

Claims:

1. A chemical-mechanical polishing composition comprising:
liquid carrier,
about 0.5 to 12 weight percent abrasive particles comprising highly irregular-shaped fused silica abrasive particles, wherein at least half of the surfaces of the highly irregular shaped fused silica are non-rounded, non-smooth, bumpy, or rough, and have a cornered or angular edge,
the composition further comprising one or more of a metal ion accelerator, stabilizer, nickel complexing agent, chelating agent, and pH control agent, and
optionally, an oxidizing agent.
2. The polishing composition of claim 1 wherein the highly irregular-shaped fused silica abrasive particles have an average particle size in a range from 50 to 2000 nanometers.
3. The polishing composition of claim 1 wherein the highly irregular-shaped fused silica abrasive particles have an average particle size in a range from 100 to 1000 nanometers.
4. The polishing composition of claim 1, further comprising abrasive particles selected from the group consisting of silicon nitride, titanium oxide, thorium oxide, alumina, yttria, zirconia, diamond, and ceria.
5. The polishing composition of claim 1 further comprising colloidal silica particles.
6. The polishing composition of claim 5 wherein the polishing composition contains:
from 10 to 40 parts by weight of the highly irregular-shaped fused silica abrasive particles, and
from 60 to 90 parts by weight colloidal silica particles,
based on 100 parts by weight total abrasive particles in the slurry.
7. The polishing composition of claim 5 wherein the polishing composition contains,
from 0.5 to 10 weight percent of the highly irregular-shaped fused silica abrasive particles, and
up to 25 weight percent colloidal silica particles,
based on total weight slurry.

8. The polishing composition of claim 5 wherein the polishing composition contains at point-of-use:

from 0.5 to 5 weight percent of the highly irregular-shaped fused silica abrasive particles, and

from 1 to 10 weight percent colloidal silica particles,
based on total weight slurry.

9. The polishing composition of claim 5 wherein the polishing composition is a concentrate and contains:

from 5 to 12 weight percent of the highly irregular-shaped fused silica abrasive particles, and

from 10 to 50 weight percent colloidal silica particles,
based on total weight slurry.

10. The polishing composition of claim 1 having a pH below about 3.