Important Immiscible Liquids Formulas PDF

Formulas
Examples
with Units

List of 19
Important Immiscible Liquids Formulas

1) Molecular Mass of Liquid forming Immiscible Mixture with Water Formula

Evaluate Formula

Formula

$$M_B = \frac{P^o_{water} \cdot M_{water} \cdot W_B}{P_B^\circ \cdot W_{water}}$$

Example with Units

$$31.8\,\text{g} = \frac{0.53\,\text{Pa} \cdot 18\,\text{g} \cdot 0.1\,\text{g}}{0.25\,\text{Pa} \cdot 0.12\,\text{g}}$$

2) Molecular Mass of Liquid in Mixture of Two Immiscible Liquids given Weight of Liquids Formula

Evaluate Formula

Formula

$$M_A = \frac{W_A \cdot M_B \cdot P_B^\circ}{P_A^\circ \cdot W_B}$$

Example with Units

$$14.7222\,\text{g} = \frac{0.5\,\text{g} \cdot 31.8\,\text{g} \cdot 0.25\,\text{Pa}}{2.7\,\text{Pa} \cdot 0.1\,\text{g}}$$

3) Partial Vapour Pressure of Immiscible Liquid given Partial Pressure of other Liquid Formula

Evaluate Formula

Formula

$$P_A^\circ = \frac{W_A \cdot M_B \cdot P_B^\circ}{M_A \cdot W_B}$$

Example with Units

$$2.7004\,\text{Pa} = \frac{0.5\,\text{g} \cdot 31.8\,\text{g} \cdot 0.25\,\text{Pa}}{14.72\,\text{g} \cdot 0.1\,\text{g}}$$

4) Ratio of Molecular Mass of 2 Immiscible Liquids Formula

Evaluate Formula

Formula

$$M_{A:B} = \frac{P_B^\circ \cdot W_A}{P_A^\circ \cdot W_B}$$

Example with Units

$$0.463 = \frac{0.25\,\text{Pa} \cdot 0.5\,\text{g}}{2.7\,\text{Pa} \cdot 0.1\,\text{g}}$$

5) Ratio of Molecular Masses of Water to Liquid forming Immiscible Mixture Formula

Evaluate Formula

Formula

$$M_{A:B} = \frac{W_{water} \cdot P_B^\circ}{P^o_{water} \cdot W_B}$$

Example with Units

$$0.566 = \frac{0.12\,\text{g} \cdot 0.25\,\text{Pa}}{0.53\,\text{Pa} \cdot 0.1\,\text{g}}$$

6) Ratio of Partial Pressure of 2 Immiscible Liquids given Number of Moles Formula

Evaluate Formula

Formula

$$P_{A:B} = \frac{n_A}{n_B}$$

Example with Units

$$10.8182 = \frac{119\,\text{mol}}{11\,\text{mol}}$$

7) Ratio of Partial Vapour Pressures of 2 Immiscible Liquids given Weight and Molecular Mass Formula

Evaluate Formula

Formula

$$P_{A:B} = \frac{W_A \cdot M_B}{W_B \cdot M_A}$$

Example with Units

$$10.8016 = \frac{0.5\,\text{g} \cdot 31.8\,\text{g}}{0.1\,\text{g} \cdot 14.72\,\text{g}}$$

8) Ratio of Partial Vapour Pressures of Water with Liquid forming Immiscible Mixture Formula

Evaluate Formula

Formula

$$P_{W:B} = \frac{W_{water} \cdot M_B}{M_{water} \cdot W_B}$$

Example with Units

$$2.12 = \frac{0.12\,\text{g} \cdot 31.8\,\text{g}}{18\,\text{g} \cdot 0.1\,\text{g}}$$

9) Ratio of Weights of 2 Immiscible Liquids forming Mixture Formula

Evaluate Formula

Formula

$$W_{A:B} = \frac{P_A° \cdot M_A}{P_B° \cdot M_B}$$

Example with Units

$$4.9992 = \frac{2.7\,\text{Pa} \cdot 14.72\,\text{g}}{0.25\,\text{Pa} \cdot 31.8\,\text{g}}$$

10) Ratio of Weights of Water to Liquid forming Immiscible Mixture Formula

Evaluate Formula

Formula

$$W_{W:B} = \frac{P°water \cdot M_{water}}{P_B° \cdot M_B}$$

Example with Units

$$1.2 = \frac{0.53\,\text{Pa} \cdot 18\,\text{g}}{0.25\,\text{Pa} \cdot 31.8\,\text{g}}$$

11) Total Pressure of Mixture of Liquid with Water given Vapour Pressure of Water Formula

Evaluate Formula

Formula

$$P_{tot} = P°water + \left(\frac{W_B \cdot P°water \cdot M_{water}}{W_{water} \cdot M_B}\right)$$

Example with Units

$$0.78\,\text{Pa} = 0.53\,\text{Pa} + \left(\frac{0.1\,\text{g} \cdot 0.53\,\text{Pa} \cdot 18\,\text{g}}{0.12\,\text{g} \cdot 31.8\,\text{g}}\right)$$

12) Total Pressure of Mixture of Two Immiscible Liquids Formula

Evaluate Formula

Formula

$$P = P_A^\circ + P_B^\circ$$

Example with Units

$$2.95\,\text{Pa} = 2.7\,\text{Pa} + 0.25\,\text{Pa}$$

13) Total Pressure of Mixture of Water with Liquid given Vapour Pressure Formula

Evaluate Formula

Formula

$$P_{tot} = P_B^\circ + \left(\frac{W_{water} \cdot P_B^\circ \cdot M_B}{W_B \cdot M_{water}}\right)$$

Example with Units

$$0.78\,\text{Pa} = 0.25\,\text{Pa} + \left(\frac{0.12\,\text{g} \cdot 0.25\,\text{Pa} \cdot 31.8\,\text{g}}{0.1\,\text{g} \cdot 18\,\text{g}}\right)$$

14) Total Vapour Pressure of Mixture of given Partial Pressure of One Liquid Formula

Evaluate Formula

Formula

$$P = P_B^\circ + \left(\frac{P_B^\circ \cdot W_A \cdot M_B}{W_B \cdot M_A}\right)$$

Example with Units

$$2.9504\,\text{Pa} = 0.25\,\text{Pa} + \left(\frac{0.25\,\text{Pa} \cdot 0.5\,\text{g} \cdot 31.8\,\text{g}}{0.1\,\text{g} \cdot 14.72\,\text{g}}\right)$$

15) Vapour Pressure of Liquid forming Immiscible Mixture with Water Formula

Evaluate Formula

Formula

$$P_B^\circ = \frac{W_B \cdot P^o water \cdot M_{water}}{W_{water} \cdot M_B}$$

Example with Units

$$0.25\,\text{Pa} = \frac{0.1\,\text{g} \cdot 0.53\,\text{Pa} \cdot 18\,\text{g}}{0.12\,\text{g} \cdot 31.8\,\text{g}}$$

16) Vapour Pressure of Water forming Immiscible Mixture with Liquid Formula

Evaluate Formula

Formula

$$P^o water = \frac{W_{water} \cdot P_B^\circ \cdot M_B}{W_B \cdot M_{water}}$$

Example with Units

$$0.53\,\text{Pa} = \frac{0.12\,\text{g} \cdot 0.25\,\text{Pa} \cdot 31.8\,\text{g}}{0.1\,\text{g} \cdot 18\,\text{g}}$$

17) Weight of Liquid in Mixture of 2 Immiscible Liquids given Weight of other Liquid Formula

Evaluate Formula

Formula

$$W_A = \frac{P_A^\circ \cdot M_A \cdot W_B}{P_B^\circ \cdot M_B}$$

Example with Units

$$0.4999\,\text{g} = \frac{2.7\,\text{Pa} \cdot 14.72\,\text{g} \cdot 0.1\,\text{g}}{0.25\,\text{Pa} \cdot 31.8\,\text{g}}$$

18) Weight of Liquid required to form Immiscible Mixture with Water Formula

Evaluate Formula

Formula

$$W_B = \frac{W_{water} \cdot P_B^\circ \cdot M_B}{P^o water \cdot M_{water}}$$

Example with Units

$$0.1\,\text{g} = \frac{0.12\,\text{g} \cdot 0.25\,\text{Pa} \cdot 31.8\,\text{g}}{0.53\,\text{Pa} \cdot 18\,\text{g}}$$

19) Weight of Water required to form Immiscible Mixture with Liquid given Weight Formula

Evaluate Formula

Formula

$$W_{water} = \frac{W_B \cdot P^{o}water \cdot M_{water}}{P_B^{\circ} \cdot M_B}$$

Example with Units

$$0.12\,\text{g} = \frac{0.1\,\text{g} \cdot 0.53\,\text{Pa} \cdot 18\,\text{g}}{0.25\,\text{Pa} \cdot 31.8\,\text{g}}$$

Variables used in list of Immiscible Liquids Formulas above

- M_A Molecular Mass of Liquid A *(Gram)*
- $M_{A:B}$ Ratio of Molecular Masses of 2 Immiscible Liquids
- M_B Molecular Mass of Liquid B *(Gram)*
- M_{water} Molecular Mass of Water *(Gram)*
- n_A Number of Moles of Liquid A *(Mole)*
- n_B Number of Moles of Liquid B *(Mole)*
- P Total Pressure of Mixture of Immiscible Liquids *(Pascal)*
- P_A° Vapor Pressure of Pure Component A *(Pascal)*
- $P_{A:B}$ Ratio of Partial Pressures of 2 Immiscible Liquids
- P_B° Vapor Pressure of Pure Component B *(Pascal)*
- P_{tot} Total Pressure of Mixture of Liquid with Water *(Pascal)*
- $P_{W:B}$ Ratio of Partial Pressures of Water and Liquid
- P^o_{water} Partial Pressure of Pure Water *(Pascal)*
- W_A Weight of Liquid A *(Gram)*
- $W_{A:B}$ Ratio of Weights of 2 Immiscible Liquids
- W_B Weight of Liquid B *(Gram)*
- $W_{W:B}$ Ratio of Weights of Water and Liquid
- W_{water} Weight of Water in Immiscible Mixture *(Gram)*

Constants, Functions, Measurements used in list of Immiscible Liquids Formulas above

- Measurement: **Weight** in Gram (g)
  Weight Unit Conversion
- Measurement: **Amount of Substance** in Mole (mol)
  Amount of Substance Unit Conversion
- Measurement: **Pressure** in Pascal (Pa)
  Pressure Unit Conversion

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