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| **SEISMIC WAVES AND THE LAYERS OF THE EARTH** |

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| Three hundred years ago the famous scientist Isaac Newton calculated, from his studies of planets and the force of gravity, that the average density of the Earth is twice that of surface rocks and therefore that the Earth's interior must be composed of much denser material.  **We now know that the earth is made up of 4 layers:**   |  |  |  | | --- | --- | --- | | http://www.edinformatics.com/math_science/earths_layers.jpg **Image source:** [USGS](http://earthquake.usgs.gov/) | CRUST --The thin, outermost layer of the earth is called the crust. It makes up only one percent of the earth's mass. This consists of the continents and ocean basins. The crust has varying thickness, ranging between 35-70 km thick in the continents and 5-10 km thick in the ocean basins. Within the crust, intricate patterns are created when rocks are redistributed and deposited in layers through the geologic processes. The crust is composed mainly of alumino-silicates.  MANTLE -- The mantle is a dense, hot layer of semi-solid rock approximately 2,900 km thick and is composed mainly of ferro-magnesium silicates. This is where most of the internal heat of the Earth is located. Large convective cells in the mantle circulate heat and may drive plate tectonic processes.  CORE - Below the mantle is the core. It makes up nearly one third the mass of the earth. The Earth's core is actually made up of two distinct parts: a 2,200 km-thick liquid outer core and a 1,250 km-thick solid inner core. The outer core is made of iron and is very dense. As the Earth rotates, the liquid outer core spins, creating the Earth's magnetic field. The inner core is made of solid iron and nickel. Many scientists believe it is kept in the solid state because of the extreme pressure from the other layers. | | |  | |  | | |