



Fig. 1 Volumetric apparatus for measurement of adsorption & desorption velocity of water on adsorbents..

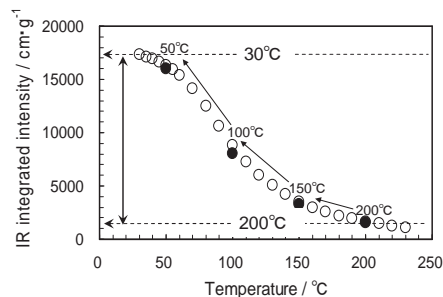


Fig. 2 Temperature dependence of IR integrated intensity of adsorbed H₂O at 10 Torr on NaY zeolite, O: 1st, ●: 2nd.



Fig. 3 special IR cell.

Content:

The utilization of waste heat for the regeneration of desiccant material in a desiccant dehumidifier system is one of the best alternatives because regeneration cost is eliminated. However, it is only suitable for equipment which can exhaust waste heat at temperature 60 °C and 140 °C. Usually, these types of equipment are only available in factories or supermarkets.

We develop estimation method of water adsorbents (desiccant materials) and propose two kinds of estimation methods for water adsorption.

- (1) Estimation of adsorption and desorption velocity of water on adsorbents by volumetric apparatus (Fig. 1).
- (2) Estimation of temperature behavior of adsorbed water on adsorbents by IR spectroscopy.

In particular, temperature dependence (Fig. 2) of adsorbed water on desiccant can be gotten easily by using special IR cell (Fig. 3). The profile was corresponding to the equilibrium adsorption data.

Keywords: water adsorbent, adsorption velocity,
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