

Molecular Mass Of Phosphorus

The structures for the phosphorus chlorides are invariably consistent with VSEPR theory. The structure of PCl_5 depends on its environment. Gaseous and molten PCl_5 is a neutral molecule with trigonal bipyramidal geometry and (D_{3h}) symmetry. The hypervalent nature of this species (as well as of $[\text{PCl}_6]^-$, see below) can be explained with the inclusion of non-bonding molecular orbitals (molecular orbital theory) or resonance (valence bond theory). This trigonal bipyramidal structure persists in nonpolar solvents, such as CS_2 and CCl_4 . In the solid state PCl_5 is an ionic compound called tetrachlorophosphonium hexachlorophosphate formulated $[\text{PCl}_4]^+[\text{PCl}_6]^-$.
afed5b5e84 Although PI_3 is a pyramidal molecule, it has only a small molecular dipole because each P-I bond has almost no bond dipole moment. The P-I bond is also weak; PI_3 is much less stable than PBr_3 and PCl_3 , with a standard enthalpy of formation for PI_3 of only -46 kJ/mol (solid). The phosphorus atom has an NMR chemical shift of 178 ppm (downfield of H_3PO_4). afed5b5e84 == Preparation == afed5b5e84 == Mass

spectra generation == afed5b5e84

Phosphorus trioxide Although the molecular formula suggests the name tetraphosphorus hexoxide, the name phosphorus trioxide preceded the knowledge of the compound's molecular structure, and its usage continues today. This colorless solid is structurally related to adamantane. A white solid that melts at room temperature, it is waxy, crystalline and highly toxic, with garlic odor. Although the molecular formula suggests the name tetraphosphorus hexoxide Phosphorus trioxide is the chemical compound with the molecular formula P_4O_6 . It is formally the anhydride of phosphorous acid, H_3PO_3 , but cannot be obtained by the dehydration of the acid. Phosphorus trioxide is the chemical compound with the molecular formula P_4O_6 afed5b5e84

== Structure == afed5b5e84 White phosphorus is a highly efficient smoke-producing agent, reacting with air to produce an immediate blanket of phosphorus pentoxide vapour. Smoke-producing white phosphorus munitions are very common, particularly as smoke grenades for infantry, loaded in defensive grenade launchers on tanks and other armoured vehicles, and in the ammunition allotment for artillery and mortars.

These create smoke screens to mask friendly forces' movement, position, infrared signatures, and shooting positions. They are often called smoke/marker rounds for their use in marking points of interest, such as... afed5b5e84

Mass (mass spectrometry) Due to this relativity, the molecular mass of a substance is commonly referred to as the relative molecular mass, and denoted The mass recorded by a mass spectrometer can refer to different physical quantities depending on the characteristics of the instrument and the manner in which the mass spectrum is displayed. $1/12$ the mass of one atom of ^{12}C afed5b5e84

== Units == afed5b5e84

Phosphorus All elemental forms of phosphorus are highly reactive and are therefore never Phosphorus is a chemical element; it has symbol P and atomic number 15. With ^{31}P as its only stable isotope, phosphorus has an occurrence in Earth's crust of about 0. 1%, generally as phosphate rock. A member of the pnictogen family, phosphorus readily forms a wide variety of organic and inorganic compounds, with as its main oxidation states +5, +3 and -3 . Elemental phosphorus can be prepared artificially,

the two most common allotropes being white phosphorus and red phosphorus. All elemental forms of phosphorus are highly reactive and are therefore never found in nature. Phosphorus is a chemical element; it has symbol P and atomic number 15

== Discovery and interstellar occurrence ==

Isotopes of phosphorus 35 days and ^{32}P with a half-life of 14. ^{31}P is also the only naturally occurring isotopes of phosphorus, so phosphorus is considered a mononuclidic element as well. radioactive isotope of phosphorus with relative atomic mass 31. 26 days. 5 minutes, most under a second. All others have half-lives of under 2. 973907 Da and half-life of 14. ^{32}P is a radioactive isotope of phosphorus with beta particle-emitting Although phosphorus (^{15}P) has 22 known isotopes from ^{26}P to ^{47}P , only ^{31}P is stable; Phosphorus is thus considered a monoisotopic element. 269 days. The longest-lived radioactive isotopes are ^{33}P with a half-life of 25

== List of isotopes == The compound is highly unstable in standard conditions, tending to rapidly self polymerize. It can be isolated within argon and

krypton matrices at 10 K (−263.1 °C). Due to its instability, documentation of reactions with other molecules is limited. Most of its reactivity has thus far been probed and studied at transition metal centers. afed5b5e84

Mass spectral interpretation Mass spectra is a plot of relative abundance against mass-to-charge ratio. oxygen, silicon, phosphorus, sulfur, or the halogens have an odd nominal mass if they have an odd number of nitrogen atoms or an even mass if they have an Mass spectral interpretation is the method employed to identify the chemical formula, characteristic fragment patterns and possible fragment ions from the mass spectra. It is commonly used for the identification of organic compounds from electron ionization mass spectrometry. Organic chemists obtain mass spectra of chemical compounds as part of structure elucidation and the analysis is part of many organic chemistry curricula afed5b5e84

== Properties == afed5b5e84 Phosphorus mononitride was the first identified phosphorus compound in the interstellar medium and is even thought to be an important molecule in the atmospheres of Jupiter and Saturn. afed5b5e84 The isolation of white phosphorus in 1669 by Hennig Brand marked the scientific

community's first discovery of an element since antiquity. The name phosphorus is a reference to the god of the Morning star in Greek mythology, inspired by the faint glow of white phosphorus when exposed to oxygen. This property is also at the origin of the term phosphorescence, meaning glow after illumination, although white phosphorus itself does not exhibit phosphorescence, but chemiluminescence caused by its oxidation. Its high toxicity makes exposure to white phosphorus very dangerous, while its flammability and pyrophoricity can be... afed5b5e84

Allotropes of phosphorus White phosphorus, yellow phosphorus or simply tetraphosphorus (P₄) exists as molecules of four Elemental phosphorus can exist in several allotropes, the most common of which are white and red solids. Gaseous phosphorus exists as diphosphorus and atomic phosphorus. Gaseous phosphorus exists as diphosphorus and atomic phosphorus. Solid violet and black allotropes are also known afed5b5e84

It is obtained by the combustion of phosphorus in a limited supply of air at low temperatures. afed5b5e84 == White phosphorus == afed5b5e84

Phosphorus triiodide Phosphorus triiodide (PI₃) is an inorganic compound with the formula PI₃. A red solid, it is too unstable to be stored for long periods of time; it is Phosphorus triiodide (PI₃) is an inorganic compound with the formula PI₃. A red solid, it is too unstable to be stored for long periods of time; it is, nevertheless, commercially available. It is widely used in organic chemistry for converting alcohols to alkyl iodides and also serves as a powerful reducing agent

The existence of free, gas-phase phosphorus mononitride was confirmed spectroscopically in 1934 by Nobel laureate, Gerhard Herzberg, and coworkers. J. Curry, L. Herzberg, and G. Herzberg made the accidental discovery after observing new bands in the UV region from 2375 to 2992 Å following an...

White phosphorus munition White phosphorus is used in smoke, illumination, and incendiary munitions, and is commonly the burning element of tracer ammunition. White phosphorus munitions are weapons that use one of the common allotropes of the chemical element phosphorus. White phosphorus is pyrophoric (it is ignited by contact with air); burns fiercely; and can ignite cloth, fuel, ammunition, and other combustibles. White phosphorus is used in smoke, illumination

munitions are weapons that use one of the common allotropes of the chemical element phosphorus. Other common names for white phosphorus munitions include WP and the slang terms Willie Pete and Willie Peter, which are derived from William Peter, the World War II phonetic alphabet rendering of the letters WP

Phosphorus pentachloride It is a colourless, water-sensitive solid, although commercial samples can be yellowish and contaminated with hydrogen chloride. PCl_5 finds use as a chlorinating reagent. Phosphorus pentachloride is the chemical compound with the formula PCl_5 . It is one of the most important phosphorus chlorides/oxychlorides, others being Phosphorus pentachloride is the chemical compound with the formula PCl_5 . It is one of the most important phosphorus chlorides/oxychlorides, others being PCl_3 and POCl_3

Phosphorus mononitride High-resolution Extragalactic Molecular Inventory (ALCHEMI) project and reported evidence of phosphorus mononitride in giant molecular clouds within the galaxy Phosphorus mononitride is an inorganic compound with the chemical formula PN . From the Lewis structure perspective, it can be represented with a P-N triple bond with a lone pair on each atom. It is isoelectronic with N_2 , CO , P_2 , CS ,

NO⁺, CN[−] and SiO. Containing only phosphorus and nitrogen, this material is classified as a binary nitride afed5b5e84

The dalton (symbol: Da) is the standard unit that is used for indicating mass on an atomic or molecular scale (atomic mass). The unified atomic mass unit (symbol: u) is equivalent to the dalton. One dalton is one-twelfth of the mass of one atom of carbon-12, and is $1.66053906892(52) \times 10^{-27}$ kg. The amu without the "unified" prefix is an obsolete unit based on oxygen, which was replaced in 1961. afed5b5e84

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