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Cationic and Anionic Salt Hydrolysis Formulas

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List of 13 Cationic and Anionic Salt Hydrolysis Formulas

Cationic and Anionic Salt Hydrolysis

1) Concentration of Hydronium Ion in Salt of Weak Acid and Strong Base

Open Calculator

fx $$C = \sqrt{\frac{K_w \cdot K_a}{C_{salt}}}$$

ex $$1.1E^{\wedge}\text{-}11 mol/L = \sqrt{\frac{1.0E^{\wedge}\text{-}14 \cdot 2.0E^{\wedge}\text{-}5}{1.76E^{\wedge}\text{-}6 mol/L}}$$

2) Concentration of Hydronium ion in Weak Base and Strong Acid

Open Calculator

fx $$C = \sqrt{\frac{K_w \cdot C_{salt}}{K_b}}$$

ex $$1E^{\wedge}\text{-}9 mol/L = \sqrt{\frac{1.0E^{\wedge}\text{-}14 \cdot 1.76E^{\wedge}\text{-}6 mol/L}{1.77E^{\wedge}\text{-}5}}$$

3) Conductance of NaCl at Infinite Dilution

Open Calculator

fx $$\lambda_{NaCl} = \lambda_{Na} + \lambda_{Cl}$$

ex $$600S = 200S + 400S$$

4) Degree of Hydrolysis in Salt of Weak Acid and Strong Base

Open Calculator

fx $$h = \sqrt{\frac{K_w}{K_a \cdot C_{salt}}}$$

ex $$0.000533 = \sqrt{\frac{1.0E\hat{}-14}{2.0E\hat{}-5 \cdot 1.76E\hat{}-6 mol/L}}$$

5) Degree of Hydrolysis in Salt of Weak Base and Strong Base

Open Calculator

fx $$h = \sqrt{\frac{K_w}{K_b \cdot C_{salt}}}$$

ex $$0.000567 = \sqrt{\frac{1.0E\hat{}-14}{1.77E\hat{}-5 \cdot 1.76E\hat{}-6 mol/L}}$$

6) Hydrolysis Constant in Strong Acid and Weak Base

Open Calculator

fx $$K_h = \frac{K_w}{K_b}$$

ex $$5.6E\hat{}-10 = \frac{1.0E\hat{}-14}{1.77E\hat{}-5}$$

7) Hydrolysis Constant in Weak Acid and Strong Base

Open Calculator

fx $$K_h = \frac{K_w}{K_a}$$

ex $$5E\hat{}\text{-}10 = \frac{1.0E\hat{}\text{-}14}{2.0E\hat{}\text{-}5}$$

8) pH of Salt of Weak Acid and Strong Base

Open Calculator

fx $$pH = \frac{pK_w + pk_a + \log 10(C_{salt})}{2}$$

ex $$6.122756 = \frac{14 + 4 + \log 10(1.76E\hat{}\text{-}6mol/L)}{2}$$

9) pH of Salt of Weak Base and Strong Base

Open Calculator

fx $$pH = \frac{pK_w - pk_b - \log 10(C_{salt})}{2}$$

ex $$5.377244 = \frac{14 - 6 - \log 10(1.76E\hat{}\text{-}6mol/L)}{2}$$

10) pKa of Salt of Weak acid and Strong base

Open Calculator

fx $$pk_a = 2 \cdot pH - 14 - \log 10(C_{salt})$$

ex $$0.754487 = 2 \cdot 6 - 14 - \log 10(1.76E\hat{}\text{-}6mol/L)$$

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11) pKb of Salt of Strong Acid and Weak base

Open Calculator

fx $$\mathrm{pk_b} = 14 - (2 \cdot \mathrm{pH}) - \log 10(\mathrm{C_{salt}})$$

ex $$4.754487 = 14 - (2 \cdot 6) - \log 10(1.76\mathrm{E\hat{}\text{-}6mol/L})$$

12) pOH of Salt of Strong Base and Weak Acid

Open Calculator

fx $$\mathrm{pOH} = 14 - \frac{\mathrm{pk_a} + \mathrm{pK_w} + \log 10(\mathrm{C_{salt}})}{2}$$

ex $$7.877244 = 14 - \frac{4 + 14 + \log 10(1.76\mathrm{E\hat{}\text{-}6mol/L})}{2}$$

13) pOH of Salt of Weak Base and Strong Base

Open Calculator

fx $$\mathrm{pOH} = 14 - \frac{\mathrm{pK_w} - \mathrm{pk_b} - \log 10(\mathrm{C_{salt}})}{2}$$

ex $$8.622756 = 14 - \frac{14 - 6 - \log 10(1.76\mathrm{E\hat{}\text{-}6mol/L})}{2}$$

Variables Used

- **C** Hydronium Ion Concentration *(Mole per Liter)*
- C_{salt} Concentration of Salt *(Mole per Liter)*
- **h** Degree of Hydrolysis
- K_a Constant of Ionization of Acids
- K_b Constant Of Ionization Of Bases
- K_h Constant Of Hydrolysis
- K_w Ionic Product of Water
- **pH** Negative Log of Hydronium Concentration
- pk_a Negative Log of Acid Ionization Constant
- pk_b Negative Log of Base Ionization Constant
- pK_w Negative Log of Ionic Product of Water
- **pOH** Negative Log of Hydroxyl Concentration
- λ_{Na} Conductance of Na Cation *(Siemens)*
- λ_{Cl} Conductance of Cl Anion *(Siemens)*
- λ_{NaCl} Conductance of NaCl at Infinite Dilution *(Siemens)*

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Constants, Functions, Measurements used

- Function: **log10**, log10(Number)
  Common logarithm function (base 10)
- Function: **sqrt**, sqrt(Number)
  Square root function
- Measurement: **Electric Conductance** in Siemens (S)
  Electric Conductance Unit Conversion
- Measurement: **Molar Concentration** in Mole per Liter (mol/L)
  Molar Concentration Unit Conversion

Check other formula lists

- **Cationic and Anionic Salt Hydrolysis Formulas**
- **Hydrolysis for Weak Acid and Weak Base Formulas**

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