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Tin-plated vs. Nickel-plated Coin Cell Contacts

Coin cell battery holders are commonly made with gold-, nickel-, or tin-plated contacts. Since the lead-free movement and RoHS, tin-plated contacts are gaining popularity due to their ease of solderability. However, tin-plated contacts introduce many new problems of which you may not be aware. We invite you to study the advantages of using nickel-plated, and gold over nickel, contacts over tin-plated ones:

- Since typical coin cells have nickel-plated shells, the mating areas of the battery contacts should also be nickel to prevent galvanic corrosion between the battery and the contacts.
- Unlike nickel, tin is not very durable on account of its softness. This renders it more vulnerable to fretting corrosion along the mating areas of the battery contacts.
- Tin alloy contacts need lubrication.
- Tin-plated contacts are not compatible with gold-plated PCBs.
- Although nickel can be difficult to solder, wave soldering just the PCB pins, or cleaning the pins with an industrial acid cleaner, can greatly increase the solderability of nickel-plated contacts. Also, the use of coin cell holders which can withstand higher soldering temperatures, such as those designed for a reflow solder process, can aid in soldering nickel.
- Unlike nickel, tin solders form tin whiskers which pose reliability and safety issues.

