

The Earth comprises three principal layers: the dense, iron-rich core, the mantle made of silicate rocks that are semimolten at depth, and the thin,, solid-surface crust.

There are two kinds of crust, a lower and denser oceanic crust and an upper, lighter continental crust found over only about 40 percent of the Earth's surface.

The rocks of the crust are of very different ages.

Some continental rocks are over 3,000 million years old, while those of the ocean flow are less than 200 million years old.

The crusts and the top, solid part of the mantle, totaling about 70 to 100 kilometers in thickness, at present appear to consist of about 15 rigid plates, 7 of which are very large.

These plates move over the semimolten lower mantle to produce all of the major topographical features of the Earth.

Active zones where intense deformation occurs are confined to the narrow, interconnecting boundaries of contact of the plates.

There are three main types of zones of contact: spreading contacts where plates move apart, converging contacts where plates move towards each other, and transform contacts where plates slide past each other.

New oceanic crust is formed along one or more margins of each plate by material issuing from deeper layers of the Earth's crust, for example, by volcanic eruptions of lava at midocean ridges.

If at such a spreading contact the two plates support continents, a rift is formed that will gradually widen and become flooded by the sea.

The Atlantic Ocean formed like this as the American and Afro-European plates move in opposite directions.

At the same time at margins of converging plates, the oceanic crust is being reabsorbed by being subducted into the mantle and remelted beneath the ocean trenches.

When two plates carrying continents collide, the continental blocks, too light to be drawn down, continue to float and therefore buckle to form a mountain chain along the length of the margin of the plates.