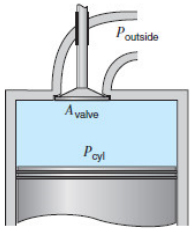
1.1 Separate the list P, F, V, v, ρ, T, a, m, L, t, and $\mathbf{V}$ into intensive properties, extensive properties, and nonproperties.

1.28 A 1-m^3 container is filled with 400 kg of granite stone, 200 kg of dry sand, and 0.2 m^3 of liquid 25°C water. Using properties from Tables A.3 and A.4, find the average specific volume and density of the masses when you exclude air mass and volume.

1.30 A 5 m^3 container is filled with 900 kg of granite (density of 2400 kg/m^3). The rest of the volume is air, with density equal to 1.15 kg/m^3. Find the mass of air and the overall (average) specific volume.

1.34 A valve in the cylinder shown in Fig. P1.34 has a cross-sectional area of 11 cm^2 with a pressure of 735 kPa inside the cylinder and 99 kPa outside. How large a force is needed to open the valve?

Figure P1.34



1.68 A 0.25 m^3 piece of softwood is lifted up to the top shelf in a storage bin that is 4 m above the ground floor. How much increase in potential energy does the wood get?