SURFACE FINISH

ELECTROPOLISHING OF STAINLESS STEEL SQUEEGEE BLADES

DSF 3.2.0

Definition:

Stainless steel is available in a wide variety of standard and special finishes. The majority of finishes can be divided into three categories:
-Mill finishes.
-Mechanically polished finishes.
-Special finishes.

This standard focuses on Special Finishes, namely **Electropolishing (BS ISO 15730: 2016)**

Properties:

Stainless steel components intended for electro-plating are prepared to a 2B finish. The process uses relatively low voltages of between 12 and 18 volts, but with large currents of between 750 and 3000 amperes. This gives anode current densities around 20 to 40 amps/dm^2 (amps per square decimetre) the stainless steel item that is being electropolished is the anode in this direct current cell. Electrolytes used are usually mixtures of phosphoric and sulphuric acids. The process targets 'peaks' or high spots (≤ 2 µm) on the surface of the work piece resulting in a net smoothing of the surface while the removal of smaller irregularities (≤0.01 µm) results in brightening & optimising the corrosion resistance (passivation) of the stainless steel by removing iron from the surface and enhancing the chromium/nickel content. Suitable for complex shapes where mechanical polishing is difficult. Good results can only be achieved on substrates that already have a good finish.

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ASM (DEK) Acceptable Criteria:

- **7C27Mo2 (Sandvic): Martensitic Stainless Steel: DSM 1.2.2**

  A hardened & tempered **martensitic** chromium stainless steel formulated with additional molybdenum to provide good formability. It offers high tensile & fatigue strength with good surface finish. Suitable for corrosive environments and/or working temp ≤ 400°C.

- **716 (Uddeholm): Martensitic Stainless Steel: DSM 1.2.2**

  As above, formulated for thinner applications where impact strength & toughness are essential. This variant is delivered in the hardened & tempered condition for enhanced bending & impact fatigue