

1116-K5-2532      **Robert W Fathauer\*** ([tessellations@cox.net](mailto:tessellations@cox.net)). *Spatially-Developing Fractal Gaskets*.

A wide variety of fractal gaskets have been designed from self-replicating tiles (reptiles), both regular reptiles (all of the constituent tiles being congruent) and irregular reptiles (all of the constituent tiles being similar but not congruent). In contrast to the Sierpinski Carpet and Sierpinski Triangle, these gaskets generally have fractal outer boundaries, and the holes in them generally have fractal boundaries. Novel solids have been created by spatially developing these gasket fractals over the first several generations. Successive generations are separated in a direction orthogonal to the plane of the gasket, and simple polygons are used to connect the external and internal edges of the gaskets. Since all of the faces in the resulting structures are polygonal, these solids can be described as polyhedra. By varying the spacing between generations, the form of these polyhedra can be varied, creating three-dimensional constructs evocative of architectural forms such as castles and geological forms such as rock spires or mesas. Furthermore, construction rules can be employed that result in varied height within a given generation of a gasket, allowing an even wider variety of three-dimensional forms. (Received September 22, 2015)