

Experiment No. (4)

The Chemistry of Phosphorous

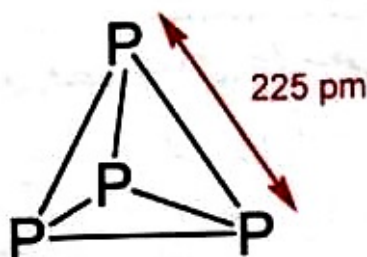
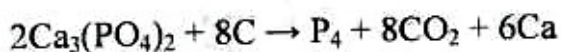
1. White Phosphorous



White phosphorus sample

White phosphorus, yellow phosphorus or simply **tetraphosphorus** (P_4) exists as molecules made up of four atoms in a tetrahedral structure. The tetrahedral arrangement results in ring strain and instability. The molecule is described as consisting of six single P-P bonds.

White phosphorus is a translucent waxy solid that quickly becomes **yellow** when exposed to light. For this reason it is also called yellow phosphorus



Tetraphosphorus Molecule

White phosphorus has an appreciable vapour pressure at ordinary temperatures. The vapour density indicates that the vapour is composed of P_4 molecules up to about $800^\circ C$. Above that temperature, dissociation into P_2 molecules occurs.

It ignites spontaneously in air at about $50^\circ C$, and at much lower temperatures if finely divided. This combustion gives phosphorus (V) oxide.

②

Experiment No. 4

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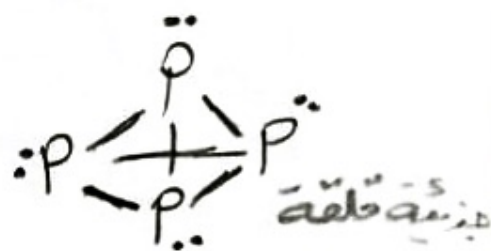
The Chemistry of Phosphorous.

① white phosphorous.

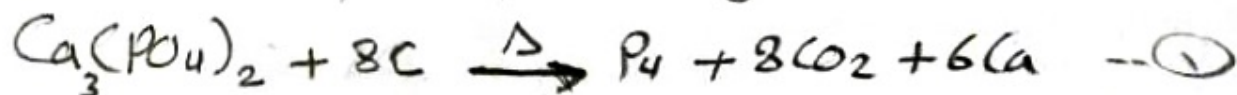
Properties

① tetraphosphorus P_4 made up of four atoms in a tetrahedral structure

② Waxy solid yellow when it exposed to light



③ The white phos. prepare by :-



④ It is very active and unstable. why?

⑤ Reacts with oxygen to produce phosphorous pentoxide according to this equation :-



Notice

* الفسفور الأبيض كقطعة تحت مادة خاملة ولا يعرض للهواء

فذلك لشدة فعاليته واهتراقه لشدة عالية وجود

ذلك في التوتر الكبير في زوايا الرابطة في P_4

والتالي هي حقيقة وسهولة الكسر لذلك كقطعة تحت مادة سالبة خاملة

* عندما يتفاعل P_4 مع الأكسجين ينتج نار ودخان أبيض كثيف
يسبب تلوث كبير متروك في التربة أو قاع الأنهار وعند
تعرض الجسم للفسفور الأبيض كثرة الجلد والكم فلا
يبقى إلا العظم.