

[ABS09]

The Influence of Higher Air Flows on the Adsorption Capacity and Breakthrough Time of Carbon

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Air flow rate through canisters is an important factor for the adsorption capacity and breakthrough time of a canister. Breathing flow rates during actual work are in most cases much higher than the flow rates used in EN standards. Is it really needed to perform experiments on canisters with higher air flows, like some other standards prescribe and most likely will be adopted in some new standards, or is it sufficient to use mathematical calculations instead? Therefore TNO Defence, Security and Safety performed a pilot study to make a start with the determination of the influence of the breathing flow rate on the adsorption capacity and the breakthrough time. The experiments were done in a high precision diameter tube with loose carbon from one type of canister. Three different gases were used to perform these experiments, under equivalent conditions, except for the flow. These air flows through the high precision tube were corresponding with flows of 30, 60, 120, 180 and 240 litres per minute through a canister. This presentation will describe the test-setup, show the results so far and show the relation between the flow and the capacity in these experiments.