A zwitterion, also known as inner salt or dipolar ion, is an overall neutral species in which two or more atoms bear opposite formal charges. (Some authors limit the term zwitterion to species in which opposite formal charges are not on adjacent atoms.) For a resonance-stabilized (see resonance theory) species to qualify as a zwitterion, all resonance forms must fit the definition of the zwitterion. The most common zwitterions are standard amino acids.

eg: The structural formula of glycine is 1.

\[
\begin{align*}
\text{H}_2\text{NCH}_2\text{C} & \quad \text{O}^- \\
\text{H} & \quad \text{N} \\
\text{O} & \quad \text{H}
\end{align*}
\]

Pure glycine, however, exists exclusively as a zwitterion.

\[
\begin{align*}
\text{H}_2\text{NCH}_2\text{C} & \quad \text{O}^- \\
\text{H} & \quad \text{N} \\
\text{O} & \quad \text{H}
\end{align*}
\]

\[
\begin{align*}
\text{H}_2\text{NCH}_2\text{C} & \quad \text{O}^+ \\
\text{H} & \quad \text{N} \\
\text{O} & \quad \text{H}
\end{align*}
\]

\[
\begin{align*}
\text{net charge } = (+) + (-1) \\
= 0
\end{align*}
\]

\[
\begin{align*}
\text{net charge } = (+) + (-1) \\
= 0
\end{align*}
\]

see also betaine, ylide

Contributors

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