Amine Water Solubility

Amines generally become less water-soluble when they contain **more than six carbon atoms**. While amines with fewer than six carbons are soluble due to hydrogen bonding with water, increasing the hydrocarbon chain length makes the molecule more hydrophobic (water-fearing) and less soluble. [1, 2, 3, 4]

Key points on amine solubility:

- **Highly Soluble:** Amines with 1–5 carbon atoms are generally soluble in water.
- **Transition Point:** Solubility significantly decreases when the carbon chain exceeds six atoms.
- **Structure Effect:** Primary and secondary amines are more soluble than tertiary amines, but increasing carbon chain length in any amine decreases water solubility.
- **Hydrophobic Character:** Larger aliphatic chains increase the non-polar characteristic, overriding the polar amine group's ability to hydrogen bond. [1, 2, 3, 4, 5, 6, 7]

AI can make mistakes, so double-check responses

[1] https://quizlet.com/539475060/chapter-15-amines-and-amides-flash-cards/
[2] https://chem.libretexts.org/Courses/Matanuska-Susitna_College/MatSu_College-CHEM_A104_Introduction_to_Organic_and_Biochemistry/15%3A_Organic_Acids_and_Bases_and_Some_of_Their_Derivatives/15.12%3A_Physical_Properties_of_Amines
[3] http://www.chem.latech.edu/~upali/chem121/Notes-C17-121.pdf
[4] https://www.youtube.com/watch?v=JjUB1IaRcy0
[5] https://openoregon.pressbooks.pub/introductoryorganic/chapter/solubility/
[6] https://sciencecready.com.au/pages/amines
[7] https://satheejee.iitk.ac.in/article/chemistry/chemistry-amines/