

ABSTRACT OF THE DISCLOSURE

A STRUCTURED ABRASIVE ARTICLE

REPLACEMENT SHEET

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This invention relates to an abrasive article comprising a backing having a composite abrasive bonded thereto. Two major concerns associated with abrasive articles, particularly in fine grade articles, are loading and product consistency. Loading is a problem caused by the filling of the spaces between abrasive grains with swarf (i.e., material removed from the workpiece being abraded) and the subsequent build-up of that material. If the abrasive article is made via a conventional process, the adhesive or binder system can flow before or during curing, thereby adversely affecting product consistency. This invention provides a coated abrasive article comprising a backing bearing on at least one major surface thereof abrasive composites comprising a plurality of abrasive grains dispersed in a binder. The binder serves as a medium for dispersing abrasive grains, and it may also bond the abrasive composites to the backing. The abrasive composites have a predetermined shape, e.g., pyramidal. The dimensions of a given shape can be made substantially uniform. Furthermore, the composites are disposed in a predetermined array. The predetermined array can exhibit some degree of repetitiveness. The repeating pattern of a predetermined array can be in linear form or in the form of a matrix. The coated abrasive article can be prepared by a method comprising the steps of: (1) introducing a slurry containing a mixture of a binder and a plurality of abrasive grains onto a production tool; (2) introducing a backing to the outer surface of the production tool such that the slurry wets one major surface of the backing to form an intermediate article; (3) at least partially curing or gelling the binder before the intermediate article departs from the outer surface of the production tool to form a coated abrasive article; and (4) removing said coated abrasive article from the production tool.

FIGURE 1