

Eruption-resistant Buildings

The Earth's crust is made up of **tectonic plates**. At some places where plates meet, volcanic eruptions can happen where people live. Hazards such as ash, pyroclastic flows and lava flows can occur.

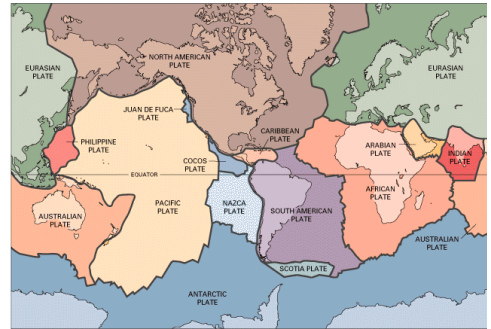


Image: [USGS](#) (public domain).

Buildings are affected by eruptions in many ways, including:

- **ash can fall on buildings** and make them collapse
- ash and debris can be **blown against buildings**
- **lava flows** can block roads and buildings, and set buildings on fire
- **toxic gases** can kill people inside buildings

Please see https://volcanoes.usgs.gov/volcanic_ash/buildings.html for more information about volcanic ash effects on buildings.

Solutions

Ash can slide off **sloping roofs** and **smooth** materials more easily than flat roofs and rough materials. It can get caught in corners and features such as chimneys though!



Volcanic ash in the corner of a roof in Montserrat. Image: [USGS](#) (public domain).



Image: [Philippe Vieux-Jeanton](#) (public domain [CC0-1.0](#)).

Using **strong materials** such as concrete can protect against damage from eruptions. **Shutters** can protect from blowing ash and debris, and **keep out gases**.



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Location can be important! Buildings in valleys could be more likely to be affected by pyroclastic and lava flows.

Pyroclastic flows can destroy anything in their path, so having **clear evacuation routes** is very important.



Large, strong **shelters** can be built for people to evacuate to if an eruption happens, like the one in Japan in the image to the left.

Image: [David McKelvey CC BY-NC-ND 2.0 https://creativecommons.org/licenses/by-nc-nd/2.0/](https://creativecommons.org/licenses/by-nc-nd/2.0/)

Channels, walls and barriers can be used to stop and divert lava flows. The Sapienza barrier, in the image to the right, stopped a lava flow from Etna reaching buildings in 1983.



Image: Jack Lockwood, [USGS](https://www.usgs.gov/) (public domain).

Minecraft challenge

Can you build your own **eruption-resistant building** in Minecraft?

You could try:

- a reinforced roof that can hold the weight of ash
- a building that won't easily collapse
- features that will keep gases out
- a building or village with protection from lava flows
- or a combination of some or all of these!



If you do not have access to Minecraft you could:

- draw your design
- build your own using simple materials.



Images: Jay Fenney



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