

Hence, we have proved the composition of hammer scale (calx of iron) by synthesis, *i.e.*, by building it up from its elements: it is oxide of iron. (To make the study complete, we should determine the relative quantities of the iron and oxygen. This has of course been done.)

An Oxide *is a compound of oxygen and another element.*

Oxidation *is the process of combining with oxygen.*

An Oxidising Agent *is a substance that will yield oxygen to another substance.*

Oxygen combines with almost all the elements, forming oxides of these elements.

The above experiments have shown us that, although oxygen does not act on most substances at ordinary temperatures, it does so at higher temperatures; experience also teaches us that it is much harder to start some substances burning than others; *i.e.*, the temperatures to which different substances must be raised before they will begin to burn vary very much from substance to substance, *e.g.*, phosphorus needs to be merely warmed, iron must be very highly heated.

The Temperature of Ignition or Kindling Point *of a substance is the lowest temperature at which it will burn actively.*

In order that a substance may burn, then, two things are necessary: First, something to support the combustion—generally air or pure oxygen; and, secondly, some part of the substance must be at a temperature equal to, or above, its particular kindling temperature. If the heat generated by the burning of this portion is sufficient to heat the next portion to the kindling temperature, and if more of the supporter of combustion is available, burning will continue. If, however, so much of the heat is dissipated as to prevent this, or if the supporter of combustion be no longer present, burning will cease. (It will, of course, also cease as soon as the supply of burning substance is exhausted.)