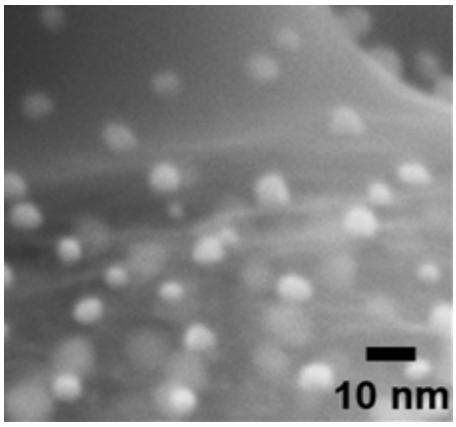
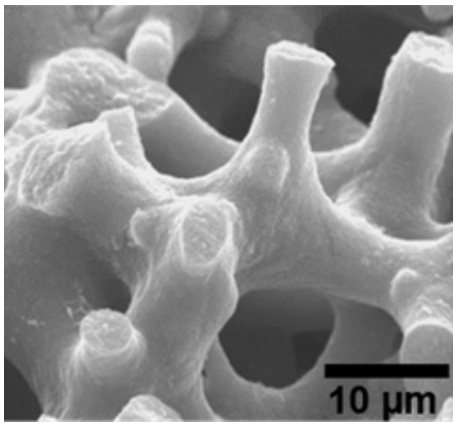
Catalog # P282891

Product #	Formula / Metal Loading	Ave. Metal Particle Size	Appearance	Surface Area (m^2/g)	
				Carbon	Palladium
46-1610	Pd/C (1%)	3.5 nm	Black, Dry Powder	600	150
46-1630	Pd/C (5%)	7 nm	Black, Dry Powder	600	70
46-1660	Pd/C (1%)	-	Black, Dry Pellet	600	130



Dispersion



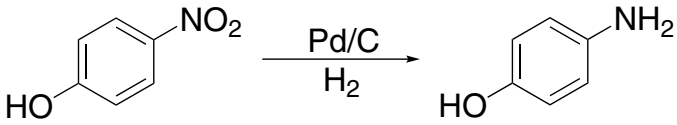
Macro + Meso Support Structure

Pellets 2-3 mm diameter

The enhanced dispersion of these Pd particles on the high purity carbon support (in both powder and pellet forms) enables the catalysts' operation under mild conditions (from RT to 60 °C) with higher selectivity and minimum unwanted side reactions.

One of the key differences of the Pd/C catalyst in pellet form (46-1660) is its more accessible surface area. This product has macroporosity (10 micron) and mesoporosity (6 nm) which makes carbon considerably lower in density (0.27 g/mL versus 0.5 -0.8 g/mL) and lighter than other carbon supports. This macroporosity allows palladium to be distributed throughout the carbon support instead of just on the outside. As a result, the metal surface area is much greater (130 m^2/g vs 20 m^2/g) and has a much smaller particle size (3.5 nm vs 40 nm).

Model Hydrogenation Reactions



In the standard catalytic conversion of 4-nitrophenol to 4-aminophenol by hydrogenation, these catalysts show approximately sixty-fold more activity compared to a commercial palladium-on-activated-carbon. When powdered, the catalysts are three-fold more active than a comparable commercial palladium-on-carbon powder.

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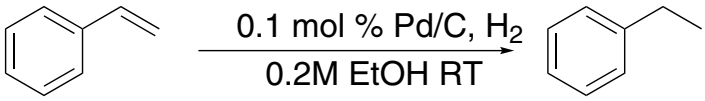
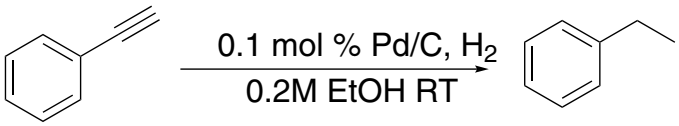
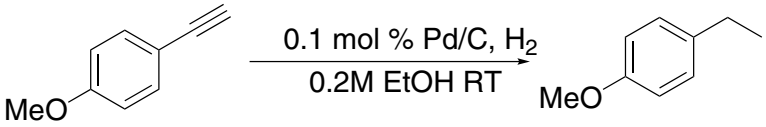


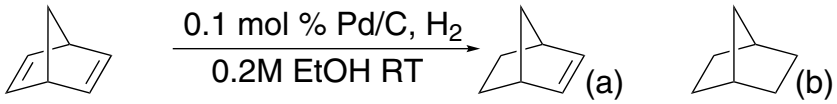
These catalysts are four times more active in hydrogenation of **styrene**, completing 100% conversion in 1 hour. The competitive catalysts took 4 hours to achieve 100% fully hydrogenated product.



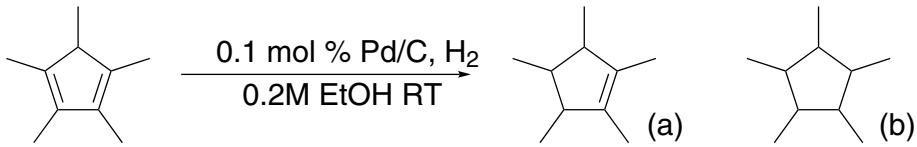
Catalysts show four times better activity to complete 100% conversion of **Phenylacetylene** into ethyl benzene.



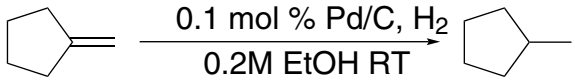
Catalysts convert **Ethynylanisole** to ethyl anisole six times faster while still achieving 100% conversion.



The hydrogenation of **Norbornadiene** highlights these catalysts' very high selectivity. After 2 hours of reaction, the catalysts achieve 100% conversion to Product (a), Norbornene.



Catalysts have the ability to hydrogenate **pentamethylcyclopentadiene** all starting material therefore producing (a) and (b).



Catalysts can convert 78% of the **Methylenecyclopentane** in 24 hours.

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