

## Application of porous materials in the automotive industry when subject to multi-dimensional constraints

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The automotive industry purchases billions of dollars of noise and vibration (N&V) control materials and that amount is growing. Porous materials make up a significant portion of those noise and vibration materials and their use will likely grow even faster as the industry moves towards electric vehicles. Though this is a very exciting market for porous materials, there are a significant number of constraints that have to be considered before a promising new material goes into production. Of course, cost, weight, and N&V performance are the primary constraints, but there are others that are not as obvious. Those include engineering constraints such as manufacturability and physical properties. They also include commercial constraints such as the strategic goals of the auto manufacturer's purchasing department among many others. The process involved with introducing a new material to an automobile manufacturer will be discussed and the constraints that must be satisfied will be considered.