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Immiscible Liquids Formulas

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List of 19 Immiscible Liquids Formulas

Immiscible Liquids

1) Molecular Mass of Liquid forming Immiscible Mixture with Water

$$\text{fx } M_B = \frac{(P^{\circ}\text{water}) \cdot M_{\text{water}} \cdot W_B}{(P_B^{\circ}) \cdot W_{\text{water}}}$$

[Open Calculator !\[\]\(a870788d6ed9b8fd294b7654a8c8526b_img.jpg\)](#)

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

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

$$\text{fx } M_A = \frac{W_A \cdot M_B \cdot (P_B^{\circ})}{(P_A^{\circ}) \cdot W_B}$$

[Open Calculator !\[\]\(c50c8b7b2cc2cf9ff925edec0ee94c0d_img.jpg\)](#)

$$\text{ex } 14.72222\text{g} = \frac{0.5\text{g} \cdot 31.8\text{g} \cdot 0.25\text{Pa}}{2.7\text{Pa} \cdot 0.1\text{g}}$$

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

$$\text{fx } (P_A^{\circ}) = \frac{W_A \cdot M_B \cdot (P_B^{\circ})}{M_A \cdot W_B}$$

[Open Calculator !\[\]\(f60b7a900783ac3fd531bfd9c111be6d_img.jpg\)](#)

$$\text{ex } 2.700408\text{Pa} = \frac{0.5\text{g} \cdot 31.8\text{g} \cdot 0.25\text{Pa}}{14.72\text{g} \cdot 0.1\text{g}}$$



4) Ratio of Molecular Mass of 2 Immiscible Liquids

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

[Open Calculator !\[\]\(cbe80b694ebd74fcfe136a095b608235_img.jpg\)](#)

$$\text{ex } 0.462963 = \frac{0.25\text{Pa} \cdot 0.5\text{g}}{2.7\text{Pa} \cdot 0.1\text{g}}$$

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

$$\text{fx } M_{A:B} = \frac{W_{\text{water}} \cdot (P_B^\circ)}{(P^\circ_{\text{water}}) \cdot W_B}$$

[Open Calculator !\[\]\(3e2231b1ad3ca8da8658228c00dd08e0_img.jpg\)](#)

$$\text{ex } 0.566038 = \frac{0.12\text{g} \cdot 0.25\text{Pa}}{0.53\text{Pa} \cdot 0.1\text{g}}$$

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

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

[Open Calculator !\[\]\(0d5ec72f61334709c3fc9450209b754f_img.jpg\)](#)

$$\text{ex } 10.81818 = \frac{119\text{mol}}{11\text{mol}}$$



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

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

[Open Calculator !\[\]\(e78f798d4ea5c530c9db49e7d26e6b95_img.jpg\)](#)

$$ex \quad 10.80163 = \frac{0.5g \cdot 31.8g}{0.1g \cdot 14.72g}$$

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

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

[Open Calculator !\[\]\(05be7c7a8995decd503647c99211f7c2_img.jpg\)](#)

$$ex \quad 2.12 = \frac{0.12g \cdot 31.8g}{18g \cdot 0.1g}$$

9) Ratio of Weights of 2 Immiscible Liquids forming Mixture

$$fx \quad W_{A:B} = \frac{(P_A^\circ) \cdot M_A}{(P_B^\circ) \cdot M_B}$$

[Open Calculator !\[\]\(fe3aebe81acea8d45108cd2768939da7_img.jpg\)](#)

$$ex \quad 4.999245 = \frac{2.7Pa \cdot 14.72g}{0.25Pa \cdot 31.8g}$$



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

$$fx \quad W_{W:B} = \frac{(P^{\circ}water) \cdot M_{water}}{(P_B^{\circ}) \cdot M_B}$$

[Open Calculator !\[\]\(e2376d476d06eb31946dc01a69a4403a_img.jpg\)](#)

$$ex \quad 1.2 = \frac{0.53Pa \cdot 18g}{0.25Pa \cdot 31.8g}$$

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

fx

[Open Calculator !\[\]\(0b5e7e25e8775f7e7e80906ada4f0021_img.jpg\)](#)

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

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

12) Total Pressure of Mixture of Two Immiscible Liquids

$$fx \quad P = (P_A^{\circ}) + (P_B^{\circ})$$

[Open Calculator !\[\]\(0fb13ad0bfa3d86868cdd3883e5665b3_img.jpg\)](#)

$$ex \quad 2.95Pa = 2.7Pa + 0.25Pa$$



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



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

[Open Calculator](#)

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

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

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

[Open Calculator](#)

$$\text{ex } 2.950408\text{Pa} = 0.25\text{Pa} + \left(\frac{0.25\text{Pa} \cdot 0.5\text{g} \cdot 31.8\text{g}}{0.1\text{g} \cdot 14.72\text{g}} \right)$$

15) Vapour Pressure of Liquid forming Immiscible Mixture with Water

$$\text{fx } (P_B^\circ) = \frac{W_B \cdot (P^\circ_{\text{water}}) \cdot M_{\text{water}}}{W_{\text{water}} \cdot M_B}$$

[Open Calculator](#)

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



16) Vapour Pressure of Water forming Immiscible Mixture with Liquid

$$\text{fx } (P^{\circ}\text{water}) = \frac{W_{\text{water}} \cdot (P_B^{\circ}) \cdot M_B}{W_B \cdot M_{\text{water}}}$$

[Open Calculator !\[\]\(9dfdaff1d86ba3c1f8353b4d1b61b8c5_img.jpg\)](#)

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

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

$$\text{fx } W_A = \frac{(P_A^{\circ}) \cdot M_A \cdot W_B}{(P_B^{\circ}) \cdot M_B}$$

[Open Calculator !\[\]\(2b376d1a92330ab09dad2665d2f89bf5_img.jpg\)](#)

$$\text{ex } 0.499925\text{g} = \frac{2.7\text{Pa} \cdot 14.72\text{g} \cdot 0.1\text{g}}{0.25\text{Pa} \cdot 31.8\text{g}}$$

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

$$\text{fx } W_B = \frac{W_{\text{water}} \cdot (P_B^{\circ}) \cdot M_B}{(P^{\circ}\text{water}) \cdot M_{\text{water}}}$$

[Open Calculator !\[\]\(c444627dab9fee9a1550c053ffaaaae2_img.jpg\)](#)

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



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

[Open Calculator !\[\]\(3d8c13c92b853674f749aac6fa869926_img.jpg\)](#)

$$\text{fx } W_{\text{water}} = \frac{W_B \cdot (P^{\circ} \text{water}) \cdot M_{\text{water}}}{(P_B^{\circ}) \cdot M_B}$$

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






Variables Used

- 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°_{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

- **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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