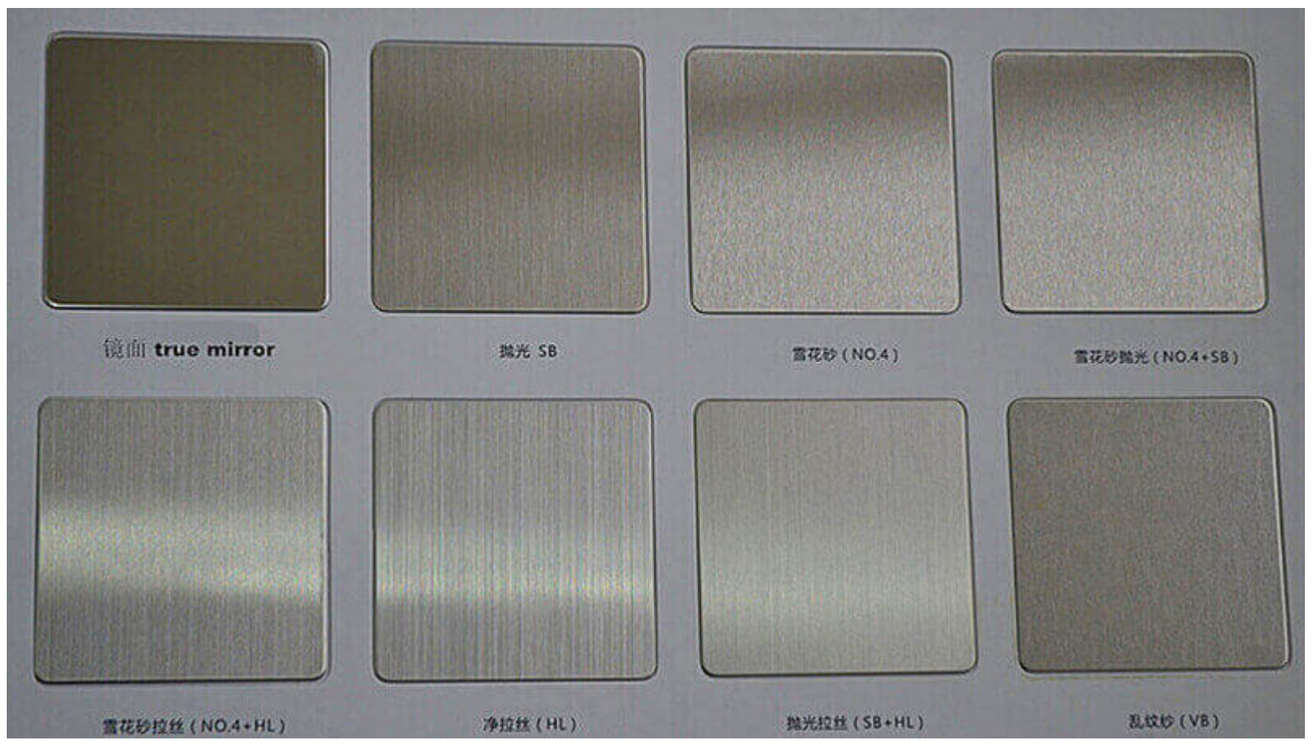
DONGSHANG
STAINLESS STEEL

Stainless Steel Finishes

There are many stainless steel finishes for option, these finishes varies from dull to mirror-like, and having special surface appearance, rough surface finishes are appropriate to some applications, smooth surface finishes are better where the steel will be processed to desired surface effect.

Selecting the right stainless steel finish for your application is very important. You are probably looking for a long lifespan, corrosion resistance and low maintenance needs. The right finishing is the way to guarantee that stainless steel will behave as expected, therefore, It is important to understand stainless steel finfishes.



Stainless Steel Introduction

Stainless steel is an alloy group having special properties, they must contain minimum 10.5 Chromium content, which is necessary and essential element, these is an extremely thin but stable and passive Chromium rich oxide film on the surface to resist corrosion, with addition of other elements, increasing the properties make it is a wide used material.

There are main characteristics of stainless steel below, these properties are determined factors for stainless steel use range.

- High strength
- Excellent corrosion resistance
- Heat resistance

Multiple finishes for opting is an important advantage of stainless steel, compared to other metals.

Stainless Steel Finishes

There are many different finishes on stainless steel, some finishes are generated from mill, like 2B finish, some finishes can be achieved from fabrication process, standard finishes are categorized as either “Mill” or “Polished”.

Mill Finishes

Whether hot finishes or cold finishes, mill finishes are the basic surface of stainless steel flat products, without additional processing, hot rolled finishes are usually dark and dull surface, when in heat treated and hot rolling condition, mill finishes surface is pickled to remove scale.

Polished Finishes

Mechanically process is common method to polish stainless steel, it is a rolling procedure using finer abrasives, this process can remove surface defects to achieve consistent surface quality, not only having a bright appearance but also resisting corrosion, wet and dry polishing types are available.

Common Stainless Steel Finishes

No. 1

Hot rolled, annealed, pickled, dull non reflective finish.

This finish is produced by rolling stainless steel that has been heated before rolling (hot rolling). Very little finishing is required, which is why it is considered as rough-finished, No. 1 finish has rough, dull, and non-uniform appearance.

No. 2D

Cold rolled, annealed, pickled, smooth non reflective finish.

No. 2D Finish is a uniform, dull silver-gray finish that is applied to thinner coils whose thickness has been reduced by cold rolling. After rolling, the coil is heat treated to produce a uniform microstructure (annealing) and to meet mechanical property requirements. Pickling or descaling is necessary after heat treatment to remove the chromium-depleted dark surface layer and restore corrosion resistance

No. 2B

Cold rolled, annealed, pickled, smooth reflective finish, the most wide used finish.

2B is typical cold rolling, smooth surface, light reflective mill finish, heat treated, it is the most widely used finish, 2B finish is basic surface condition for many other polished finishes,

This is the most common finish produced and called for on sheet material. It is brighter than 2D and is semi-reflective, and is more easily polished to the final finished required than is a 2D finish.

BA

Cold rolled, annealed, pickled, smooth reflective finish, the most wide used finish.

Bright Annealed (BA) is produced by heat-treating (annealing) in a controlled atmosphere furnace. It has a mirror like appearance but may have some cloudiness and other imperfections.

No. 3

Non reflective finish, light polishing using grinding belt, 100 – 120 grit.

It is obtained by either mechanically polishing with gradually finer abrasives or by passing the coil through special rolls, which press a pattern into the surface, simulating the appearance of mechanical abrasion. It is a moderately reflective finish

No.4 – Brushed Finish

Reflective dull polishing, brushed finish, using 120 – 320 grit belt after light grinding.

Brushed finish has strong decorative surface, and not too reflective, it is one of the most popular finishes available, particularly kitchen appliances, there is light groove on the surface of stainless steel, so it is not suitable used corrosion environment, because this finish may lead to corrosion attack, it is applied in ornamental purpose in the most case, the final finish can be anywhere between 120 and 320 grit. Higher grit numbers produce finer polishing lines and more reflective finishes.

No. 6

Cold rolled, dull satin finish by tampico brushing a No.4 finish.

A dull, silver-white finish with relatively short linear polishing lines. It has a lower reflectivity than No. 4 finish. It is produced by Tampico brushing a No. 4 finish sheet in an oil and abrasive medium

No. 7

High reflective finish, by a finely ground surface, 320 grit is buffed.

No. 7 Finish has a high degree of reflectivity and a mirror-like appearance. A No. 4 finish that has been polished to 320 grit is buffed for up to 10 minutes, but existing grit lines are not removed.

No.8 – Mirror Finish

High reflective, bright polishing, smooth surface, mirror finish.

Mirror finish is a highly reflective surface by polishing, It is produced in the same manner as the No. 7 finish except that the buffing is continued for an additional five to ten minutes. In comparison to a No. 7 finish, the grit lines are much less visible, but they can be seen if the finish is examined closely. The resulting finish is mirror-like but not a perfect mirror.

Special Finishes

Special Finishes include finishes that are generally used when aesthetic appearance is important and for specialized industrial applications.

- Patterned Finishes
- Electro-Polished Finishes
- Colored Finishes

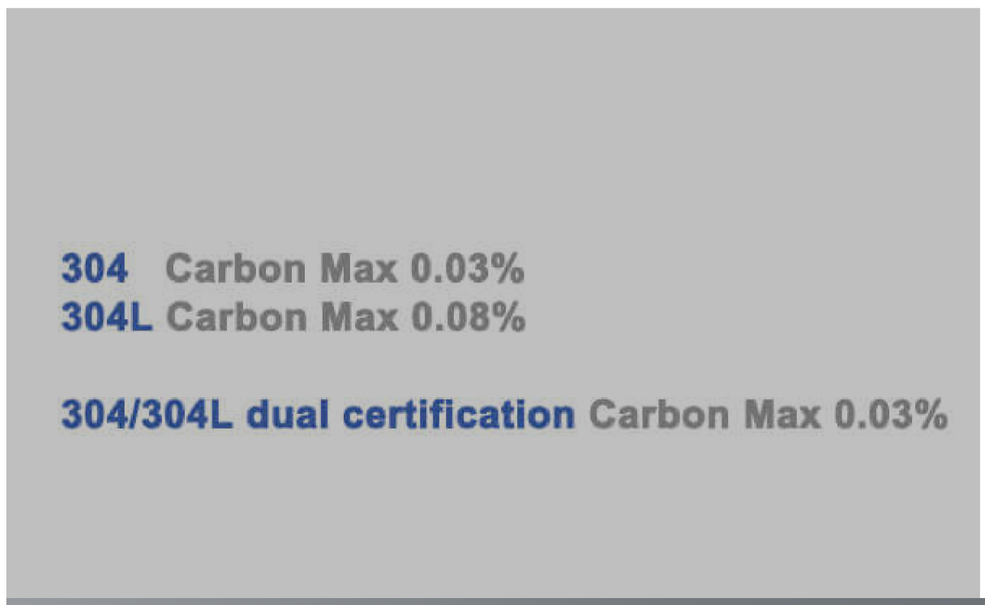
Microscope images show our different surfaces

Stainless Steel Finishes, Grit And Roughness

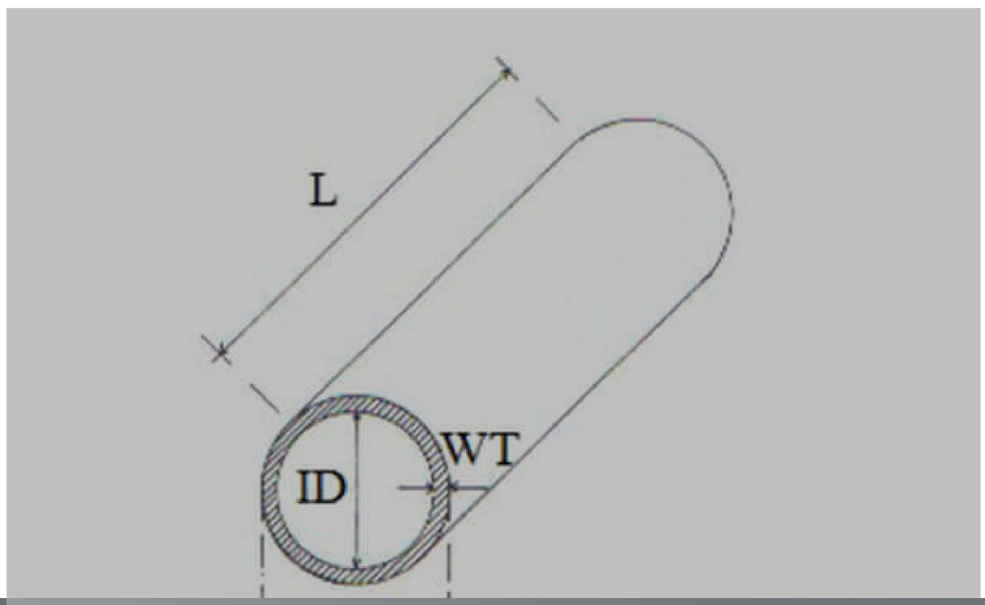
Metal surface roughness is measured using special means, Ra is a roughness unit, roughness of different finishes has different values.

There is no standard to specify stainless steel finishes relation with roughness value Ra, in practice, they can be roughly converted as following:

Common Name	Ra (Mm)	Grit Number	USA Finish
	50	—	—
	25	—	—
	12.5	—	—
Mill Plate	6.3	60	#1
	3.2	—	—
Satin Sheet	1.75 Max, 1-1.5	80	#2
	1.6	—	—
	1.3	100 To 120	#3
Commercial #4	1-1.5	120	#4
Sanitary/Dairy Finish	1.05 Max, 0.75-0.875	150	#4
ANSI #4	0.8	—	—
3A Sanitary Finish	0.8 Max, 0.5-0.8	180	#4
Biotech Finish	0.625 Max, 0.5-0.625	200 To 220	#4
Fine Satin Finish	0.375-0.5	240	#6
	0.4	—	—
Semi-Bright Finish	0.3 Max, 0.2-0.3	320	#7
	0.3	—	—
	0.2	—	—
Mirror Finish	0.1-0.2	400	#8
Supermirror Finish	<0.1, 0.075-0.2	500	#8
Supermirror Finish	0.1	500	#8
	0.05	—	—
	0.025	—	—



304 304L Dual Certified Stainless Steel



Stainless Steel Tube & Pipe Sizes: NPS, Pipe Schedule, DN

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