

## Hydrogen Bonds

There are three intermolecular forces: London dispersion forces, Dipole-Dipole interactions, and Hydrogen Bonds. Hydrogen bonds are the strongest of the three, and they occur when a hydrogen atom is bound to an electronegative atom. The electronegative atom pulls electrons unequally towards itself, leaving the hydrogen with a partial positive charge and the electronegative atom with a partial negative charge. In the whole mixture of molecules, the partial negatives interact with partial positives on other molecules, causing hydrogen bonding. It increases the boiling point of the compound because more energy is required to transform the substance from liquid to gas phase.



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### Stronger than London Dispersion Forces

[Bond Stronger Than London-Guard](#)

Hydrogen bonds are stronger than London Dispersion forces, which are the weakest intermolecular force.

### Stronger than Dipole-Dipole Interactions

[Bond Stronger Than Die-Pole](#)

Hydrogen bonds are stronger than dipole-dipole interactions, which are the second weakest of the intermolecular forces.

### Hydrogen is bound to a Highly Electronegative Atom

[H+ Bound to Electric-Devil Atom](#)

Hydrogen bonding begins with hydrogen binding to a highly electronegative atom, typically fluorine, oxygen, nitrogen, or in some cases carbon.

### Hydrogen has a Partial Positive Charge

[H+ releasing Part-Positive Angel](#)

When hydrogen binds to a highly electronegative atom, it gains a partial positive charge because the electrons are pulled closer to the electronegative atom.

### Electronegative Atom has a Partial Negative Charge

[Electric-Devil Atom releasing Part-Negative Devil](#)

When an electronegative atom binds hydrogen, it gains a partial negative charge because the electrons are pulled closer to the electronegative atom.

### Partial Positives Interact with Partial Negatives

[Partial Angel Interacting with Partial Devil](#)

The partial positive hydrogens interact with partial negative electronegative atoms on other molecules, so that multiple molecules are weakly bound together by the hydrogen bonds.

### Hydrogen Bonds Increase Boiling Point

[H+ Bond in Boiling Water with Exploding Thermometer](#)

Hydrogen bonds increase the boiling point of substances because they are extra intermolecular forces that must be broken to pass into the gas phase.