

measurement (or uniform or superior in one direction, or uniform or superior in two orthogonal directions), and the like.

These improvements are sought in areas where composite articles are used, e.g. equipment for semiconductor manufacture, in aircraft parts, in automotive parts, in gaskets, in seals, and the like.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 shows schematically some mattes of the known art.

Figure 2 shows elevation views of a matte and two composite articles according to the present disclosure.

SUMMARY OF THE INVENTION

Disclosed herein is an article, wherein said article is semiconductor manufacture component comprising:

- (a) about 70 wt% to about 90 wt% of a thermoplastic polymer;
- (b) about 10 to about 30 wt % of chopped carbon fiber;
- (c) .001 to about 10 % of a sizing agent selected from the group consisting of polyvinylpyrrolidone, polyvinyl alcohol, copolyvinyl alcohol, copolyvinly acetate, copolyvinly alcohol-acetate and sodium carboxymethyl cellulose, optionally further comprising (d) less than 2 000 nanomoles per gram of sodium, potassium, calcium, and aluminum, combined; wherein the wt% in each of (a), (b) and (c) is based on the total weight of the component.

In one aspect of the invention, there is provided an article, wherein said article is a semiconductor manufacture cleaning component comprising:

- (a) 70 wt% to 90 wt% of a thermoplastic polymer comprising copoly(tetrafluoroethylene-perfluoro[propylvinyl ether]);
- (b) 10 to 30 wt % of chopped carbon fiber;
- (c) .001 to 10 % of a sizing agent selected from the group consisting of polyvinylpyrrolidone, polyvinyl alcohol, copolyvinyl alcohol, copolyvinyl acetate, copolyvinyl alcohol-acetate and sodium carboxymethyl cellulose, optionally further comprising (d) less than 2,000 nanomoles per gram of fiber, of sodium, potassium, calcium, and aluminum, combined; wherein the wt% in each of (a), (b) and (c) is based on the total weight of the component; and wherein said thermoplastic polymer (a), said chopped carbon fiber (b) and said sizing agent (c) are a mixture present in the form of a densified matte.

DETAILED DESCRIPTION OF THE INVENTION

Disclosed herein is a method for making a composite article of density D_c comprising polymer and fibers. The method disclosed herein comprises providing a matte comprising: about 1 to about 91 weight percent fiber and about 9 to about 99 weight percent of said polymer. The matte has a density of D_m , and is less than D_c , wherein said polymer has a softening