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Eight Good Reasons for Mechanical Plating

Mechanical plating is an effective means of applying zinc, tin, aluminum or other ductile metals or mixtures thereof to metal substrates. It has a number of advantages over conventional plating and coating processes.

- The most important reason for mechanical plating is the assurance of product reliability through **the elimination of hydrogen embrittlement**. Mechanical plating is the method preferred by many engineers for hardened fasteners and stressed components.
- **Elimination of lengthy pre-plating and post-plating baking cycles**. Recently, the ASTM has been developing standard practices recommending baking cycles before and after electroplating to prevent hydrogen embrittlement. For extremely hard parts, baking cycles can be quite extensive - in some cases, as long as 40 hours.
- **Mechanical plating is the best way to avoid the extra expense of long baking cycles**. Customers can visually confirm that parts have been mechanically plated - something that cannot be done to confirm baking cycles. Mechanical plating has a matte finish easily distinguishable from electroplating's bright finish.
- The ability to plate parts which tangle; the glass impact media used in the process tends to prevent parts from tangling. This mechanical plating process characteristically makes this technology an ideal choice for plating hardened steel springs.
- Mechanical plating has **the ability to plate sintered metal parts** (powder metallurgy) without costly impregnation.
- **The ability to plate flat parts**; the media prevents flat parts from masking one another, making sure that all surfaces are plated. This makes mechanical plating an ideal process for plating flat stampings and washers.
- Because mechanical plating consumes all the chemistry in each process cycle, there is no build-up of contamination in the bath. This assures users of **long-term product and process consistency**.
- The ability to apply leachant-sealants after the chromate conversion coating to enhance the corrosion protection of the process with little incremental expense. **A zinc deposit of 0.0004" with a chromate and a leachant-sealant topcoat will get over 500 hours of salt spray**; at 0.001" this process will deliver over 1000 hours. This can also be achieved with the RoHS Compliant **Hyperguard™ 326™** and a Sealer, at 0.001" of Zinc.
- **Attractive economics for coating thicknesses above 0.0003"**. This is due primarily to the fact that in mechanical plating the process for thick coatings is only slightly longer than the cycle for thin coatings (unlike electroplating, where the plating time is directly proportional to the plating thickness). The cost of additional plating thickness in mechanical plating is only slightly more than the cost of the plating metal.



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Seven Good Reasons for Mechanical Galvanizing

Mechanical Galvanizing is an extension of the well-established mechanical plating (peen plating) technology. The process is nearly identical to mechanical plating except that the amount of metal (zinc) deposited is substantially greater-galvanized coatings begin at 1 mil (.045 ounces per square foot) and go up to 1 1/2 ounces per square foot (3.3 mils). Generally, parts to be mechanically galvanized can be up to 1 pound in weight and up to 6 inches long.

Mechanical Galvanizing offers these important features, advantages, and benefits:

- **No hydrogen embrittlement.** Because Mechanical Galvanizing is an extension of mechanical plating technology, it does not produce hydrogen embrittlement and does not require lengthy pre-plate or post-plate baking cycles.
- **No detempering.** Mechanical Galvanizing is a room temperature process that does not detemper heat-treated parts.
- **Excellent thread fit.** Mechanical Galvanizing does not fill the valleys of threaded fasteners. Mechanical Galvanized parts mate quickly and easily.
- **No need to chase nuts after plating.** In hot-dip galvanizing, threads must be cut or chased after galvanizing, robbing them of protection and requiring extra expense. Mechanical Galvanizing produces parts that are ready to use without any further processing steps.
- **No galling.** Because of the composite nature of mechanical coatings, this naturally lubricious coating will not gall, producing more accurate torque-tension relationships.
- **No stickers.** In hot-dip galvanizing, molten zinc often fuses parts together, resulting in lost time, effort, and materials. In contrast, mechanically galvanized parts are 100% usable.
- **Excellent adhesion.** Because of the underlying coatings, Mechanical Galvanizing has excellent adhesion to the base metal.

With advantages like these, it is clear why knowledgeable users are making the move to Mechanical Galvanizing. Now is the time to move up to the high quality and unsurpassed performance of PS&T Mechanical Galvanizing.