

The following patent information was graciously translated from the original German by **Hoffmann-LaRoche**: German patent DE 1951660.

Diphoronepentaperoxide $C_{18}H_{26}O_2(O_2)_5$

field of invention: the invention refers to an explosive which has special properties that make it suitable especially for mining and as well for military purposes.

Task: The invention wants to make blasting operations cheaper and easier.

Solution: Following cheap substances are required for synthesis:

1part conc. hydrochloric acid (HCl)
1part acetone (CH_3COCH_3)
2parts 30% hydrogen peroxide (H_2O_2)

Process of manufacture:

1 part of acetone are added to 1 part hydrochloric acid, through which acetone polymerizes to phorone; then 2 parts of hydrogen peroxide are added, through which two molecules of HCl bond with the two C-double-bonds of the phorone. In the course of the reaction free chlorine develops, which bonds with 3 hydrogen atoms of the phorone to give 3 HCl(see drawing) and bonds itself with phorone.

Hydrogen peroxide causes the chlorine atoms to split off the phorone and the peroxide itself bonds with the phorone. Because of the fact that one peroxy-bond stays half-opened, one also open phoroneperoxide adds to give diphoronepentaperoxide, which precipitates from the solution in crystalline form.

Properties:

- a) insoluble in water
- b) still explosive when heavily contaminated
- c) detonation velocity approx. 9000m/s
- d) low detonation temperature approx. 200°C
- e) does not develop smoke upon detonation, does not smell, no solid residues.
- f) ignition by fire, blasting cap or electric
- g) does not decompose at long storage
- h) yield of manufacturing process approx. 90%