









# White Paper

is used when moderate roughness values are acceptable, which means numerous surface scratches and other irregularities remain. These can cause many of the problems mentioned in the first paragraph of this section. For example, these irregularities can cause areas of differing electrical potential due to surface stresses, which become sites where corrosion begins.

Electropolishing is an electrolytic process (the reverse of plating) combining electric current and chemicals to remove metal without smearing or folding. The peaks of burr, folds, inclusion and other anomalies of a metal surface are dissolved more quickly than valleys as a result of the greater concentration of current over the protuberances. This electrochemical action produces a smoothing and rounding of the surface profile, resulting in irregularities as small as 0.01 micrometer (0.04 micro-inch). It prevents or reduces most of the problems associated with rougher metal surfaces. The inherent benefits of electropolishing subsequent to mechanical polishing include:

- Removal of surface occlusions
- Removal of inclusions and entrapped contaminants such as lubricants and grit particles
- Cleaner surface of the “wet contact” areas
- Reduced surface area/chemical reactivity for less absorption and adsorption
- Less contamination and build-up of process chemicals on a surface
- Superior surfaces for cleaning and sterilization
- Elimination of localized corrosive cells (galvanic differences) remaining after mechanical polishing
- Resultant passivated surfaces enhance corrosion resistance
- High luster reflective appearance
- Reduced surface friction

## References

1. Wikipedia, [http://en.wikipedia.org/wiki/Surface\\_finish](http://en.wikipedia.org/wiki/Surface_finish)
2. Degarmo, E. Paul; Black, J T.; Kohser, Ronald A. (2003), Materials and Processes in Manufacturing (9th ed.), Wiley, ISBN 0-471-65653-4.