ABSTRACT

GAS STORAGE AND DISPENSING SYSTEM WITH MONOLITHIC CARBON ADSORBENT

A fluid storage and dispensing apparatus, including a fluid storage and dispensing vessel having an interior volume, in which the interior volume contains a physical adsorbent sorptively retaining a fluid thereon and from which the fluid is desorbable for dispensing from the vessel, and a dispensingassembly coupled to the vessel for dispensing fluid from the vessel. The physical adsorbent includes a monolithic carbon physical adsorbent that is characterized by at least one of the following characteristics: (a) a fill density measured for arsine gas at 25° C and pressure of 650 torr that is greater than 400 grams arsine per liter of adsorbent; (b) at least 30% of overall porosity of the adsorbent including slit-shaped pores having a size in a range of from about 0.3 to about 0.72 nanometer, and at least 20% of the overall porosity including micropores of diameter < 2 nanometers; and (c) having been formed by pyrolysis and optional activation, at temperature(s) below 1000° C, and having a bulk density of from about 0.80 to about 2.0 grams per cubic centimeter.

Fig. 1