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论文

真空吸气剂PdO 粉末的微观结构

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摘要：

为了研究真空多层绝热储罐中PdO 粉末对H2 的吸附机理,利用ASAP2010 型物理吸附仪,在77 K 下对 PdO 粉末进行高纯N2 吸附和脱附,分析其微观结构. 结果表明: PdO 粉末的吸附等温线属于第郁类吸附等温线,起始部分满足BET 二常数公式;在吸附等温线中间段,发生毛细孔凝聚,吸附量急剧增加;吸附等温线和脱附等温线之间存在着滞后环,当相对压力达到0. 9 时,出现吸附饱和现象; PdO 粉末的固体孔结构多为中孔,孔结构是两端都开放的管状毛细孔, PdO 粉末比表面积为14. 669 m2 / g,孔容积为0. 030 984 cm3 / g,孔径范围为1. 700 ~20. 000 nm,平均孔径为8. 449 nm.

关键词： 微观结构　吸气剂　吸附等温线　比表面积　孔容积　孔径分布

Microstructure Analysis of Vacuum Getter PdO Powder

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Abstract:

In order to study the H2 adsorption mechanism of PdO powder in the vacuum multilayer insulated tank, adsorption and desorption of high purity N2 with PdO powder were carried out at 77 K using a Micromeritics ASAP2010 automated instrument, and the microstructure of the PdO powder was analyzed. Experimental results showed that the N2 absorption isotherm of the PdO powder belonged to type 郁, and the initial stage of the isotherm could be explained by two-constant BET (Brunauer-Emmett-Teller) equation. An abrupt increase in the adsorbance occurred to the middle part of the adsorption isotherm because of capillary condensation. There was a hysteresis loop between the adsorption isotherm and the desorption isotherm. The saturated absorption was achieved when the relative pressure of N2 arrived at 0. 9. The PdO powder was mainly of mesoporous structure. The pores were tubular in shape and open at both ends. The specific surface area of the PdO powder was 14. 669 m2 / g; the total pore volume was 0. 030 984 cm3 / g; and the pore size, with a mean size of 8. 449 nm, was distributed in the range of 1. 700 to 20. 000 nm,

Keywords: microstructure　getter　adsorption isotherm　specific surface area　pore volume　pore size distribution

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