The molarity of H2SO4 solution ,which has a density 1.84 g/cc at 35 Celsius and contain 98% by weight is
(1)1.84
(2)18.4
(3)20.6
(4)24.5
All are in M(molarity)

Solution:

$\rho = \dfrac{m}{V}$; ρ - the density (g/L); m – the mass (g); V – the volume (L);

If V=1 L, then m(solution)=1.84*10^{3}g (1.84 kg);

W= $\dfrac{m}{m_{tot}}$; m=Wm$_{tot}$;

W – the mass fraction (%); m – the mass of H2SO4 (g); m$_{tot}$ – the mass of the total mixture (g);

m(H2SO4)=1803.2 g;

$\nu = \dfrac{m}{M}$; ν - the mole (mol); M –the molar mass (g/mol);

M(H2SO4)=98 g/mol;

ν (H2SO4)=18.4 mol;

$C = \dfrac{\nu}{V}$; C – the molarity (mol/L);

C(H2SO4)=18.4 mol/L;

Answer: (2)18.4