



Standard Practice for Preparation of Nickel for Electroplating with Nickel¹

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1. Scope

1.1 This practice summarizes well-known, generally practical methods for producing adherent electrodeposits of nickel on nickel.

1.2 Electrodeposits of nickel on nickel are produced, for example, to improve the performance of decorative coatings, to reclaim electroplated parts that are defective, and to resume nickel electroplating after interruptions in processing. Interruptions may be deliberate, for example, to machine the electrodeposit at an intermediate stage in the electrodeposition of thick nickel coatings. The interruptions may be unintentional, for example, resulting from equipment and power failures.

1.3 To ensure good adhesion of nickel to nickel, precautions should be taken to avoid biopolar effects during nickel electroplating. This is of particular importance in return-type automatic plating machines where one rack follows another rack closely. Bipolar effects can be avoided by making the racks cathodic while they are entering or leaving the nickel tank. Separate current control on entry and exit stations is desirable.

1.4 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

¹ This practice is under the jurisdiction of ASTM Committee B08 on Metallic and Inorganic Coatings and is the direct responsibility of Subcommittee B08.02 on Electroplating.

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2. Types of Nickel

2.1 The types of nickel for which an overplate of nickel may be desired are dull nickel, semi-bright nickel, bright nickel, and nickel strike. Variations in these types may possibly require special handling.

2.2 Surface conditions of the nickel may vary as follows:

2.2.1 Freshly electroplated surfaces that are still wet with electroplating solution or rinse water (see 5.1),

2.2.2 Freshly electroplated surfaces that have been allowed to dry (see 5.2),

2.2.3 Buffered, buffed, or machine-ground surfaces (see 5.3), and

2.2.4 Surfaces that have been given a reverse-current treatment in an alkaline solution for cleaning or possibly stripping an overplate of chromium (see 5.4).

3. Cleaning

3.1 The following cleaning treatments may be used for all conditions and types of electrodeposited nickel. The choice of the procedure will be governed largely by the condition of the surface.

3.1.1 *Degreasing*—Degreasing is used to remove the bulk of grease, oil, and buffing compounds that may be present on the surface. The cleaning may be effected with vapor degreasing, organic solvents, emulsion cleaners, or soak cleaner.

3.1.2 *Electrolytic Alkaline Cleaning*—Removal of final traces of dirt, grease, and oil is accomplished best with electrolytic alkaline cleaning. The solution may be either a proprietary cleaner or a formulated one. Since a nickel surface forms an oxide coating if treated anodically in an alkaline solution, this condition must be altered in subsequent steps if it cannot be avoided.

4. Activating

4.1 The procedure used for etching or activating the nickel surface usually determines the soundness of the adhesion. The choice of the procedure may be governed by the condition of the surface and possibly the type of nickel. The milder etching treatment should be used in the case of highly finished surfaces, but it may result in sacrificing maximum adhesion.