Mantle (geology)

A **mantle** is a layer inside a planetary body that is between the core and the crust of a planetary body. Mantles are made of rock or ices. They are generally the largest layer of the planetary body. All terrestrial planets, all ice giants, a number of asteroids, and some moons have mantles.

Earth's mantle

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See the main article: Earth's mantle

The Earth's mantle is a layer of silicate rock between the crust and the outer core. Its mass is 4.01×10^{24} kg. It makes up 67% the mass of the Earth. It has a thickness of 2,900 kilometres (1,800 mi).[1] It makes up about 84% of Earth's volume. The Earth's mantle behaves as a viscous fluid.

Other planetary mantles

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Mercury has a silicate mantle that is approximately 490 km thick. Mercury's mantle makes up 28% of its mass. Venus's silicate mantle is approximately 2800 km thick. Venus's mantle makes up around 70% of its mass. Mars's silicate mantle is approximately 1600 km thick. Mar's mantle makes up 74–88% of its mass. Uranus and Neptune's icy mantles are approximately 30,000 km thick. Their mantles make up 80% of both masses.[1]

Moons with mantles

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Jupiter's moons Io, Europa, and Ganymede have silicate mantles. Io's mantle is 1100 km thick. Ganymede's mantle is 1315 km thick. Europa's mantle is 1165 km thick.[1] The silicate mantle of the Moon is approximately 1300–1400 km thick.[2] Titan and Triton each have a mantle made of ice or other solid volatile substances.[3][4]

Asteroids with mantles

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Some of the largest asteroids have mantles.[5] For example, Vesta has a silicate mantle similar in composition to diogenite meteorites.[6]

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