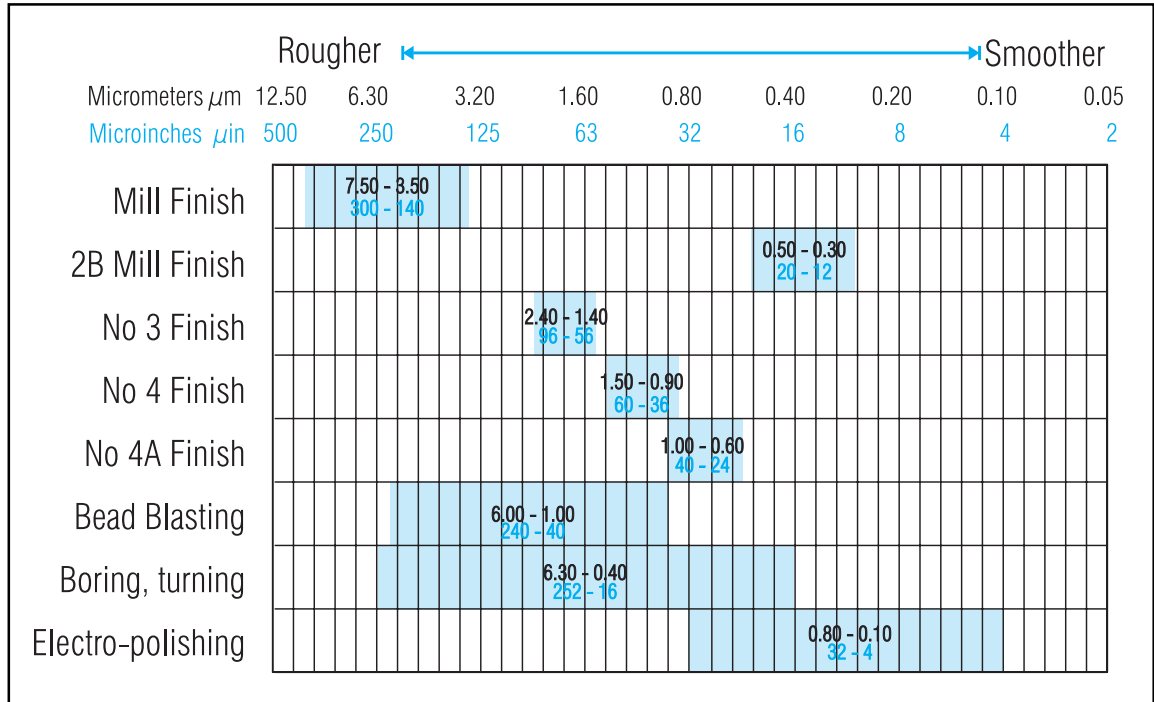


# Surface Textures Of Stainless Steels



Roughness in Micrometers (Microns)  $\mu\text{m}$

## Definitions

- Roughness
- Waviness
- Finishing Options
- Sanitary Surfaces

*Stainless steel* is defined today as a steel alloy containing at least 10% chromium, plus other elements, especially nickel. Stainless steel is widely used in equipment designed and constructed to meet sanitary guidelines. It offers a long service life with product contact areas that are easy to clean and sterilize. The surface texture of these areas also has a direct bearing on the cleanability and sanitary standards.

*Surface texture* is defined as the typical surface of a material, including geometric irregularities in or the composite of certain deviations. It includes roughness, waviness, and lay (grain).

*Ra (Roughness average)* is a standard of the finishing industry for an average of the peaks and valleys of the metals surface. These measurements are expressed in micro inches ( $\mu\text{in}$ ) or micrometers ( $\mu\text{m}$ ).

*RMS (Root Mean Square)* is a machining standard used to diagnose machine operations and surface finish (tool lines, etc.)

## Unpolished Stainless Steel Textures

*Mill Finish* has a dull-gray, matte appearance that is produced by cold rolling to a specified thickness, annealing and descaling.

Typical Ra would be 3.50-7.50  $\mu\text{m}$  (140-300  $\mu\text{in}$ ).

*2B Mill Finish* is a bright defect free finish that is produced by a final, light cold roll pass on polished rolls. There is no visible "grain" with this finish. Typical Ra would be 0.30 - 0.50  $\mu\text{m}$  (12-20  $\mu\text{in}$ ).

*Note:* A 2B mill finish is only available on stainless steel sheet stock (less than 7ga). Stainless steel plate or bar stock is only available in a mill finish.

## Polished Stainless Steel Textures

*No 3 Finish* is a intermediate polished finish with an Ra of 1.40-2.40  $\mu\text{m}$  (56-96  $\mu\text{in}$ ). This finish is generally used where a semifinished polish surface is required and may receive additional polishing.

*No 4 & 4A Finishes* are general purpose sanitary finishes with an Ra of 0.90-1.50  $\mu\text{m}$  (36-60  $\mu\text{in}$ ) for No.4 and 0.60-1.00  $\mu\text{m}$  (24-40  $\mu\text{in}$ ) for No. 4A.

The finishes are generally used in the food processing industry and will have a bright finish with a visible "grain" that prevents mirror like reflections. 4A is USDA compliant.

## Other Textures

*Bead blasting* has a Ra of 1.00-6.00  $\mu\text{m}$  (40-240  $\mu\text{in}$ ).

*Boring, turning* has a Ra of 0.40-6.30  $\mu\text{m}$  (16-252  $\mu\text{in}$ ).

*Electro-polishing* has a Ra of 0.10-0.80  $\mu\text{m}$  (4-32  $\mu\text{in}$ ).



**AMERICAN  
PROCESS  
SYSTEMS**

Member Eirich Group

American Process Systems is a division of Eirich Machines, Inc.

For More Information Contact:

---

**Air Process Systems & Conveyors Co., Inc.**

774 Burr Oak Drive • Westmont, Illinois 60559 • Phone: 630.887.0770 • 800.822.0771 • Fax: 630.887.0771

Website: [www.AirProcessSystems.com](http://www.AirProcessSystems.com) • E-mail: [Sales@AirProcessSystems.com](mailto:Sales@AirProcessSystems.com)