Stainless Steel Grade and Finish Selection Guide

How to choose between AISI 201, 304 and 316, how wall thickness is decided, and what each finish option actually does.

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Lead time	15 to 30 days after deposit received

AISI 304 vs 316 Stainless Steel for Outdoor Sculpture

When 304 is enough, when 316 earns the extra cost, and why chloride rather than rain is what actually attacks a polished surface.

The Short Answer

Use AISI 304 for inland gardens, parks, campuses and interiors. Use AISI 316 where the piece will stand near the sea, beside a pool, or in a city that salts its roads in winter. Both grades take the same mirror polish, so the choice is about how the surface looks in year ten rather than in year one. AISI 201 is also available and is the lowest cost of the three, which makes it a reasonable choice for sheltered indoor work only.

What Actually Attacks a Sculpture Outdoors

Stainless steel does not rust the way painted mild steel does. It carries a thin passive oxide layer that repairs itself in air. Chloride is what breaks that layer down, and chloride arrives as sea spray, pool water and winter de-icing salt. Once chloride sits in a scratch or behind a fixing it pits the surface, and pitting on a mirror finish is visible from a long way off because the reflection breaks.

Where 304 Is Enough

304 is the default across most of our catalogue. Inland parks, private gardens, campus courtyards, hotel lobbies and office interiors all sit comfortably within its range. A mirror polished 304 sphere in a garden needs washing with clean water and a soft cloth and nothing else. It holds its reflection with no repainting cycle, which is the main reason it replaces painted steel and cast resin in landscape work.

Where 316 Earns the Extra Cost

316 is the grade for coastal cities, pool surrounds and acid rain areas. If the piece is within sight of salt water, beside a swimming pool, or on a street that gets salted every winter, the extra material cost is small against the risk of pitting a mirror surface that cannot be repolished in place. Order 316 at the start, because there is no way to upgrade the grade once the piece is welded.

Grade and Wall Thickness Are Separate Decisions

Grade decides how the surface survives. Wall thickness, offered from 1 mm to 6 mm, decides how the form holds its shape and how much handling it can take. A large sphere in a public plaza is normally specified in a heavier wall than the same sphere in a private garden, whichever grade it is made from. Getting one right and the other wrong still produces a piece that disappoints.

What to Send with an Enquiry

Give the site location and exposure, the diameter or overall size, the finish you want, and the fixing you already have. Grade and wall thickness can then be recommended against the real conditions rather than a default. Shop drawings are supplied for large pieces so the groundworks package can be prepared before the crate arrives.

Questions On This Topic

Is 316 stronger than 304?

No. The difference is corrosion resistance, not strength. 316 holds up better against chloride from sea spray, pool water and de-icing salt.

Can I tell 304 and 316 apart by looking?

Not on a finished piece. Both take the same mirror polish. The difference only shows after years of chloride exposure, when 304 may begin to pit.

What is AISI 201 used for?

201 is the lowest cost of the three grades we offer and suits sheltered indoor pieces. It is not the grade for coastal or salted sites.

Does the grade change the lead time?

No. Delivery is 15 to 30 days after the deposit is received regardless of grade, with hollow sphere batches at 20 to 30 days.

How should a polished piece be cleaned?

Clean water and a soft cloth. Avoid wire brushes, abrasive pads and any chloride based cleaner.

How to Choose Wall Thickness for a Stainless Steel Sphere

What 1 mm, 2 mm and 6 mm walls actually change, and why thickness is a handling decision more than a strength one.

Why Thickness Is a Real Decision

Our hollow spheres are offered in wall thicknesses from 1 mm to 6 mm, and the difference is not academic. Wall thickness sets the weight, the cost, how the sphere behaves during installation, and how it survives being leaned on. A sphere that is correctly specified in a private garden can be badly under specified in the middle of a plaza at exactly the same diameter.

1 Mm and 2 Mm

1 mm suits small decorative balls, handrail infill and interior pieces that nobody handles roughly. 2 mm is the general default across the catalogue and covers most garden spheres, interior pieces and mid size decorative work. At 2 mm a sphere is stiff enough to survive careful handling and light enough to place without lifting plant.

4 Mm to 6 Mm

Heavier walls are for pieces that are large, publicly accessible, or handled by people who did not commission them. If a sphere sits where people will lean on it, sit on it or climb it, the wall goes up. Heavier walls also make it easier to weld substantial pedestals and anchors without distorting the surface during the weld.

Diameter Does Not Set Thickness by Itself

It is tempting to assume that a bigger sphere simply needs a thicker wall, but exposure and access matter as much. A three metre sphere on a private lawn behind a gate is a different problem from a one metre sphere at a station entrance. Tell us where the piece stands and who reaches it, and the thickness recommendation follows from that.

Thickness and Installation

Weight scales with wall thickness, and weight is what decides whether two people with a padded cradle can place a piece or whether a crane day has to be booked. For large diameters we supply shop drawings with the weight and the lift points so the installer can plan before the crate arrives.

What to Tell Us

Diameter, where the sphere will stand, whether the public can reach it, and the fixing you already have. From those four answers we can recommend a wall between 1 mm and 6 mm and quote it. Diameters run from 19 mm to 3000 mm with no fixed steps, so an intermediate size costs the same as a round number.

Questions On This Topic

What is the standard wall thickness?

2 mm is the general default. The full range offered is 1 mm to 6 mm and the right answer depends on size, exposure and handling.

Does a thicker wall make the sphere more corrosion resistant?

No. Corrosion resistance comes from the grade, not the thickness. Choose 316 for chloride exposure and set thickness separately.

Can a thin sphere be repaired if it dents?

A dent in a mirror polished surface is effectively permanent. Where dents are a realistic risk, specify a heavier wall instead.

Is there a diameter above which you always recommend heavier walls?

There is no single cut off. Large public pieces get heavier walls; large pieces in private gardens often do not need them.

Do you supply weights before delivery?

Yes, on the shop drawings for large pieces, together with lift points.

Mirror Polishing Explained for Stainless Steel Sculpture

Why the quality of a mirror finish is decided during welding and fixing, long before the piece reaches the polishing shop.

A Mirror Surface Hides Nothing

Polishing does not fix problems, it reveals them. A weld left slightly proud, a ripple from forming, or a scratch from a late drilling operation is amplified by the reflection and visible from metres away. This is why the difference between a cheap mirror sphere and a good one is almost never the final polishing step.

Seam Grinding Is the Real Step

A hollow sphere is two pressed hemispheres welded together. That seam runs all the way around the widest part of the form, exactly where the eye lands. We grind and blend it progressively until the joint no longer reads when the surface is viewed in reflected light. On our VFX spheres the surface passes through more than twenty processes for the same reason: the reflection has to stay clean enough to be used as measurement data.

Everything Sharp Happens Before Polishing

Holes, threads, pedestals, base plates and hanging brackets are all completed before the piece enters the polishing shop. Cutting a hole into a finished mirror surface leaves damage around the fixing that cannot be corrected in place, which is why we ask for hole positions and fixing details with the order rather than after it.

Mirror Is Not Always the Right Answer

Mirror gives the strongest reflection and the biggest visual effect, but it shows every fingerprint. Where a piece sits within reach in a lobby or on a desk, a brushed or matt finish usually looks better after a month of use. We make the same forms in all three finishes, so the decision is about the location rather than the product.

Batch Matching

Two pieces polished weeks apart will not match exactly under the same light. If you are ordering a graded set, a wall group or a run of spheres, order them together so they go through the polishing shop in one batch. This is the single most common cause of disappointment in sets bought piecemeal.

Protecting the Finish

Protective film goes on straight after finishing and stays on through packing, freight and installation. Take it off once the piece is fixed and the site around it is clean. After that, clean water and a soft cloth are all a mirror finish needs; wire brushes, abrasive pads and chloride based cleaners all cause permanent damage.

Questions On This Topic

How many polishing stages are there?

The surface is worked through progressive grits rather than jumped. On the VFX spheres the surface passes through more than twenty processes to reach a specular finish.

Can a seam ever be completely invisible?

That is the target. A properly ground and blended seam does not read in reflected light, which is the practical test we use.

Should I choose mirror or brushed for a hotel lobby?

Brushed where guests can touch the piece, mirror where it sits behind a barrier or above reach.

Can you polish a piece I already own?

We polish what we build. Refinishing existing work is not something we take on, because we cannot vouch for what is under the surface.

When should the protective film come off?

Once the piece is fixed in place and the surrounding site is clean.

Colour Finishes on Stainless Steel Electroplating and Candy Coating

The three ways we put colour on stainless steel, what each one does to the reflection, and how to specify a colour that will actually match.

Why Not Just Paint It

Paint sits on top of the metal and flattens the reflection, so a painted sphere reads as a plastic object almost immediately. The three routes we use, vacuum metallising, electroplating and candy colour spray over a metallised base, all keep the depth of the metal underneath, which is why coloured stainless steel still looks like metal rather than like a coloured ball.

Vacuum Metallising

A metallised layer is applied under vacuum. On its own it produces bright metallic finishes, and it also provides the base for transparent candy colours. It is the usual starting point when the finish has to hold a metallic reading at a distance rather than a specific flat colour.

Electroplating

Electroplating is used where the colour has to be deep and even across a large curve. Gold and rose tones in particular are difficult to make convincing by spraying, and plating gives them the density they need. Our gold and rose gold pieces are made this way.

Candy Colour Spray

Transparent and matt candy colours are sprayed over a metallised base. Because the colour is transparent, the metal underneath still contributes to the finish, and the shade can be tuned rather than picked from a fixed list. Where the colour matters we supply a sample before the batch runs, because a shade on a mirror curve rarely looks like the same shade on a flat swatch.

Colour Does Not Replace Grade

A coating is not a substitute for the right steel. If the piece stands near the sea or beside a pool, specify AISI 316 under the colour. The base grade stays your choice on every coloured item in the catalogue.

Matching a Set

Colour drifts between production runs, and on a graded set that drift is immediately visible. Order the whole run together so it is coated in one batch. This is the same rule as for mirror polishing and it is the most common reason a set bought in stages looks wrong on site.

Questions On This Topic

Which colour route lasts longest outdoors?

It depends on the shade and the exposure. Tell us where the piece stands and we will recommend the route, and specify 316 underneath where chloride is a factor.

Can you match a Pantone or a paint reference?

We can work to a reference with a sample before the batch runs. Expect a shade to read differently on a mirror curve than on a flat card.

Can a piece be two colours?

Yes. Two tone and gradient finishes are made on a single piece.

Does colour hide surface flaws?

No, it magnifies them. Seam grinding matters as much under a bright coating as under a mirror polish.

Will a repeat order match my first one?

Not reliably. Order a full set together if the pieces have to match each other.