

Absorber of ammonia and hydrogen sulphide on the basis of active carbon and the investigation of its properties

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Abstract

The subject of this research is to study the influence of the nature of the porous structure of active carbon carrier – absorber for ammonia and hydrogen sulfide are intended for use in gas technology, and the rationale for the composition of the active component. The relevance of the study determined that in industrial conditions obtaining active coals the parameters of their porous structure can vary within certain limits, even in full compliance with the modes of the technological process. This fact has a significant impact on the quality of chemical absorbers obtained on their basis. The activity of the absorbent for the ammonia largely depends on the cation of the metal, which forms with it a compound. The highest activity for ammonia are samples of absorbers with additives of salts of cobalt, copper, zinc. The required value of the sorption capacity for hydrogen sulfide is provided only by the content of salts of copper(II). As a carrier of the absorber was considered a series of granular activated carbon industrial production having different porosity. It is established that a marked increase in the dynamic activity of the absorber for ammonia and hydrogen sulfide is observed, since the content of the additive copper(II) sulfate more than 13%. The optimal volume of sorption pores of a carrier of active carbon AG-5, providing the absorber of ammonia and hydrogen sulfide with high sorption properties should be in the range 0.50-0.54 cm³/g. Electron microscopy shows the relationship between the particle size of the active Supplement, copper(II) sulfate on the surface of the carrier and the characteristics of the porous structure of active carbon carrier. Surface studies of cross sections of pellets of the two samples of absorbent obtained on the basis of active carbons, wherein the limit volume of sorption space it is shown that the particle size of the active additives on the surface of active carbon with $W_0 = 0.54 \text{ cm}^3/\text{g}$ to about 2 times less than on the surface of active carbon with $W_0 = 0.48 \text{ cm}^3/\text{g}$.

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