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(54) Title: PROCESS FOR INCREASING COBALT CATALYST HYDROGENATION ACTIVITY VIA AQUEOUS LOW TEMPERATURE OXIDATION

(57) **Abstract:** An aqueous low temperature oxidation (ALTO) process wherein a catalyst or catalyst precursor constituted of a solids support, or powder component, and a metal, or metals component, inclusive of cobalt, is oxidized, reduced and rendered catalytically active for conducting carbon monoxide hydrogenation reactions. The cobalt catalyst or cobalt catalyst precursor is thus contacted at low temperature with an oxidant in the presence of water (e.g., water to which an oxidant is added), sufficient to oxidize the cobalt metal, or metals component of the catalyst or catalyst precursor. On reduction, the hydrogenation activity of the cobalt catalyst is increased. All or a portion of the cobalt metal of the catalyst precursor is oxidized to form a Co^{2+} cationic or oxoanionic species at least during the initial phase of the reaction. On reduction, as may be produced by contact and treatment of the oxidized catalyst or catalyst precursor with hydrogen, or a hydrogen-containing gas, the catalytic metal, or metals component of the catalyst, is reduced to metallic metal, e.g., Co, and the catalyst thereby activated, and/or the catalytic activity increased.