

Chemistry buffers: bicarbonate buffers essay sample



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Chemistry Buffers: Bicarbonate buffers

- what a buffer is
- what a Bicarbonate buffer is and how it works
- What would happen if Bicarbonate Buffers didn't exist.

Buffers (I had example diagrams on my word program, but they didn't copy over. You can find these diagrams on the sites listed at the bottom.)

A Buffer is a mixture of an acid and its conjugate base, or a Base and its conjugate acid. A Buffer works by reacting with any new strong acid or base added to the mixture of the buffer. It reacts with the base or acid added so that the new base/acid won't change the pH of the mixture. The way buffer does this is by reacting with the strong acid/base to form a weak acid/base that will barely affect the pH if any effect.

Blood is a good example of how buffers work. The pH of blood is around 7.4 and if it changes by only .2 it can be enough to kill a person. This is why your blood has buffers, because the buffers keep the blood's pH from changing and without them, we wouldn't be able to live. Blood contains 3 different buffer systems so that the blood will be able to buffer any kind of acid/base that enters it. Bicarbonate buffer is one of them and is a very important buffer. This is how a bicarbonate buffer works when too much base is added to the blood system:

As you can see the buffer has taken a highly basic material, and created two neutral products, that won't have much of an effect on the pH of the system.

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This is how a bicarbonate buffer works when too much acid is put into a system:

As you can see in this case when a highly acidic substance is added the buffer reacts with the acid and makes the neutral products that won't have any effect on the pH of the system.

Bicarbonate buffers are very important in the human body. They work very well because they can buffer acids and bases that are put into the human body. Bicarbonate buffers can do this because they can be in the form of Carbonic acid and neutralize any base materials that are put into the human blood by creating a neutral equilibrium. Bicarbonate buffers can also be in the form of the conjugate base of Carbonic acid and in this state they can neutralize any acids that are put into the human blood stream by creating a neutral equilibrium system with the acid. These equilibrium systems is shown on the next page

The Bicarbonate buffer can shift left and give off H^+ ions that will make the mixture more acidic if a base is added. Or it can shift left and make the mixture more basic if an acid is added.

If this buffer system didn't exist in our bodies we could easily die at any moment. This is because if the pH of our blood is shifted from as much as . 2 up or down it can result in a coma or death; because very important proteins in our body would lose they're structure and wouldn't be able to function properly, when the pH level of the blood is changed.

Bibliography:

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