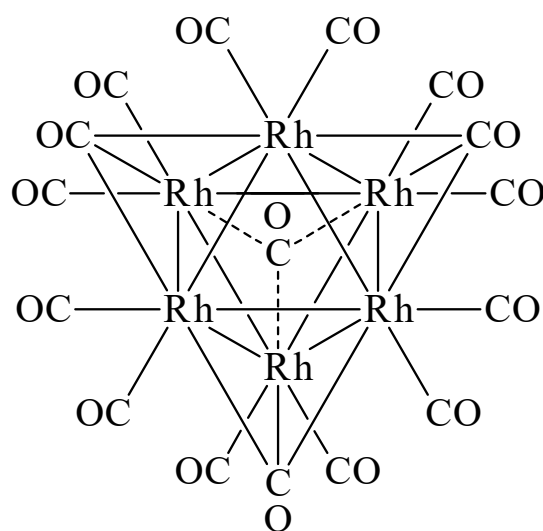




>>Entry Name: Tetra- μ_3 -carbonyldodecacarbonylhexarhodium, 12Cl, 11Cl, 10Cl, 9Cl

Synonym(s): Hexadecacarbonylhexarhodium. Hexarhodium hexadecacarbonyl. Rhodium carbonyl ($\text{Rh}_6(\text{CO})_{16}$)



CAS Registry Number: 28407-51-4

BA0230 BA0040 BA0030 BA0020 BA0010 BA0495 BA0275 BA0430

Molecular Formula: $\text{C}_{16}\text{O}_{16}\text{Rh}_6$

Molecular Weight: 1065.599

Accurate Mass: 1065.35164

Percentage Composition: C 18.03%; O 24.02%; Rh 57.94%

Source/Synthesis: Synth. from $[\text{Rh}(\text{cod})\text{N}_3]_2 + \text{CO}$ in EtOH for 24h, or from $\text{Rh}_2(\text{OAc})_4 + \text{HBF}_4 + \text{CO}$ in propanol at 75-80° for 20h, or from $[\text{RhCl}(\text{CO})_2]_2$ adsorbed onto SiO_2 under CO for 5d

Use/Importance: Catalyses hydroformylation, water gas shift reaction, Fischer-Tropsch reaction, cyclopropanation of alkenes with ethyl diazoacetate, selective carbonylation of alkynes to furan-2(5*H*)-ones and redn. of aromatic nitro compds. to arenes by $\text{CO} + \text{H}_2\text{O}$. Catalyses hydrogenation of alkynes, alkenes; transfer hydrogenation of dienes to monoenes using 2-propanol under CO; redn. of nitropropane to propionitrile; redn. of heteroarenes using water gas, $\text{ArNO}_2 \rightarrow \text{ArNH}_2$; hydrogenation of $\text{C}=\text{C}$ of enones, enals, α,β -unsatd. nitriles by $\text{CO}/\text{H}_2\text{O}$. Catalyst precursor for homologation of MeOH with CO; catalyses aminomethylation of alkenes, H/D exchange in tertiary amines, and CH activation in C_6H_6 under CO with addn. to ketenes, isocyanates, alkynes; catalyst for aldehyde hydrogenation in presence of CO and base. Catalyses oxidn. of ketones to carboxylic acids by O_2/CO , cyclohexane to cyclohexanone and adipic acid, CO to CO_2 ; also oxidn. of phosphines, arsines. Catalyses carbonylation of allyl phosphonates to give amides in the presence of R_2NH . Catalyst for reductive carbonylation (CO/H_2) of aryl azides to 1,3-diaryl ureas. Catalyses reaction of CO with ArNO_2 in the presence of diphenylacetylene to give *N*-aryl-2,3-diphenylmaleimides. Catalyses reductive amination of aldehydes. Catalyses redn. of the heterocyclic ring of quinolines and redn./carbonylation of the heterocyclic ring of isoquinolines

Physical Description: Air-stable violet-brown to black cryst. (CHCl_3)

Melting Point: Mp 238-242°

Other Data: Dec. >200°

Aldrich: 24765-0

Fluka: 83747

References: