A material is called solid rather than fluid if it can also support a substantial shearing force over the time scale of some natural process or technological application of interest. Shearing forces are directed parallel, rather than perpendicular, to the material surface on which they act; the force per unit of area is called shear stress. For example, consider a vertical metal rod that is fixed to a support at its upper end and has a weight attached at its lower end. If one considers a horizontal surface through the material of the rod, it will be evident that the rod supports normal stress. But it also supports shear stress, and this becomes evident when one considers the forces carried across a plane that is neither horizontal nor vertical through the rod. Thus, while water and air provide no long-term support of shear stress, granite, steel, and rubber normally do so and are therefore called solids. Materials with tightly bound atoms or molecules, such as the crystals formed below melting temperature by most substances or simple compounds and the amorphous structures formed in glass and many polymer substances at sufficiently low temperature, are usually considered solids. The distinction between solids and fluids is not precise and in many cases will depend on the time scale. Consider the hot rocks of the Earth's mantle. When a large earthquake occurs, an associated deformation disturbance called a seismic wave propagates through the adjacent rock, and the entire Earth is set into vibrations which, following a sufficiently large earthquake, may remain detectable with precise instruments for several weeks. The rocks of the mantle are then described as solid—as they would also be on the time scale of, say, tens to thousands of years, over which stresses rebuild enough in the source region to cause one or a few repetitions of the earthquake. But on a significantly longer time scale, say, on the order of a million years, the hot rocks of the mantle are unable to support shearing stresses and flow as a fluid. The substance called Silly Putty (trademark), a polymerized silicone gel familiar to many children, is another example. If a ball of it is left to sit on a table at room temperature, it flows and flattens on a time scale of a few minutes to an hour. But if picked up and tossed as a ball against a wall, so that large forces act only over the short time of the impact, the Silly Putty bounces back and retains its shape like a highly elastic solid.