

# THE CHEMISTRY OF MATCHES

## How Matches Work

The composition of matches varies depending on type, but safety matches are the most commonly used. They contain a strong oxidising agent in the match head, and red phosphorus in the striking surface. Striking the match causes small amounts of the oxidiser and phosphorus to combine, and the heat generated by the friction of the striking causes them to ignite.

Prior to the 1900s, white phosphorus was the active ingredient in most matches, but this could cause 'phossy jaw' and bone disorders, and was also toxic, so was replaced.

## The Match



### POTASSIUM CHLORATE

Main ingredient (45-55%) in heads of safety matches.



### PHOSPHORUS SESQUISULFIDE

Component in the heads of 'strike anywhere' matches.



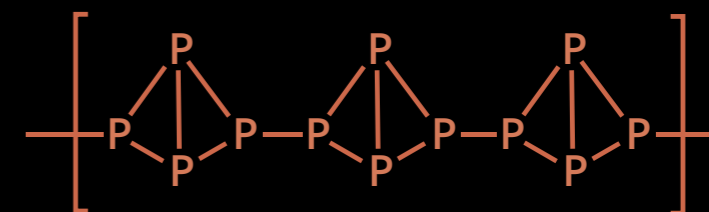
### ANTIMONY (III) SULFIDE

Added to some matches to make them burn more vigorously.

Additionally, the matches contain ammonium phosphates to prevent 'afterglow', glue to bind materials, and paraffin wax for ease of burning.

## The Match Box

The striking surface of safety match boxes contains red phosphorus and an abrasive substance. When struck, a small amount of white phosphorus is produced, which ignites.



Red Phosphorus (above); White Phosphorus (below)

