

FLUORO-SORB® 200 ADSORBENT

SORPTION OF DISSOLVED PAH COMPOUNDS

FLUORO-SORB® 200 Adsorbent has great potential as a filtration media for treating PFAS contaminated groundwater and drinking water. There is also interest in understanding FLUORO-SORB 200 Adsorbent's ability to adsorb other co-contaminants, such as polycyclic aromatic hydrocarbon (PAH) compounds. The University of Texas at Austin conducted a set of laboratory tests to determine PAH sorption coefficient, k_d , values for FLUORO-SORB 200 Adsorbent. Depending upon the sorption potential of the selected PAHs, 20mg to 100mg of FLUORO-SORB 200 Adsorbent was used for each measurement. After adding the media, the bottle was filled with spiked water solution until complete full to minimize the headspace. The bottles were then tumbled for approximately 48 hours. At the end of the experiment, the bottles were removed from the tumbler and set still for 30 minutes to let the media settle down. Preliminary tests showed that this was enough time to get clear water samples. One millimeter of the supernatant was transferred to 2 mL auto-sampling vials and analyzed by HPLC immediately. Three replicates and two blanks were prepared for each concentration. The blank concentration accounts for the loss of the sorbates during the experiment. PAH sorption coefficient, k_d , values were determined for FLUORO-SORB 200 Adsorbent relative to four PAH compounds: naphthalene, anthracene, pyrene, and benzo(a)pyrene.

The PAH partition coefficients were then correlated to published PAH octanol-water partition coefficient, k_{ow} , values. It shows a high correlation ($r^2 > 0.99$) between FLUORO-SORB 200 Adsorbent $\log k_d$ and $\log k_{ow}$ of the PAH compounds. The FLUORO-SORB 200 Adsorbent k_d of PAH compounds can be estimated by using the following equation where units are in L/kg:

$$\text{Log } k_d = 1.10 * \text{Log } k_{ow}$$

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UPDATED: SEPTEMBER 2025

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FORM:FS-111FLUORO-SORB200ADSORBENTSORPTIONOFDISSOLVEDPAHCOMPOUNDS_AM_EN_202509