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(54) Title: A SELECTIVE HYDROGENATION CATALYST AND METHODS OF MAKING AND USING SAME

(57) Abstract: A method for producing a selective hydrogenation catalyst for hydrogenating a highly unsaturated hydrocarbon to an unsaturated hydrocarbon comprising contacting an inorganic catalyst support with a chlorine-containing compound to form a chlorided catalyst support and adding palladium to the chlorided catalyst support to form a supported-palladium composition. A selective hydrogenation catalyst for hydrogenating a highly unsaturated hydrocarbon to an unsaturated hydrocarbon formed by the method comprising contacting an inorganic catalyst support with a chlorine-containing compound to form a chlorided catalyst support and adding palladium to the chlorided catalyst support to form a supported-palladium composition. A method of selectively hydrogenating a highly unsaturated hydrocarbon to an unsaturated hydrocarbon comprising contacting the highly unsaturated hydrocarbon with a selective hydrogenation catalyst composition produced by contacting an inorganic catalyst support with a chlorine-containing compound to form a chlorided catalyst support and adding palladium to the chlorided catalyst support to form a supported-palladium composition.

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