

Proposal for a technical presentation/paper on the subject of tyre noise 15th May 2019 v1

Title

Doughnuts all sound the same so why don't tyres?

Abstract

Tyres are complex systems not black doughnuts which, depending on the Chef, tend to be both isotropic and homogenous.

Noise transmission is controlled by Mass, Stiffness and Damping of a system. Tyre stiffness is controlled by inflation pressure. Tyre building techniques are not that different, and tyres tend to be of similar mass; why then are some so much noisier? The tread compound, pattern and road surface texture produce responses that differ from tyre to tyre.

Data is presented that compares laboratory road wheel derived radiated noise, standard pass-by-noise test results and internal tyre cavity noise and vibration levels. Cabin noise is shown to closely correlate with tyre cavity noise. The effect of damping foam, applied to the tyre liner, is shown to be identical to the difference between the best and worst tyre.

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