

Features and Benefits of Bradex® Abrasive Brushing Tools

by Abtex Corporation

Abtex Corporation manufactures Bradex abrasive filament brushing tools. Since 1979 we have focused exclusively on the formatting of abrasive filaments in various brush configurations. This concentration has afforded us a tremendous understanding of the capabilities and applications of abrasive filament brushing tools. We have also developed the necessary process flexibility in order to modify the characteristics of the brushing tool to optimize it for a specific application.

Abrasive filaments have been produced for the past 25 years. Composed of heat stabilized nylon and abrasive grain, they are co-extruded into a monofilament. The result is a flexible, homogeneous structure that has, by weight, approximately 30% abrasive loading. Abrasive grains are exposed on all surfaces of the filament. Abrasive action occurs on both the tip of the filament as well as the lateral surface. In application, the side of the filament is often drawn across the intended surface, functioning much like a flexible file. The majority of applications are deburring. While the inherent flexibility of the filament makes it ideal for finishing uneven surfaces, it also serves to limit its cutting ability. While they do remove material, it tends to be preferentially towards burrs and sharp edges. Desirable applications are those where burr removal and/or edge radiusing is needed without negatively impacting the dimensional tolerances of the part.

Variables of abrasive filaments include filament diameter, abrasive grain type, abrasive grain size and abrasive loading. As seen from the following chart, filament diameter increases as abrasive grain size increases. This relationship is necessary in order to effectively bind the abrasive. Due to filament flexibility, there is no direct relationship between other abrasive formats (sandpaper, non-woven, bonded) grit size and abrasive filaments. In choosing a filament diameter, the rule of thumb is that smaller is better. Smaller filaments bend, and recover more easily, making them less susceptible to fracturing. Also, more filaments can occupy a given area, thus putting more abrasive in contact with the workpiece. Grit size choice is largely a function of the particular application. However, the majority fall between 80 and 180 with 120 being the most widely applied. Silicon carbide and aluminum oxide grains are both available. Silicon carbide filaments appear gray in color while aluminum oxide has a brownish orange appearance. Silicon carbide is, by far, most commonly applied with a loading of 30% by weight.

Filament Dia.	.060"	.045"	.040"	.028"*	.035"	.030"	.022"	.018"
Grit Size	46	60	80,120	120	180	240	320	500

* most popular

Bradex brushes are constructed of a tough, polyurethane backing into which “looped”, abrasive filaments are anchored. The “looping” of filaments in the backing makes fiber pull-out virtually impossible. The even, and controlled, distribution of filaments across the face of the brush is unique to Bradex brushes. This “full face” style of brush provides a greater filament density than competitive products. This offers longer life and more effective finishing.

The successful application of abrasive filament brushing tools is a function of matching the attributes of the brush to the specific application. Filament diameter, grit size, filament density (number of fibers in a given area) and filament length are all brush construction variables. A change in any one will affect the way the brush performs and could mean the difference between successful and unsuccessful application of the tool. The “one size fits all” strategy is not effective in the application of abrasive filament brushing tools.

Abtex’s manufacturing process is extremely flexible. Virtually any aspect of the brush can be independently altered to suit a specific application. For those applications which we are currently serving, we have designed specific brushes, with their own attributes, to optimize function and economics. For new applications, we work closely with the customer in order to provide the most effective and efficient brush for their needs.

In summary, Abtex has 20 years experience in the manufacture and application of abrasive filament brushing tools. Through an extremely flexible manufacturing process, we can optimize a brush for a specific application. The customer is thus ensured that Bradex brushes will be the most effective and efficient for their needs.