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ACTION

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(54) Title: HYDROTHERMALLY STABLE HIGH PORE VOLUME ALUMINUM OXIDE/SWELLABLE CLAY COMPOSITES AND METHODS OF THEIR PREPARATION AND USE

(57) Abstract: Porous composite particles are provided which comprise an aluminum oxide component, e.g., crystalline boehmite, and a swellable clay component, e.g., synthetic hectorite, intimately dispersed within the aluminum oxide component at an amount effective to increase the hydrothermal stability, pore volume, and/or the mesopore pore mode of the composite particles relative to the absence of the swellable clay. Also provided is a method for making the composite particles, agglomerate particles derived therefrom, and a process for hydroprocessing petroleum feedstock using the agglomerates to support a hydroprocessing catalyst. In said composite particles: (A) the alumina oxide component comprises at least 75 wt. % alumina, at least 5 wt. % of which alumina is in the form of crystalline boehmite, gamma alumina derived from the crystalline boehmite, or mixtures thereof; (B) the swellable clay component is dispersible prior to incorporation into the composite particle and present in the composite particles at an amount (i) of less than 10 wt. %, based on the combined weight of the aluminum oxide component and the swellable clay component.