ABSTRACT

Absorptive materials are widely used in the exhaust systems of vehicles as noise damping elements, especially at the mid and high frequency ranges. The damping properties of such materials are depending on the material type, the material packing density, and the chamber (to be filled with the material) geometries. For this paper specific investigations on three of the nowadays most commonly used absorbing materials in the exhaust systems (DBW PowerTex, DBW Biosil and HakoTherm), with a perforated through flow chamber silencer and perforated multi chamber silencers were performed; to investigate the influence on chamber and quarter wave resonances by adding the absorbing material, changing of the material packing densities and using different absorbing materials with and without mean flow. Acoustic simulation models for the absorptive materials were applied and verified by experiments. Results are presented in the investigated frequency range up to 1.2 kHz.