GT New Horizons

Cleanroom

The Cleanroom is a multiblock that provides a sterile environment inside it. More specifically, when running at 100% efficiency, it satisfies the "Needs Cleanroom" requirement for any machine that runs inside it. A Cleanroom at less than a 100% efficiency rating has a chance of voiding items equal to the difference between its current rating and one hundred. Potential loss *only* applies to recipes that require the Cleanroom.
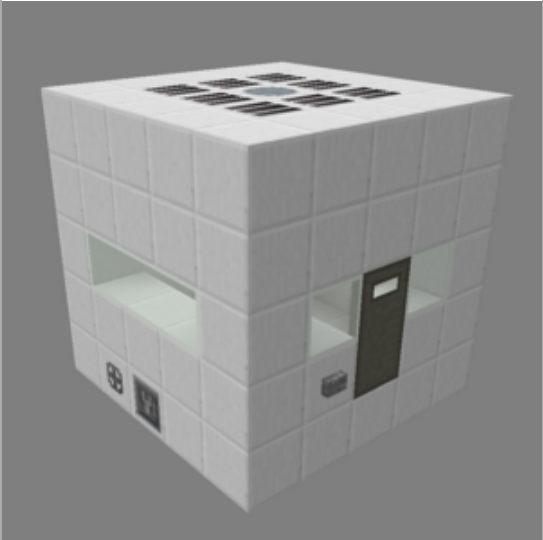
Construction

A cleanroom is a hollow, variable-sized structure between 3x4x3 and 15x15x15 (width x height x depth). Its footprint (width x depth) *must* be an odd numbered square; 3x3, 5x5, 7x7, etc. There are no restrictions on the height other than a minimum of four and a maximum of fifteen blocks. The Energy Hatch only powers the cleanroom itself; Machine Hulls are used to supply power to machines inside.

Requires:

- 1 Cleanroom Controller; top-most layer, perfectly centered
- 0-168 Filter Machine Casings; entire top layer except controller and edges
- 1 Maintenance Hatch, anywhere[1]
- 1 Energy hatch; anywhere
- 0-2 Reinforced Door [2][3]
- 0-1 Elevator block, in the floor [3]
- 0-1 Rotating Elevator block, in the floor [3]
- 0-1 Travel Anchor, in the floor [3]
- 0-10 Machine Hulls/Diodes; anywhere that is not an edge.[4]
- Plascrete Blocks everywhere else
- Up to x% of of the Plascrete can be replaced with certain types of glass.[5]

Cleanroom

Mod	Gregtech 5
Type	Tile Entity
Tooltip Text	Controller Block for the Cleanroom
Relevant Quest	Cleanroom
Tier	HV
Size	3x4x3 - 15x15x15
Pollution	none

Properties:

Blast resistance	6-3000
Hardness	1-50

Energy:

Energy usage	4-40 EU/t (with LV Energy Hatch)
Voltage in	As Energy Hatch
Max amperage	2A on startup, 1A @ 100%

3. These blocks count against the non-plascrete block calculation for maximum X% glass. Limits are independent for each.
4. Both Machine Hulls and Diodes count against the ten count limit, in any combination.
5. Calculation of this is complicated. Sum total of all plascrete blocks in the Cleanroom, *except* the top layer. Up to a percentage of this can be glass, how much depends on the type - as little as 5% for Reinforced Glass and up to 50% for Warded Glass. Limits are again independently checked.

Known Issues

Due to its valid structure check coding, attempting to replace plascrete blocks on the top layer or SE edge (X+,Z+) of the cleanroom will result in an incomplete structure. Relocate any hatches, busses or hulls to other locations. It's very hard to move Reinforced Glass without breaking it, so place carefully. If the multiblock doesn't form, try reducing the amount of glass.

Usage

Doing a "Needs Cleanroom" recipe in a cleanroom has a output chance based on efficiency, Ex: %10 efficiency is %10 chance to output and %100 is always outputting. The current efficiency is displayed via Waila when looking at the controller. Efficiency can also be checked with either with a Gregtech Portable Scanner or a GregTech Sensor Kit on an Industrial Information Panel. Right-click the Controller to bind the Sensor Kit to it.

If you don't want your items voided, always keep your efficiency to %100. For each maintenance issue it currently has, cleanroom will have %10 less efficiency

At 80% efficiency or higher with a LV Energy Hatch, the cleanroom drains 4 EU/t. While charging up, the cleanroom will use 40 EU/t, swiftly decreasing as it rises above 10% efficiency. For this reason, it's necessary to have at least two amps of LV feeding into an LV Energy Hatch. A 2x battery buffer can also be used to supply the initial surge demand. Providing a higher tier Energy Hatch will overclock the cleanroom, making it gain efficiency faster at the cost of higher power use, even after 100% is achieved.

Polluting machines cannot be run inside a Cleanroom. Attempting to do so will immediately result in the Cleanroom shutting down with **HAS PROBLEMS**, requiring Maintenance and potentially voiding recipes. Non-polluting generators such as Magic Energy Converters and Magic Energy Absorbers can be run inside safely.

Accessing the Cleanroom

A Reinforced Door, Travel Anchor, and/or Elevator can all be used to enter and exit the cleanroom. The door requires a redstone signal to open and must be closed for 100% efficiency. Anchors and Elevators do not reduce a cleanroom's efficiency when used. The second Elevator block can be placed on top or below, while another Travel Anchor can be anywhere in its range. Any number of Elevators/Anchors can be placed inside the cleanroom instead of as part of the structure, if desired.

> ⚠️ **Caution:** It seems that the door and optional elevator block/anchor count against the X% not plascrete calculation, so reducing the amount of glass may be necessary to get the Cleanroom to form.

Machine Hulls

Machine hulls allow players to transfer items, fluids, and energy in and out of the cleanroom. Putting ingredients into a hull is easy enough. Treat it basically like any other inventory/tank when transferring items/fluids and like a machine face when transferring power, since it can accept GT cables.

On the other side of the hull, right-clicking with a Wrench will control where the "dot" face points and this face will be where ingredients come out. Note that the hull does **not** auto output items and fluids. There will need to be something pulling items and/or fluids out of the hull on the other side. Attaching a Conveyor and Pump Covers on a hull does not work because it itself holds no EU (it merely transports it) to power the covers. However, attaching Fluid Pipes with covers attached to them (screwdriver set to "import") will work. The same goes for covers attached to machine faces (screwdriver set to "import") facing the machine hull dot face.

EU is transferred directly to the cable or machine face the dot face is pointing at and does not need anything special "pulling" the EU out. A hull can only transfer as much energy as the tier of the hull. For example, an HV Machine Hull can only output one Amp of HV.

Because there are a max of ten machine hulls per multiblock, it is important to be efficient with hulls. A single dedicated output hull from inside the cleanroom to the outside is highly recommended, rather than having an output hull for each machine inside. A dedicated power line is recommended as well.

Requires Cleanroom Recipes

Circuit Assembler

- EV+ circuits
- Processors / last circuit recipe of each tier
- BartWorks Resonatic Circuits
- AE2 Storage Components
- OpenComputers CPU
- Data Stick

Precision Laser Engraver

- Memory Chips / Wafers
- Mytryl & Mysterious Crystal
- Engraved Lapotron Chip
- NASA Workbench Schematics

More information

- Wafers > Integrated Circuits

Chemical Reactor

- CPU (Wafer) > Nano CPU (Wafer)

Sample Minimum Build

The following is a sample Cleanroom build of minimal size (26 Plascrete, no Filter Casings) with automation to get you started with HV Circuits. Note that this setup requires using the Reinforced Door to swap out the lens - close the door promptly to preserve efficiency.

```
Top Layer:
- 1 Cleanroom Controller: top layer, center
- +8 Plascrete Blocks: top layer, edges
Middle Top:
- 1 MV Energy Hatch, rear middle
- 1 MV Machine Hull, middle left (Item Input)
  - 1 Hopper, outside, pointing into Machine Hull
- 1 Brass Pipe, inside center
  - 1 MV Conveyor Module, pointed left on Brass Pipe, set to Import (Screwdriver x1)
  - 1 Wooden Cover, pointed up on Brass Pipe (blocking the Cleanroom Controller)
- 1 Chest (or other container), outside middle right
- 0 Reinforced Door (top half)
  - 1 Lever, outside front right
- +5 Plascrete Blocks: remainder
Middle Bottom:
- 1 MV Machine Hull, rear middle (Power Input)
- 1 MV Advanced Precision Laser Engraver, inside center, set to Auto-Output Items
- 1 MV Machine Hull, middle right (Item Output)
  - 1 Brass Pipe, outside middle right
  - 1 MV Conveyor Module, pointed left on Brass Pipe, set to Import (Screwdriver x1)
    (Note: this pipe should connect to the Chest on the Middle Top layer.)
- 1 Maintenance Hatch, front left
- 1 Reinforced Door (bottom half)
- +4 Plascrete Blocks: remainder
Bottom Layer:
- +9 Plascrete Blocks

Elsewhere:
- 1 Industrial Information Panel
- 1 Industrial Information Panel Extender
- 1 Lever, behind Information Panel, on
- 1 GregTech Sensor Kit
  - Settings: #3 Off
```

This setup can be upgraded - take a look at the Tips section below!

Tips

- Do not forget about upgrading hulls when upgrading a cleanroom to handle higher tier voltage machines. Overvolting will result in disaster.
- A "Needs Maintenance" cover will also come in handy for alerting players about maintenance issues. Since the Cleanroom runs constantly while powered, it generates maintenance issues more frequently than intermittent machines.
- Zinc is a relatively rare resource early on in the game. Because of this, it is recommended to expand a cleanroom vertically before expanding horizontally. This allows the player to focus on building plascrete blocks instead, which are much easier to make.

- Transfer multiple amps of energy into a cleanroom by step-upping prior to sending energy into a hull and step-downing inside the cleanroom. Be careful and remember that the correct voltage tier hull must be used when doing this.
- You can use an Elevator or other forms of teleportation to enter the cleanroom without opening the door.
- In order to get access to your ME System inside of the cleanroom Wireless Connectors from AE2 Stuff can be used.
- Cleanroom Controller outputs redstone depending on how efficient it becomes starting at one redstone strength going up as efficency goes up to a max of 15.

Retrieved from "https://wiki.gtnewhorizons.com/wiki/Cleanroom?oldid=12150"