

ZINC PLATING

ASTM B633-23 | ASTM F-1941/F-1941M

An economical, sacrificial coating electrodeposited on iron and steel to protect the base metal from corrosion. Zinc corrodes preferentially, shielding the substrate even where the coating is scratched. A chromate or passivate post-treatment greatly extends salt-spray life and adds color. WARNING: high-strength steels above 1700 MPa (247 ksi, 46 HRC) shall NOT be zinc electroplated per B633-23 sec 1.4. Reference F-1941/F-1941M for mechanical fasteners.

Fe/Zn 25	SC4 Very Severe - 25 um
Fe/Zn 12	SC3 Severe - 12 um
Fe/Zn 8	SC2 Moderate - 8 um
Fe/Zn 5	SC1 Mild - 5 um
Type I / II / III	As-plated / Colored chromate 96h / Colorless 12h (Non-RoHS)
Type IV / V / VI	Phosphate / Colorless passivate 72h / Colored passivate 120h (RoHS)
Process	Acid & Alkaline - Rack or Barrel - Bright, Semi-Bright or Dull luster

TANK: Up to 120" x 36" x 72"

OFFERED BY GLECO PLATING

CADMIUM PLATING

AMS-QQ-P-416G

A sacrificial coating prized for natural lubricity, excellent corrosion resistance in marine environments, and galvanic compatibility with aluminum. Type II adds a chromate conversion (iridescent bronze, olive drab or yellow), and a hex-chrome-free option is available. High-strength steel requires hydrogen-embrittlement relief: bake within 4 hours of plating per sec 3.2.7.

Type I / II / III	As-plated / Chromate / Phosphate
Class 1	.0005" min
Class 2	.0003" min
Class 3	.0002" min
Type II Gr A	Iridescent bronze / olive drab / yellow
Type II Gr B	Hex-chrome-free
H-relief	Bake within 4h; high-strength steel per 3.2.7

TANK: 25" x 24" x 41"

OFFERED BY GLECO PLATING

SULFURIC ANODIZE

MIL-PRF-8625F Type II

A conventional sulfuric-acid anodic oxide that improves corrosion resistance and provides an excellent base for dye and paint on aluminum alloys. Type IIB is a thin, non-chromate alternative. The coating may be left non-dyed or dyed a wide range of colors, and is sealed with dichromate, boiling DI water, or nickel acetate.

Type II	Conventional sulfuric acid anodize
Type IIB	Thin sulfuric, non-chromate alt for I/IB
Class 1	Non-dyed
Class 2	Dyed: Clear/Black/Gray/Gold/Red/Blue/Green/Copper
Seal	Dichromate / boiling DI water / Ni acetate

TANK: 120" x 36" x 60"

OFFERED BY GLECO PLATING

GOLD PLATING

ASTM B488-18 | MIL-DTL-45204D

A precious-metal deposit valued in electronics for its outstanding conductivity, contact reliability, and resistance to tarnish and corrosion. It is typically plated over a nickel underplate on connectors and contacts. Purity and hardness are specified by type and hardness code, with a wide range of thickness classes available.

Type I / II / III	99.7% / 99.0% / 99.9% purity
Hardness A / B	90 HK max / 91-129
Hardness C / D	130-200 / 200+
Classes	00 (.00002") to 6 (.00150") min
Use	Electronics, connectors, contacts - over nickel underplate

TANK: 12" x 12" x 18"

OFFERED BY GLECO PLATING

PAINT & POWDER COATING

Gleco Paint & Powder Coating (GPP)

Liquid paint and powder coating through Gleco's sister company GPP, offering a wide range of colors, textures, and finishes including primer-plus-topcoat systems. Used for decorative and protective coatings, often paired with a pre-treatment such as chem film or phosphate for maximum adhesion and corrosion performance.

Services	Liquid paint & powder coating (sister company GPP)
Capabilities	Wide range of colors, textures & finishes; primer + topcoat
Use	Decorative & protective; paired with pre-treatment
Contact	5020 Grisham Dr., Rowlett TX 75088 - (972) 475-2726 - glecopaintandpowder.com

OFFERED BY GLECO PLATING

BLASTING

Surface Preparation & Finishing

Abrasive blasting to clean, deburr, and texture parts prior to plating or coating. Media is selected to match the substrate and required surface finish, removing scale, rust, and contamination while preparing an ideal surface profile for adhesion.

Glass Bead	Clean, smooth satin finish - low material removal
Aluminum Oxide	Aggressive cleaning & profiling for adhesion
Sand	General-purpose cleaning and descaling
Use	Surface prep prior to plating or coating

OFFERED BY GLECO PLATING

ZINC-NICKEL PLATING

ASTM B841 | AMS 2417K

A high-performance alloy of zinc and nickel offering dramatically better corrosion resistance than zinc alone, especially at elevated temperature. AMS 2417 requires no red corrosion after 500 hours of salt spray, making it a preferred replacement for cadmium on elevated-temperature steel parts. Available with a range of chromate topcoats in hexavalent (A) or non-hexavalent (AN) chemistries.

Class 1 (B841)	5-12% Nickel
Class 2 (B841)	12-16% Nickel
AMS 2417	6-20% Nickel allowed
Chromate A / B / C	Blue-Bright / Yellow / Bronze
Chromate D / E	Black / plus organic topcoat
Corrosion	AMS 2417: 500h no red corrosion

TANK: Low 72" x 36" x 48" / High 120" x 30" x 72"

OFFERED BY GLECO PLATING

BRIGHT NICKEL PLATING

QQ-N-290A | ASTM B689

A versatile deposit used for both corrosion protection and engineering build-up. Nickel can be plated soft or hard, dull or bright, with hardness ranging widely with process and bath conditions. Corrosion resistance is a direct function of thickness; the deposit is magnetic and has a low coefficient of thermal expansion. Bright nickel is RoHS-compliant and runs on either rack or barrel.

Class 1	Corrosion-protective
Class 2	Engineering
Grade A / B / C	.0016" / .0012" / .0010"
Grade D / E	.0008" / .0006"
Grade F / G	.0004" / .0002"
Use	Corrosion & wear resistance - Rack or Barrel

TANK: 72" x 36" x 48"

OFFERED BY GLECO PLATING

CHEM FILM / ALODINE

MIL-DTL-5541F

A chemical conversion coating for aluminum that provides corrosion protection on its own and an excellent paint base when a finish system follows. Type I contains hexavalent chromium; Type II is hex-chrome-free and RoHS-compliant. Class 1A gives maximum corrosion protection, while Class 3 is formulated for low electrical contact resistance.

Type I	Contains hexavalent chromium (Non-RoHS)
Type II	No hexavalent chromium (RoHS)
Class 1A	Maximum corrosion (painted / unpainted)
Class 3	Low electrical resistance
Use	Corrosion protection + paint base on aluminum

TANK: 120" x 36" x 60"

OFFERED BY GLECO PLATING

PASSIVATION

AMS 2700F | ASTM A967 | ASTM A380

A chemical treatment that dissolves free iron from the surface of stainless steel and restores the protective chromium-oxide passive layer, improving corrosion resistance without changing dimensions. Both nitric and citric chemistries are offered, with the process type mapped to the stainless grade family - austenitic, ferritic, martensitic, duplex, or precipitation-hardened.

Nitric (A967)	Variants 1-5 - e.g. Nitric 2: 20-45% HNO3, 20-30C, 30 min
Citric (A967)	Variants 1-5 - e.g. Citric 1: 4-10% acid, 60-70C, 4 min
Grades	Mapped to Austenitic / Ferritic / Martensitic / Duplex / PH
Use	Dissolve free iron, restore chromium oxide

TANK: Citric 72" x 24" x 36" / Nitric 24" x 24" x 36"

OFFERED BY GLECO PLATING

SILVER PLATING

ASTM B700-20 | QQ-S-365D

The best electrical conductor of the plated metals, silver also offers excellent lubricity and smear characteristics that make it valuable for anti-galling on static seals and bushings, plus excellent solderability. An anti-tarnish chromate or non-chromate post-treatment is available. QQ-S-365 calls for .0005" minimum (.0010" on ferrous).

Type 1 / 2 / 3	99.9% / 99.0% / 98.0% purity
Grate A / B	Matte / Bright
Grade C / D	Polished bright / Semibright
Class N / S / T	None / Chromate anti-tarnish / Non-chromate
Use	High conductivity, solderability, anti-galling

TANK: 24" x 24" x 30"

OFFERED BY GLECO PLATING

DRY FILM LUBE

MIL-PRF-46010

A resin-bonded solid-film lubricant (MoS2) that provides low friction, anti-galling, and corrosion resistance for sliding-motion applications such as bearings, hinges, and cam surfaces. It is applied over a phosphate, anodize, or chem-film base and cures to a film that is highly resistant to conventional fluid lubricants.

Type	Resin-bonded solid film lubricant (MoS2)
Use	Low friction, anti-galling, corrosion resist
Base	Applied over phosphate / anodize / chem film
Application	Sliding motion - bearings, hinges, cam surfaces

OFFERED BY GLECO PLATING

ZINC PHOSPHATE

MIL-DTL-16232 | Type Z

A heavy zinc-base phosphate conversion coating for ferrous parts, applied by immersion. The crystalline coating is an excellent base that holds a supplementary oil or paint, which provides most of the corrosion resistance, and it helps prevent galling in cold-forming operations. Coatings are gray to black. Classes cover the supplementary treatment applied over the phosphate base.

Type Z	Zinc phosphate base (ferrous parts)
Class 1	Supplementary preservative as specified
Class 2	Oil per MIL-PRF-16173 Gr 3 or MIL-PRF-3150
Class 3	No supplementary treatment
Class 4	Chemically converted; may be dyed to color
Coating	Gray to black - base for oil / paint - anti-galling

TANK: 24" x 24" x 36"

OFFERED BY GLECO PLATING

SULFAMATE NICKEL

QQ-N-290A | ASTM B689

A low-stress, highly ductile nickel deposit produced from a sulfamate bath. Its low internal stress makes it the deposit of choice for electroforming and heavy build-up, and it offers excellent solderability. Classified as Class 2 engineering nickel, it is RoHS-compliant and available on rack or barrel.

Class 2	Engineering - low-stress ductile deposit
Grades A-G	per QQ-N-290 (.0002" to .0016")
Use	Electroforming, build-up, solderability
Process	RoHS - Rack or Barrel

TANK: 30" x 32" x 20"

OFFERED BY GLECO PLATING

ELECTROLESS NICKEL PLATING

MIL-C-26074E | ASTM B733-22 | AMS 2404J

A nickel-phosphorus deposit applied without electrical current, giving an extremely uniform thickness on complex geometry, bores, and threads regardless of line-of-sight. Phosphorus content sets the character of the deposit: mid-phos (5-9%) is the general workhorse, while high-phos (10%+) is non-magnetic and best for the most aggressive acid environments. A Class 2 heat treatment develops maximum hardness.

Type I / II / III	No req. / 1-3% / 2-4% Phosphorus
Type IV Mid-Phos	5-9% (primary)
Type V High-Phos	10%+ (non-magnetic)
Class 1 / 2	As-plated / Heat-treat for hardness
Class 3-6	Thermal treat for adhesion (Al/Be/Ti)
Thickness	SC0 .1um / SC1 5um / SC2 13um / SC3 25um / SC4 75um
Hardness	Class 2 HT 260-400C (450-800F) for max hardness

TANK: 36" x 18" x 30"

OFFERED BY GLECO PLATING

HARD ANODIZE

MIL-PRF-8625F Type III

A dense, wear-resistant hardcoat anodic oxide that penetrates into the aluminum as much as it builds on the surface. It delivers outstanding abrasion resistance and dielectric properties for wear surfaces and electrical insulation, and is normally left unsealed when maximum wear resistance is the goal. Note that hardcoat may reduce the fatigue strength of the base part.

Type III	Hardcoat, dense wear-resistant oxide
Thickness	.0005"-.0045" (nominal .002") per Table IV
Class 1	Non-dyed
Class 2	Dyed (normally unsealed)
Use	Wear surfaces, dielectric insulation

TANK: 120" x 36" x 60"

OFFERED BY GLECO PLATING

TIN PLATING

ASTM B545 | MIL-T-10727

A soft, ductile, gray-white deposit chosen for excellent solderability, corrosion resistance, and anti-galling behavior. Available matte, bright, or flow-brightened on rack or barrel. On brass and copper alloys a nickel or copper underplate prevents zinc migration that would poison solderability. B545 defines service classes by thickness.

Class A / B / C	2.5um / 5um / 8um (10um steel)
Class D / E / F	15um / 30um / 1.5um
MIL Type I / II	Electrodeposited / Hot-dipped
Finish	Matte, Bright, or Flow-brightened - Barrel or Rack
Use	Solderability, corrosion resistance, anti-galling

TANK: 72" x 24" x 48"

OFFERED BY GLECO PLATING

CERAKOTE

Ceramic-Based Thin-Film Coating

A ceramic-based thin-film coating that bonds to metal, polymer, and other substrates to deliver an exceptional combination of hardness, wear and abrasion resistance, corrosion protection, and chemical resistance. Applied in a very thin film, it adds durable protection and a wide range of custom colors and finishes with minimal dimensional change. Applied on aluminum, steel, copper, brass, and stainless.

Type	Ceramic-based thin-film coating
Properties	Hardness, wear & abrasion resistance
Protection	Corrosion & chemical resistance
Finish	Wide range of custom colors & finishes
Substrates	Aluminum, steel, copper, brass, stainless

OFFERED BY GLECO PLATING

OTHER SERVICES OFFERED: Masking - Bright Dip on Copper & Brass - Degreasing - Pickling

A finish is not the last step - it is a design decision. These notes cover what plating and coating actually do to your parts, how to choose the right process, and what we need from you to get it right the first time. Send us the print before you release it. We would rather solve it on the drawing than on the dock.

DIMENSIONS & FIT

What a finish does to your part's geometry

1

Plating is not uniform - it favors edges

Electroplated deposits build heavier on edges, corners, and outside radii than on flat faces. A surface called out at .001" can measure closer to .002" on an edge. Radius your corners generously and put the tolerance where you actually need it.

2

Threads grow about four times the plate thickness

Plating lands on every flank of a thread, so the pitch diameter grows roughly four times the deposit thickness. Account for it in your class of fit - otherwise the hardware will not go together.

3

Deep and blind holes will not plate evenly

Electroplating does not throw far into a hole; coverage falls off past roughly one diameter of depth. If a bore, blind hole, or internal thread needs uniform thickness, use electroless nickel - it deposits without current and does not care about line of sight.

4

Hard anodize grows AND eats into the part

Hardcoat converts the aluminum rather than just sitting on it: roughly half builds up and half penetrates. A .002" hardcoat adds about .001" per surface, so a bore closes and a shaft grows. Machine for it - hardcoat is never dimensionally free.

5

Blasting changes the surface, not just the look

Glass bead, aluminum oxide, and sand each leave a different profile and remove a different amount of material. If you have a critical surface finish or a tight dimension, tell us and we will pick the medium to match it.

MATERIAL & PROCESS

Choosing the right finish for the metal and the duty

6

High-strength steel needs an embrittlement bake

Steel at roughly Rockwell C39/40 and above is at risk of hydrogen embrittlement, and the post-plate bake has to start promptly - not next shift. Call it out on the print. Steels above 1700 MPa should not be zinc electroplated at all (B633 sec 1.4).

7

Shot peen before plating - never after

If fatigue life matters, peening comes first. Peening a plated part defeats the purpose and damages the deposit. Put the peening standard on the drawing so it lands in the right place in the routing.

8

Match alloy and finish across an assembly

Anodize color shifts with alloy and temper. If mating parts have to look the same, specify the same alloy and the same finish from the same source, and settle your hardware before the parts are anodized or chem filmed.

9

Do not over-specify thickness

Thickness drives cost, dimensional change, and lead time all at once. Pick the service condition you actually need - mild, moderate, severe - rather than defaulting to the heaviest class because it sounds safer.

10

Ask before you commit to a spec

Some combinations simply do not work: a material that will not passivate, an alloy that will not anodize to the color you want, a thickness that closes a tolerance. We would rather flag it on the drawing than after the lot is run.

WORKING WITH GLECO

Capacity, logistics, and how to spec for our shop

11

We run parts up to 750 lbs.

Our largest tanks reach 120" x 36" x 72", and we process parts up to 750 lbs. If your part is large, heavy, or awkward, send the envelope early - we will tell you straight away whether it fits the line and which tank it runs in.

12

Mask only what must stay bare

Masking is hand work and it adds cost. Mark the surfaces that must stay unplated - bearing journals, sealing faces, contacts, threads - directly on the print. A clear callout beats a paragraph in the notes every time.

13

Finish comes last - tell us what comes after

Plating and coating follow machining, forming, welding, and stress relief. But if the part gets painted, bonded, soldered, or pressed after finishing, say so - it changes the pretreatment and sometimes the finish we would recommend.

14

One shop, plating through paint

Plating, anodize, passivation, paint, powder, dry film lube, Cerakote, and blasting all run under one roof across our Rowlett and McAllen facilities. Routing a multi-process part through one supplier removes the handoffs where parts get damaged and schedules slip.

15

Send parts clean, protected, and documented

Handle parts with gloves - skin oils and fingerprints turn into rejects downstream. Ship them separated and undamaged, with the drawing, specification, revision, type, and class identified. Missing paperwork is the most common reason a job sits.

16

We test in-house

Both locations run full labs for wet analysis and hull-cell testing, so bath chemistry is verified continuously rather than assumed. If your part needs documented results, ask up front and we will build the testing into the job.

SUBSTRATES WE PROCESS

and what we run on them

Aluminum	Anodize (sulfuric & hard), chem film, electroless nickel, plating, paint, powder, Cerakote
Steel	Zinc, zinc-nickel, zinc phosphate, cadmium, nickel, tin, dry film lube, paint, powder
Stainless Steel	Passivation (citric & nitric), nickel, copper, gold, paint, powder, Cerakote
Copper & Brass	Nickel, tin, silver, gold, bright dip
Powdered Metal	Plating and coating per application
Zinc Die Cast	Plating and coating per application
Inconel	Plating and coating per application

The finishes on the reverse are our core processes. We work to a wide range of additional AMS, ASTM, MIL, and QQ specifications - if you do not see yours listed, ask us. Certifications: ISO 9001:2015 | AS9100D | ITAR Registered.

SEND US THE PRINT BEFORE YOU RELEASE IT - We will review your finish callouts at no charge.