JWARP> Vol.1 No.4, October 2009

OPEN ACCESS

Adsorption Capacity for Phosphorus Comparison among Activated Alumina, Silica Sand and Anthracite Coal

PDF (Size:200KB) PP. 260-264 DOI: 10.4236/jwarp.2009.14031

Author(s)

Junling WANG, Yajun ZHANG, Cuimin FENG, Junqi LI, Guibai LI

ABSTRACT

Experimental researches on adsorptive capacity of activated alumina, silica sand and anthracite coal for phosphorus were conducted. Results showed that performances of three filter media were all in line with Langmuir isotherm, and activated alumina adsorptive performance was much better than silica sand and anthracite coal for phosphorus removal. The adsorptive capacity of activated alumina, silica sand and anthracite coal for phosphorus was 3333μg/g, 49μg/g and 100μg/g respectively. Activated alumina displayed adsorp-tive function well for phosphorus, because its inner porosity, specific surface area and surface isoelectric pH value were all higher than those of other two filter media. While activated alumina was used as filter material in water treatment process, phosphorus would be removed strongly because of adsorptive characteristic of activated alumina.

KEYWORDS

Activated Alumina, Filtration, Adsorptive Capacity, Phosphorus Removal

Cite this paper

J. WANG, Y. ZHANG, C. FENG, J. LI and G. LI, "Adsorption Capacity for Phosphorus Comparison among Activated Alumina, Silica Sand and Anthracite Coal," *Journal of Water Resource and Protection*, Vol. 1 No. 4, 2009, pp. 260-264. doi: 10.4236/jwarp.2009.14031.

References

[1] M. J. Lehtola, I. T. Miettinen, T. Vartiainen, T. Myllykangas and P. J. Martikainen, "Microbially available organic carbon, phosphorus and microbial growth in ozonited drinking water," Water Research, Vol. 35, No. 7, pp. 1635–1640, July 2001.

[2] J. Q. Sang, G. Z. Yu, X. H. Zhang and Z. S. Wang, "Re-lation between phosphorus and bacterial regrowth in drinking water," Chinese Journal of Environmental Sci-ence, Vol. 24, No. 4, pp. 81–84, April 2003.

[3] A. Dietze, U. Wiesmann and R. Gnirss, "Phosphorus removal with membrane filtration for surface water treat-ment," Water Science and Technology: Water Supply, Vol. 3, No. 5, pp. 23–30, May 2003.

[4] W. Nishijima, E. Shoto and M. Okada, "Improvement of biodegradation of organic substance by addition of phosphorus in biological activated carbon," Water Sci-ence and Technology, Vol. 36, No. 12, pp. 251–257, De-cember 1997.

[5] D. L. Jiang, and X. J. Zhang, "Relationship between phosphorus and bacterial regrowth in drinking water," Chinese Journal of Environmental Science, Vol. 25, No. 5, pp. 57–60, May 2004.

[6] D. L. Jiang and X. J. Zhang, "Phosphorus in drinking water and it's removal in conventional treatment proc-ess," Chinese Journal of Environmental Science, Vol. 24, No. 5, pp. 796–801, May 2004.

[7] Q. Y. Feng, "Study on advanced treatment technique of phosphorus removal in drinking water," Master Disserta-tion, Beijing University of Technology, Beijing, 2007.

• Open Special Issues
• Published Special Issues
• Special Issues Guideline

JWARP Subscription

Most popular papers in JWARP

About JWARP News

Frequently Asked Questions

Recommend to Peers

Recommend to Library

Contact Us

Downloads:	402,262
Visits:	1,010,997

Sponsors, Associates, a
Links >>

[8] P. Ning, C. L. Deng, H. P. Pu and L. M. Niu, “Adsorption of phosphate from water with activated alumina,” Non-ferrous metal, Vol. 54, No. 1, pp. 37–39, January 2002.

[9] N. B. Hua and Y. Z. Ruan, “Microstructures of active alumina reproduction by heat-treatment method,” Journal of Fuzhou University (Natural Science Edition), Vol. 35, No. 1, pp. 81–84, January 2007.

[10] H. Xie, W. B. Jia and Z. G. Wu, , “Performance of acti-vated aluminum oxide as a fluorine-removal agent,” Journal of Huazhong University of Science and Tech-nology (medical sciences), Vol. 34, No. 5, pp. 644–646, May 2005.