

Answer on Question # 70195, Chemistry / General Chemistry

The specific gravity of a patients urine sample was measured to be 1.003. Given that the density of water is 1.000 g/ml at 4°C, what is the density of the urine sample at 4°C.

Solution:

$$SG = \frac{m(\text{sample})}{m(H_2O)}$$

$$V = 100 \text{ ml} \Rightarrow m(H_2O) = 100 \times 1.000 = 100.0 \text{ (g)}$$

$$m(\text{sample}) = SG \times m(H_2O)$$

$$m(\text{sample}) = 1.003 \times 100.0 = 100.3 \text{ (g)}$$

$$\rho = \frac{m(\text{sample})}{V} = \frac{100.3}{100} = 1.003 \left(\frac{\text{g}}{\text{ml}}\right)$$

Answer: 1.003 g/ml.

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