Mass of 1 steel screw is 4.11g Find the mass of 1 mole of steel screw. Compare this with the mass of Earth. Mass of Earth is 5.98*10power24 kg. Which one is heavier by how many times

Solution:

Mass of one mole of steel screw is:

$$M = m(one\ steel\ screw) \times N_A$$

N_A = 6.022*10^{23} – Avogadro number

M = 4.11 * 6.022*10^{23} = 24.75*10^{23} (g) = 2.475*10^{21} (kg)

$$\frac{Mass\ of\ Earth}{Mass\ of\ 1\ mole\ of\ steel\ screw} = \frac{5.98 \times 10^{24}}{2.475 \times 10^{21}} = 2416$$

Answer:

Mass of 1 mole of steel screw is 2.475*10^{21} kg. Earth is 2416 times heavier than one mole of steel screw