



— UNITED PROCESS PIPING —

STAINLESS FINISH REFERENCE GUIDE

SURFACE FINISHES FOR SANITARY
AND INDUSTRIAL APPLICATIONS



THE RIGHT FINISH. THE RIGHT PERFORMANCE.

Surface finish plays a critical role in the performance, cleanability, and longevity of stainless steel equipment. The proper finish helps reduce product buildup, resist corrosion, and maintain compliance with industry standards.

Use this guide to select the appropriate stainless finish for your process application.

COMMON STAINLESS STEEL FINISHES				
FINISH TYPE	AVERAGE Ra (MICRO-INCHES)	AVERAGE Ra (MICROMETERS)	DESCRIPTION	TYPICAL APPLICATIONS
 MILL	125 – 250	3.2 – 6.3	As-received from the mill. Visible tool marks and inconsistent finish.	• Structural Applications • Non-Product Contact • Fabrication Components
 #4 BRUSHED	32 – 63	0.8 – 1.6	Uniform directional brushed finish with visible grain.	• General Equipment • Exterior Surfaces • Non-Critical Areas
 #3 BRUSHED	16 – 32	0.4 – 0.8	Fine brushed finish with tighter grain than #4.	• Food Processing • Dairy Equipment • General Processing
 #2B MILL	8 – 16	0.2 – 0.4	Smooth, reflective mill finish produced by cold rolling and annealing.	• Food & Beverage • Pharmaceutical • Chemical Processing
 320 POLISHED	4 – 8	0.1 – 0.2	Lightly polished finish with low reflectivity and fine scratch pattern.	• Sanitary Piping • Process Equipment • Product Contact Surfaces
 400 POLISHED	2 – 4	0.05 – 0.1	Smoother, more reflective finish with reduced surface texture.	• High-Purity Systems • Food & Beverage • Dairy & Pharmaceutical
 600 POLISHED	1 – 2	0.025 – 0.05	High-gloss finish with excellent reflectivity and minimal texture.	• High-Purity Processing • Biotech & Pharma • Critical Clean Applications
 ELECTRO-POLISHED	< 1	< 0.025	Electrochemical process that removes surface material for a smooth, passive, cleanable surface.	• Ultra High Purity • Pharmaceutical • Semiconductor • Critical Sanitary Systems

WHY FINISH MATTERS



ENHANCES CORROSION RESISTANCE

Smoother surfaces reduce crevices and areas where corrosion can start.



IMPROVES CLEANABILITY

A smoother finish minimizes product buildup and allows for more effective cleaning.



REDUCES BACTERIAL HARBORAGE

Lower Ra values help reduce bacterial adhesion and support sanitary process requirements.

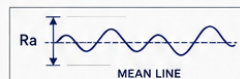


SUPPORTS COMPLIANCE

Helps meet regulatory standards including 3-A, USDA, ASME BPE, and FDA requirements.

UNDERSTANDING Ra

Ra (Roughness Average) is the most commonly used measurement of surface finish. It represents the average deviation of the surface profile from the mean line.



FINISH SELECTION GUIDE



CONSIDER YOUR PROCESS

Product type, cleanliness requirements, temperature, and chemical exposure all impact the right finish choice.



EVALUATE CLEANING METHODS

CIP, SIP, and manual cleaning are more effective on smoother, low Ra surfaces.



BALANCE COST & PERFORMANCE

Higher polish levels increase cost but improve performance, cleanability, and longevity.



CONSULT THE EXPERTS

Our team can help you select the right finish for your application and industry standards.

QUALITY FINISHES. SUPERIOR RESULTS.

UPP provides precision-finished stainless steel piping, components, and equipment built to the highest sanitary and industrial standards.

Contact us to discuss your application requirements.



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