

Compare the volume occupied by carbon dioxide gas with the volume occupied by supercritical carbon dioxide

- 1 Calculate the volume of 100 000 tonnes of CO₂ at room temperature conditions. How many Olympic swimming pools is this?
- 2 Calculate the volume of 100 000 tonnes of supercritical CO₂. How many Olympic swimming pools is this?
- 3 What is the ratio of volume of CO₂ at gaseous state to the volume at supercritical state?
- 4 Calculate the volume of reservoir rock occupied by the supercritical CO₂. How many Olympic swimming pools is this?

Data

Density of CO₂ at room temperature conditions (20°C and 1 atm pressure): 1.84 kg/m³

Density of supercritical CO₂ at subsurface reservoir conditions (an estimate, as it depends on the temperature and pressure): 500 kg/m³

Dimensions of an Olympic swimming pool: 50m x 25m x 2m

Average porosity of reservoir rock: 15% (Porosity is a measure of the amount of pore space available in the rock).

