

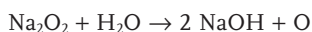
Experiment 1

Spontaneous Ignition by Adding Water

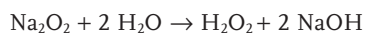
*Whoever is ignorant
of the elements,
of the strength they wield
and of their quality
Cannot master
The band of the spirits.*

Johann Wolfgang von Goethe

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| Apparatus | A fire-proof support, one 250-mL beaker, one wash-bottle, safety glasses, protective gloves. |
| Chemicals | Wood shavings, Na_2O_2 , water (or champagne, beer, etc.). |
| Attention! | Na_2O_2 reacts almost like sodium spontaneously with water. Na_2O_2 and hydrogen peroxide can cause burns, and skin contact must be avoided. Do not scale up the amount of Na_2O_2 . Safety glasses and protective gloves must be used at all times. |
| Experimental Procedure | The wood shavings are loosely filled into the beaker and the latter is placed on the fire-resistant support. Before starting the experiment, 0.4 g of Na_2O_2 is placed on the wood shavings and immediately a few drops of water are added. The water reacts spontaneously with the Na_2O_2 , and the wood shavings start to burn. In most of cases, the beaker cracks. |
| Explanation | Na_2O_2 is a strong oxidizer and reacts very often explosively with unsaturated organic compounds under incandescence. In the presence of small amounts of water, Na_2O_2 reacts under the elimination of oxygen: |



The NaOH reacts catalytically under decomposition of the intermediately formed H_2O_2 . However, at low temperatures Na_2O_2 reacts with water under formation of NaOH and H_2O_2 :



Experiment 1: A beaker with burning wood shavings and sodium peroxide.