rod	Copper Ingot		
Waxed Lightning Rod	Matching Unwaxed Lightning Rod + Honeycomb		

Usage

Diverting lightning

Lightning rods can be oriented in different directions. Lightning rods that are the highest block in the column redirect lightning strikes within a spherical volume having a radius of 128 blocks in *Java Edition* and 64 blocks in *Bedrock Edition*. The block emits particles during thunderstorms as an indicator. If multiple lightning rods are in range, the closest to the original location of the strike is chosen.

Lightning rods cannot have any block with a hitbox over it to divert lightning.[*check the code*]

A lightning rod can be struck by lightning when hit by a trident enchanted with Channeling during thunderstorms. In *Bedrock Edition*, this can happen even if there are solid blocks above the lightning rod blocking rainfall, as long as all the blocks are fully transparent (do not block sky light).

Lightning rods *do not* divert lightning created by a Channeling trident thrown at an entity, or lightning summoned by commands.

Unlike in real life, a lightning rod doesn't require a direct connection to ground in order to work.

Lightning strikes on lightning rods cannot summon skeleton trap horses.

A lightning rod emits a redstone pulse, and strongly powers the block it's attached to, at level 15 for 8 game ticks (0.4 seconds) when struck by lightning.

Lightning diverted by a lightning rod inflicts lightning damage on mobs within a 6×12×6 volume centered 4 blocks above the bottom center of the lightning rod block (that is, extending 2 below and 9 above).

When a lightning rod is struck by lightning, the lightning has a chance to set fire to the surrounding blocks. In *Java Edition*, the lightning tries to set fire to a 3×3×3 volume around the air block directly above the lightning rod. Then, fire spawning conditions apply: The block itself must be air *and* is either on top of a block with a solid full top or is adjacent to a flammable block.

This creates a danger zone of a 2-block radius sphere around the air block directly above the lightning rod (this sphere is all the blocks adjacent to the 3×3×3 volume and the volume itself). However, two blocks within this sphere are never set on fire by the lightning - the lightning rod itself and the block on which it's placed.

Oxidation

Main article: Oxidation

Non-waxed lightning rods have four stages of oxidation (including the initial normal state). Lightning bolts and axes can remove the oxidation on lightning rods. They can be waxed with honeycomb to prevent oxidation from progressing.

A Cross-section wool block model showing safe flammable block placement around the lightning rod. Java Edition 1.21.5

As the block begins to oxidize (exposed), it gets discolored and green spots begin to appear. As the oxidation continues (weathered), the block is a green color with brown spots. In the last stage (oxidized), the block is teal with several green spots.

Sounds

Generic

Java Edition:

copper sound type								[hide]
Sound	Closed captions	Source	Description	Identifier	Translation key	Volume	Pitch	Attenuation distance
	Block broken	Blocks	Once the block has broken	`block.copper.break`	`subtitles.block.generic.break`	1.0	0.8	16
	Block placed	Blocks	When the block is placed	`block.copper.place`	`subtitles.block.generic.place`	1.0	0.8	16
	Block breaking	Blocks	While the block is in the process of being broken	`block.copper.hit`	`subtitles.block.generic.hit`	0.25	0.5	16
	Something falls on a block	*Entity-Dependent*	Falling on the block with fall damage	`block.copper.fall`	`subtitles.block.generic.fall`	0.5	0.75	16
	Footsteps	*Entity-Dependent*	Walking on the block	`block.copper.step`	`subtitles.block.generic.footsteps`	0.15	1.0	16

Bedrock Edition:

copper sound type							[hide]
Sound	Closed captions [*upcoming: BE 26.0*]	Source	Description	Identifier	Translation key [*upcoming: BE 26.0*]	Volume	Pitch
	?	Blocks	Once the block has broken	`dig.copper`	?	1.0	0.8-1.0
	?	Blocks	When the block is placed	`dig.copper`	?	1.0	0.8-1.0
	?	Blocks	While the block is in the process of being broken	`hit.copper`	?	0.3	0.5
	?	Players	Falling on the block with fall damage	`fall.copper`	?	0.4	1.0
	?	Players	Walking on the block	`step.copper`	?	0.3	1.0
	?	Players	Jumping from the block	`step.copper`	?	0.12	1.0
	?	Players	Falling on the block without fall damage	`step.copper`	?	0.22	1.0

Unique

Java Edition

Sounds								[hide]
Sound	Closed captions	Source	Description	Identifier	Translation key	Volume	Pitch	Attenuation distance
	Trident thunder cracks	Weather	When a trident with Channeling strikes a lightning rod	`item.trident.thunder`	`subtitles.item.trident.thunder`	5.0	1.0	16

Bedrock Edition: *None*[1]

Data values

ID

Java Edition:

Name	Identifier	Form	Block tags	Item tags	Translation key	[hide]
Lightning Rod	lightning_rod	Block & Item	lightning_rods mineable/pickaxe needs_stone_tool	lightning_rods	block.minecraft.lightning_rod	
Exposed Lightning Rod	exposed_lightning_rod	Block & Item	lightning_rods mineable/pickaxe needs_stone_tool	lightning_rods	block.minecraft.exposed_lightning_rod	
Weathered Lightning Rod	weathered_lightning_rod	Block & Item	lightning_rods mineable/pickaxe needs_stone_tool	lightning_rods	block.minecraft.weathered_lightning_rod	
Oxidized Lightning Rod	oxidized_lightning_rod	Block & Item	lightning_rods mineable/pickaxe needs_stone_tool	lightning_rods	block.minecraft.oxidized_lightning_rod	
Waxed Lightning Rod	waxed_lightning_rod	Block & Item	lightning_rods mineable/pickaxe needs_stone_tool	lightning_rods	block.minecraft.waxed_lightning_rod	
Waxed Exposed Lightning Rod	waxed_exposed_lightning_rod	Block & Item	lightning_rods mineable/pickaxe needs_stone_tool	lightning_rods	block.minecraft .waxed_exposed_lightning_rod	
Waxed Weathered Lightning Rod	waxed_weathered_lightning_rod	Block & Item	lightning_rods mineable/pickaxe needs_stone_tool	lightning_rods	block.minecraft .waxed_weathered_lightning_rod	
Waxed Oxidized Lightning Rod	waxed_oxidized_lightning_rod	Block & Item	lightning_rods mineable/pickaxe needs_stone_tool	lightning_rods	block.minecraft .waxed_oxidized_lightning_rod	

Bedrock Edition:

Name	Identifier	Numeric ID	Form	Item ID[i 1]	Block tags	Translation key	[hide]
Lightning Rod	lightning_rod	567	Block & Giveable Item[i 2]	Identical[i 3] (Numeric: -312)	minecraft:is_pickaxe_item_destructible minecraft:stone_tier_destructible	tile.lightning_rod.name	
Exposed Lightning Rod	exposed_lightning_rod	1314	Block & Giveable Item[i 2]	Identical[i 3] (Numeric: -1059)	minecraft:is_pickaxe_item_destructible minecraft:stone_tier_destructible	tile.exposed_lightning_rod .name	
Weathered Lightning Rod	weathered_lightning_rod	1315	Block & Giveable Item[i 2]	Identical[i 3] (Numeric: -1060)	minecraft:is_pickaxe_item_destructible minecraft:stone_tier_destructible	tile.weathered_lightning_rod .name	
Oxidized Lightning Rod	oxidized_lightning_rod	1316	Block & Giveable Item[i 2]	Identical[i 3] (Numeric: -1061)	minecraft:is_pickaxe_item_destructible minecraft:stone_tier_destructible	tile.oxidized_lightning_rod .name	
Waxed Lightning Rod	waxed_lightning_rod	1317	Block & Giveable Item[i 2]	Identical[i 3] (Numeric: -1062)	minecraft:is_pickaxe_item_destructible minecraft:stone_tier_destructible	tile.waxed_lightning_rod.name	
Waxed Exposed Lightning Rod	waxed_exposed_lightning_rod	1318	Block & Giveable Item[i 2]	Identical[i 3] (Numeric: -1063)	minecraft:is_pickaxe_item_destructible minecraft:stone_tier_destructible	tile .waxed_exposed_lightning_rod .name	
Waxed Weathered Lightning Rod	waxed_weathered_lightning_rod	1319	Block & Giveable Item[i 2]	Identical[i 3] (Numeric: -1064)	minecraft:is_pickaxe_item_destructible minecraft:stone_tier_destructible	tile .waxed_weathered_lightning_rod .name	
Waxed Oxidized Lightning Rod	waxed_oxidized_lightning_rod	1320	Block & Giveable Item[i 2]	Identical[i 3] (Numeric: -1065)	minecraft:is_pickaxe_item_destructible minecraft:stone_tier_destructible	tile .waxed_oxidized_lightning_rod .name	

1. ID of block's direct item form, which is used in savegame files and addons.
2. Available with /give command.
3. The block's direct item form has the same ID as the block.

Block states

See also: Block states

Java Edition:

Name	Default value	Allowed values	Description	[hide]
facing	up	up down north south east west	The direction that the lightning rod is facing, determined by its anchoring.	
powered	false	false true	Whether or not the lightning rod is powered.	
waterlogged	false	false true	Whether or not there's water in the same place as this lightning rod.	

Bedrock Edition:

Name	Default value	Allowed values	Description	[hide]
facing_direction	0	0 1 2 3 4 5	The direction the lightning rod faces. ▪ 0: Down ▪ 1: Up ▪ 2: North ▪ 3: South ▪ 4: West ▪ 5: East	
powered_bit	false	false true	Whether or not the lightning rod is powered.	

Advancements

Icon	Advancement	In-game description	Actual requirements (if different)	[hide]
	Surge Protector	Protect a Villager from an undesired shock without starting a fire	Be within 30 blocks of a lightning strike that doesn't set any blocks on fire, while an unharmed villager is within or up to six blocks above a 30×30×30 volume centered on the lightning strike.	
	Wax On	Apply Honeycomb to a Copper block!	Use a honeycomb on *any* of these 15 waxable copper block variants: Block of Copper Chiseled Copper Copper Bars Copper Bulb Copper Chain Copper Chest Copper Door Copper Golem Statue Copper Grate Copper Lantern Copper Trapdoor Cut Copper Cut Copper Slab Cut Copper Stairs Lightning Rod The block can be in any of its four oxidation stages, but cannot already be waxed.	
	Wax Off	Scrape Wax off of a Copper block!	Use an axe to revert *any* of these 15 waxed variants of copper blocks: Block of Copper Chiseled Copper Copper Bars Copper Bulb Copper Chain Copper Chest Copper Door Copper Golem Statue Copper Grate Copper Lantern Copper Trapdoor Cut Copper Cut Copper Slab Cut Copper Stairs Lightning Rod The block can be in any of its four oxidation stages.	

History

Reveal

October 3, 2020 (https://youtube.com/watch?v=DBvZ2Iqmm3M&t=28m55s)	Lightning rods are revealed at Minecraft Live 2020.
	Inventory model was different.
October 20, 2020 (https://twitter.com/_LadyAgnes/status/1318545266811817986)	LadyAgnes shows a lightning rod can be placed in different positions, and can emit a redstone signal.

Java Edition

Java Edition			[hide]
1.17	**20w45a**	Added lightning rods.	
	20w46a	The texture of lightning rods has been changed to match copper blocks.	
		The range of lightning rods has been increased from 16 blocks to 32 blocks.	
	21w05a	Lightning rods are now shaded properly.[2]	
	21w10a	Changelog states they can now be waterlogged, though this is not the case.	
	21w11a	When lightning strikes, the lightning rod turns white.	
		Lightning rods can now be waterlogged.	
		Lightning emits particles during thunderstorms as an indicator.	
	21w13a	The model of the lightning rod has been changed that the underside texture is corrected.	
1.21.9	**25w31a**	Lightning rods now oxidize.	
		Added exposed, weathered and oxidized variants of lightning rods.	
		Lightning rods can be waxed by using honeycomb, producing yellow particles.	
		Axes can scrape off wax and oxidation of lightning rods, producing white particles.	

Bedrock Edition

Bedrock Edition			[hide]
1.16.210 — Experiment — **Caves and Cliffs**	**beta 1.16.210.57**	Added lightning rods under the Caves and Cliffs experimental gameplay toggle.	
		It also has a broken texture in the inventory.	
1.16.220 — Experiment — **Caves and Cliffs**	**beta 1.16.220.52**	Lightning rods can now be waterlogged.	
		Now emits particles when in contact with rain.	
1.17.0 — Experiment — **Caves and Cliffs**	**beta 1.17.0.50**	Blocks connected to a lightning rod now correctly conduct redstone signal when the rod is hit by lightning.	
1.17.0	**beta 1.17.0.52**	Lightning rods are no longer available only through experimental gameplay.	
1.20.30	**Preview 1.20.20.21**	Increased the blast resistance of lightning rods from 3.6 to 6.	
1.21.111	**Preview 1.21.110.22**	Lightning rods now oxidize.	
		Added exposed, weathered and oxidized variants of lightning rods.	
		Lightning rods can be waxed by using honeycomb, producing yellow particles.	
		Axes can scrape off wax and oxidation of lightning rods, producing white particles.	
	Preview 1.21.110.23	Lightning rods now turn white when hit by lightning.	
		Lightning rods now have the powered_bit block state.	
		Lightning rods can now be crafted into waxed variants.	

Issues

Issues relating to "Lightning Rod" are maintained on the bug tracker. Issues should be reported and viewed 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%22Lightning%20Rod%22%29%20ORDER%20BY%20resolution%20DESC).

Trivia

- According to Minecraft Live 2020, Ulraf had the idea of lightning rods when a lightning strike burned down his wooden house.[3]
- In *Minecraft Dungeons*, lightning rods can be found atop The Roof of Woodland Mansion being used to create charged creepers.
- If /item replace is used to place a lightning rod on a player's head, the item appears upside-down and to the right of their head, somewhat

resembling a robot's antenna.[*Java Edition* only]

Gallery

Lightning rod placed on a player's head using `/item replace`.

Renders

Unoxidized
Java Edition

Bedrock Edition

Exposed
Java Edition

Bedrock Edition

Weathered
Java Edition
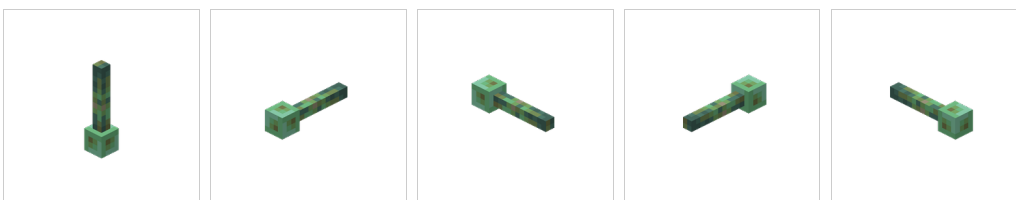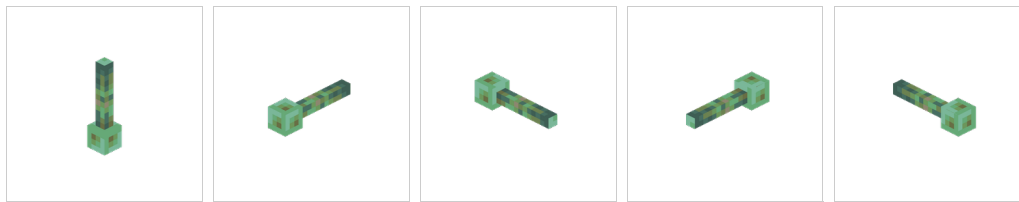
Bedrock Edition

Oxidized

Java Edition

Bedrock Edition

Powered
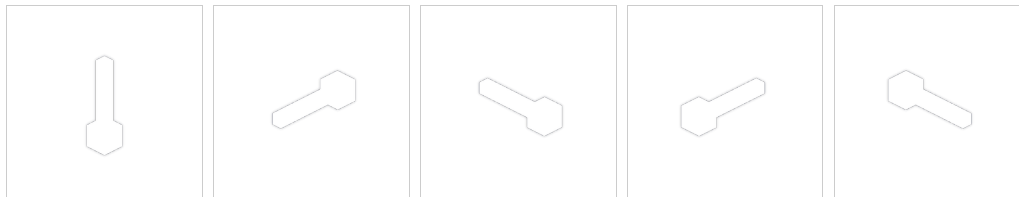
Screenshots
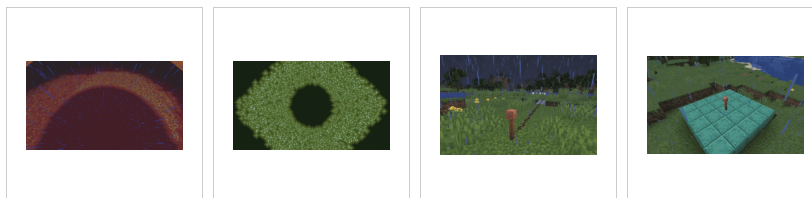
Range testing in Java 1.17.1. Glowstone marks where lightning struck.

Range testing in Bedrock 1.17.34, simulation distance 12. Sea lanterns mark lightning strikes.

Lightning hitting a lightning rod and sending a redstone signal.

A lightning-struck lightning rod decreasing the oxidizing level of nearby blocks of copper.

Mojang screenshots
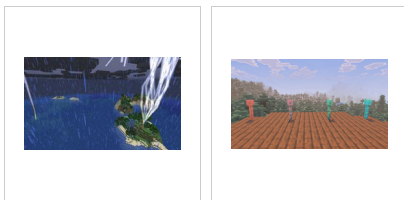
Four stages of lightning rods.

Development images
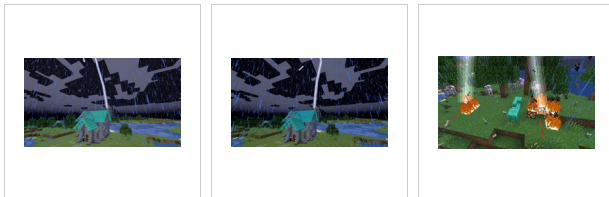
References

1. MCPE-173931 — Tridents don't make channeling sounds when striking a lightning rod
2. MC-204446 - fixed in 21w05a despite that being an affects version; see comments
3. "Minecraft Live: Caves & Cliffs - First Look @ 29:53" (https://youtube.com/watch?v=DBvZ2Iqmm3M&t=1793) – Minecraft on YouTube, October 3, 2020

Navigation

Copper							[hide]
Material	Ore	Deepslate Ore	Raw	Raw Block	Ingot	Nugget	
Building blocks	Block	Chiseled	Cut (| Stairs | Slab)	Grate	Bars	Chain	Lantern	Torch
Functional blocks	Bulb	Chest	Door	Trapdoor	Golem Statue	Lightning Rod	
Armor	Helmet	Chestplate	Leggings	Boots	Horse Armor	Nautilus Armor	
Tools	Pickaxe	Axe	Shovel	Sword	Hoe	Spear	
Mobs	Golem						

◆ **Redstone**	[hide]
Redstone circuits & tutorials	[show]
Redstone components	[hide]

|	
Power emission	🟥 Block of Redstone ▪ Buttons (▪ Wooden ▪ Stone ▪ Polished Blackstone) 🎛 Daylight Detector 🛤 Detector Rail 🎵 Jukebox 📖 Lectern ⌐ Lever ⚡ Lightning Rod 👁 Observer ⬛ Pressure Plates (🟫 Wooden 🔲 Stone ⬛ Polished Blackstone 🟨 Light Weighted ⬜ Heavy Weighted) ⚖ Redstone Comparator 🔥 Redstone Torch 🔊 Sculk Sensor (📶 Calibrated) 🎯 Target 📦 Trapped Chest 🪝 Tripwire Hook (∿ Tripwire)
Signal transmission	∿ Redstone Wire ⚏ Redstone Repeater ☐ Conductive and non-conductive blocks
Item and entity transportation	🔷 Allay 🛶 Boat with Chest 🛶 Bamboo Raft) 🐖 Copper Golem 🔨 Crafter 📦 Dispenser 📦 Dropper 📦 Hopper 🛒 Minecart (📦 with Chest 🔥 with Furnace 📦 with Hopper) 🚂 Rail (🔀 Activator 🔥 Powered) 🟦 Water (🌀 Bubble Column)
Comparator-readable	🛢 Barrel 🐝 Bee Nest (🍯 Hive) ⚗ Brewing Stand 🍰 Cake 🪣 Cauldron 📦 Chest (📦 Copper) 📚 Chiseled Bookshelf 🗑 Composter 🐖 Copper Golem Statue 🏺 Decorated Pot 🌀 End Portal Frame 🔥 Furnace (🔥 Blast 🔥 Smoker) 🖼 Item Frame (🌟 Glow) 🟪 Respawn Anchor 🟪 Shulker Box
Observer-related	🟥 Redstone Ore (🟦 Deepslate) ☐ Scaffolding 🟫 Sculk Catalyst 🔊 Sculk Shrieker 🧱 Wall
Pistons/related	🟫 Piston (🟩 Sticky) 🍯 Honey Block 🟩 Slime Block ⬛ Movable and immovable blocks
Sculk sensor-related	🟪 Block of Amethyst 🔔 Wool (▢ Carpet)
Mechanisms/misc.	⚒ Armor Stand 🔔 Bell 🌿 Big Dripleaf 🟫 Copper Bulb 🔴 Creaking Heart 🚪 Doors (🟫 Copper 🚪 Iron 🚪 Wooden) 🚪 Fence Gate 🗿 Head 🎵 Note Block 💡 Redstone Lamp 📚 Shelf 🧨 TNT (🛒 Minecart) 🚪 Trapdoors (🟫 Copper 🚪 Iron 🚪 Wooden)
Creative or commands only	🟪 Command Block (🛒 Minecart) 🛒 Minecart with Monster Spawner 🟪 Structure Block 🟧 Test Block

🟫 **Blocks**	[hide]
🟫 **Structural**	[show]
🟦 **Ornamental**	[show]

Natural [show]

Utility [hide]

Interactable Anvil (Chipped   Damaged) Barrel Beacon Brewing Stand Cartography Table Chest (Ender Copper) Crafting Table Enchanting Table Furnace (Blast Smoker) Grindstone Lectern Loom Shulker Box (Dyed) Sign (Hanging) Smithing Table Stonecutter

Utilizable Banners (Ominous) Beehive Beds Bell Bookshelf Cake (with Candle) Campfire (Soul) Cauldron Chiseled Bookshelf Composter Conduit Copper Golem Statue Decorated Pot End Gateway End Portal End Portal Frame Farmland Fletching Table Flower Pot Frosted Ice Heads (Skeleton Wither Skeleton Zombie Creeper Piglin Dragon) Heavy Core Jukebox Ladder Lodestone Monster Spawner Nether Portal Respawn Anchor Scaffolding Shelf Sponge (Wet) Suspicious Gravel Suspicious Sand TNT Trial Spawner (Ominous) Vault (Ominous)

Redstone/ Mechanical Buttons (Wooden Stone Polished Blackstone) Copper Bulb Crafter Daylight Detector Dispenser Dropper Doors (Copper Iron Wooden) Honey Block Hopper Lever Lightning Rod Note Block Observer Piston (Sticky) Pressure Plates (Wooden Stone Polished Blackstone Heavy Weighted Light Weighted) Rail (Activator Detector Powered) Redstone Lamp Redstone Wire (Comparator Repeater Torch) Slime Block Target Trapped Chest Trapdoors (Copper Iron Wooden) Fence Gates Tripwire Hook (Tripwire)

BE & edu only Allow Border Chalkboard Compound Creator Deny Element Constructor Heat Block Item Frame (Glow) Lab Table Material Reducer Underwater TNT Underwater Torch

Creative or commands only [show]

Removed [show]

Unused [show]

Unimplemented [show]

Joke [show]

Extreme metadata variants [show]

This page was last edited on 4 January 2026, at 03:50.