

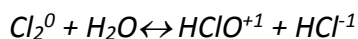
Answer on the question #41949, Chemistry, Physical Chemistry

Question:

Why is a lot of water used to wash articles bleached with chlorine gas?

Answer:

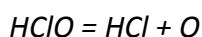
As a result of hydrolysis, the hypochlorous acid ($HClO$) is formed:



This reaction is a disproportionation one.

The products of hydrolysis HCl и $HClO$ can interact with each other with chlorine and water formation. That's why the reaction doesn't complete. Equilibrium is established, when approximately one third of chlorine reacted.

$HClO$ is weaker than carbonic acid, unstable and decomposes even in diluted solutions. Hypochlorous acid is very strong oxidant. In water solution it decomposes to hydrochloric acid and atomic oxygen:



Released oxygen bleaches the dyes (pigments) and kills microorganisms.

So, chlorine itself doesn't show the bleaching properties. They can be explained with hypochlorous acid formation. Chlorine bleaching is often used in treating cotton and paper. This method isn't used for silk and wool because of chlorine acid properties.

Washing the bleached articles with large amount of water is necessary for complete removal of chlorine to preserve articles from further oxidizing action of chlorine.