>>**Entry Name: Palladium**

CAS Registry Number: 7440-05-3
Related CAS Registry Numbers(s): 16065-88-6 20561-55-1

Pd

Molecular Formula: Pd
Molecular Weight: 106.42
Accurate Mass: 105.903478
Percentage Composition: Pd 100.00%

(earth's crust). Has no biological role. Fcc struct.
Source/Synthesis: Extracted from Cu and Zn ores. Metal may be obt. by heating $Pd(NH_3)_2Cl_2$ in H_2 → spongy form
Use/Importance: V. large number of applications in catalysis. Also used in H_2 purifn. Electrical, dental, medical applications. Jewellery of some importance. Supported Pd catalyst as Pd/ZnO. Synth. from impregnation of ZnO with $Pd(NO_3)_2$. Highly selective (80%) in dehydrogenation of MeOH to give methyl formate
Physical Description: Grey-white or silvery white malleable, ductile metal. Resists corrosion. Dissolves in oxidising acids (HNO_3 + Cl; conc. H_2SO_4 at 300°). No reaction with hot H_3PO_4, $NaNO_3$. Dissolves anodically in warm acidic $Cl^{(-)}$ solns.
Melting Point: Mp 1554°
Boiling Point: Bp 2970° (2940°)
Solubility: Sol. conc. HNO_3, HCl/Cl_2
Other Data: Sponge form absorbs 1000-1200 vols. of H_2 at amb. temp. Pd with other oxides (SiO_2, Al_2O_3, MnO_2, MgO, Cr_2O_3, TiO_2, ZrO_2, HfO_2, La_2O_3, Nd_2O_3) and unsupported Pd - no HCOOMe produced
Hazard & Toxicity: Non toxic. Finely divided metal is explosion and fire haz.

Aldrich: 26709-0
Fluka: 75981
Sigma: P4769

>>**Variant: Palladium 100**

CAS Registry Number: 15690-69-4

Source/Synthesis: Prod. from Rh (p,4n), ^{103}Rh (d,5n), or proton bombardment of Cd
Other Data: *I* = +0. Decays by orbital electron capture to ^{100}Rh

>>**Variant: Palladium 102**

CAS Registry Number: 14833-50-2

Other Data: *I* = +0

>>**Variant: Palladium 103**

CAS Registry Number: 14967-68-1

Source/Synthesis: Prod. from Pd (n,γ), Rh (d,2n), or ^{103}Rh (p,n)
Other Data: *I* = + 5/2 . Decays by electron orbital capture to ^{103}Rh

>>**Variant: Palladium 104**

CAS Registry Number: 15128-18-4

Other Data: *I* = +0

>>**Variant: Palladium 105**

CAS Registry Number: 15749-57-2

Use/Importance: Isotope used for nmr spectroscopy
Other Data: *I* = + 5/2 ; μ = - 0.642 μ_N. Nmr relative sensitivity (^{1}H=1.00) 1.12 x 10^{-3}; receptivity (^{13}C=1.00) 1.41

>>**Variant: Palladium 106**

CAS Registry Number: 14914-59-1

Other Data: *I* = +0