

ABSTRACT OF THE DISCLOSURE

TITLE OF THE INVENTION:

CARBON DIOXIDE ADSORBENTS CONTAINING MAGNESIUM OXIDE,
SUITABLE FOR USE AT HIGH TEMPERATURES

Adsorption of carbon dioxide from gas streams at temperatures in the range of 300 to 500 °C is carried out with a solid adsorbent containing magnesium oxide, preferably promoted with an alkali metal carbonate or bicarbonate so that the atomic ratio of alkali metal to magnesium is in the range of 0.006 to 2.60. Preferred adsorbents are made from the precipitate formed on addition of alkali metal and carbonate ions to an aqueous solution of a magnesium salt. Atomic ratios of alkali metal to magnesium can be adjusted by washing the precipitate with water. Low surface area adsorbents can be made by dehydration and CO₂ removal of magnesium hydroxycarbonate, with or without alkali metal promotion. The process is especially valuable in pressure swing adsorption operations.

(Figure 1)