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 (

Evaluate Formula (

Evaluate Formula (

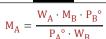
$$M_{B} = \frac{P^{o}water \cdot M_{water} \cdot W_{B}}{P_{B}^{o} \cdot W_{water}}$$

$$31.8_{g} = \frac{0.53 P_{a} \cdot 18_{g} \cdot 0.1_{g}}{0.25 P_{a} \cdot 0.12_{g}}$$

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

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





Example with Unit

$$M_{A} = \frac{W_{A} \cdot M_{B} \cdot P_{B}^{\circ}}{P_{A}^{\circ} \cdot W_{B}}$$

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

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

$$P_{A}^{\circ} = \frac{W_{A} \cdot M_{B} \cdot P_{B}^{\circ}}{M_{A} \cdot W_{B}}$$

$$P_{A}^{\circ} = \frac{W_{A} \cdot M_{B} \cdot P_{B}^{\circ}}{M_{A} \cdot W_{B}} \qquad 2.7004 \, P_{a} = \frac{0.5 \, g \cdot 31.8 \, g \cdot 0.25 \, P_{a}}{14.72 \, g \cdot 0.1 \, g}$$

4) Ratio of Molecular Mass of 2 Immiscible Liquids Formula C



Evaluate Formula (

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

Example with Units

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

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

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

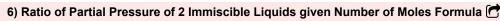


$$M_{A:B} = \frac{W_{water} \cdot P_B^{\circ}}{P^{o}water \cdot W_B}$$

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

Example with Units

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





Evaluate Formula (

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

Formula Example with Units
$$P_{A:B} = \frac{W_A \cdot M_B}{W_B \cdot M_A} \qquad 10.8016 = \frac{0.5\,\mathrm{g}\,\cdot\,31.8\,\mathrm{g}}{0.1\,\mathrm{g}\,\cdot\,14.72\,\mathrm{g}}$$

Evaluate Formula (

Evaluate Formula [

Evaluate Formula [

Evaluate Formula (

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

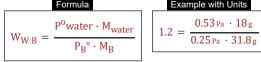
Formula Example with Units
$$P_{W:B} = \frac{W_{water} \cdot M_B}{M_{water} \cdot W_B} = \frac{0.12 \, \mathrm{g} \cdot 31.8 \, \mathrm{g}}{18 \, \mathrm{g} \cdot 0.1 \, \mathrm{g}}$$

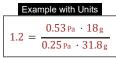
Evaluate Formula (

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

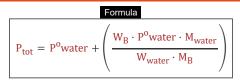


10) Ratio of Weights of Water to Liquid forming Immiscible Mixture Formula 🕝





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



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 Example with Units $P = P_{\text{A}}^{\circ} + P_{\text{B}}^{\circ} \qquad 2.95 \, \text{Pa} = 2.7 \, \text{Pa} + 0.25 \, \text{Pa}$

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

Example with Units

Evaluate Formula (

Evaluate Formula (

Evaluate Formula (

Evaluate Formula (

Evaluate Formula [

 $P_{\text{tot}} = P_{\text{B}}^{\circ} + \left(\frac{W_{\text{water}} \cdot P_{\text{B}}^{\circ} \cdot M_{\text{B}}}{W_{\text{B}} \cdot M_{\text{water}}}\right) \qquad 0.78 \, P_{\text{B}} = 0.25 \, P_{\text{B}} + \left(\frac{0.12 \, g \cdot 0.25 \, P_{\text{B}} \cdot 31.8 \, g}{0.1 \, g \cdot 18 \, g}\right)$

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

Formula $P = P_{B}^{\circ} + \left(\frac{P_{B}^{\circ} \cdot W_{A} \cdot M_{B}}{W_{B} \cdot M_{A}}\right) = 2.9504 P_{B} = 0.25 P_{B} + \left(\frac{0.25 P_{A} \cdot 0.5 g \cdot 31.8 g}{0.1 g \cdot 14.72 g}\right)$

Example with Units

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

 $P_{B}^{\circ} = \frac{W_{B} \cdot P^{o}water \cdot M_{water}}{W_{water} \cdot M_{B}} \qquad \boxed{ 0.25_{Pa} = \frac{0.1_{g} \cdot 0.53_{Pa} \cdot 18_{g}}{0.12_{g} \cdot 31.8_{g}} }$

Example with Units

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

Example with Units

 P^{o} water = $\frac{W_{water} \cdot P_{B}^{\circ} \cdot M_{B}}{W_{R} \cdot M_{water}}$ | $0.53 Pa = \frac{0.12 g \cdot 0.25 Pa \cdot 31.8 g}{0.1 g \cdot 18 g}$

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

 $W_{A} = \frac{P_{A}^{\circ} \cdot M_{A} \cdot W_{B}}{P_{R}^{\circ} \cdot M_{R}} \qquad 0.4999_{g} = \frac{2.7_{Pa} \cdot 14.72_{g} \cdot 0.1_{g}}{0.25_{Pa} \cdot 31.8_{g}}$

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

Evaluate Formula

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

Formula

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

Example with Units

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

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)
- Mwater Molecular Mass of Water (Gram)
- n_▲ 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)
- Pa° Vapor Pressure of Pure Component A (Pascal)
- P_{A:B} Ratio of Partial Pressures of 2 Immiscible Liquids
- P_R° 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
- Powater Partial Pressure of Pure Water (Pascal)
- W_▲ Weight of Liquid A (Gram)
- WA:B Ratio of Weights of 2 Immiscible Liquids
- W_R Weight of Liquid B (Gram)
- W_{W·R} Ratio of Weights of Water and Liquid
- Wwater 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

Amount of Substance Unit Conversion



 Measurement: Pressure in Pascal (Pa) Pressure Unit Conversion

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