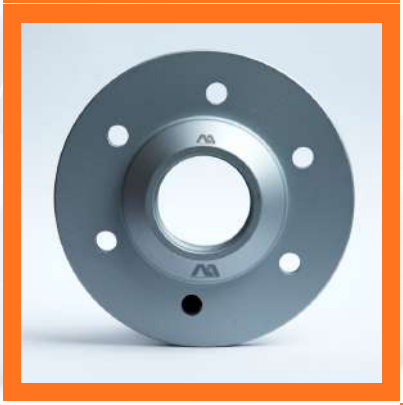
AUM DACRO COATINGS

AI Powered Zinc Flake Job Coater

The Ultimate Guide to Surface Finishing

Understanding Corrosion, Coatings & Geomet



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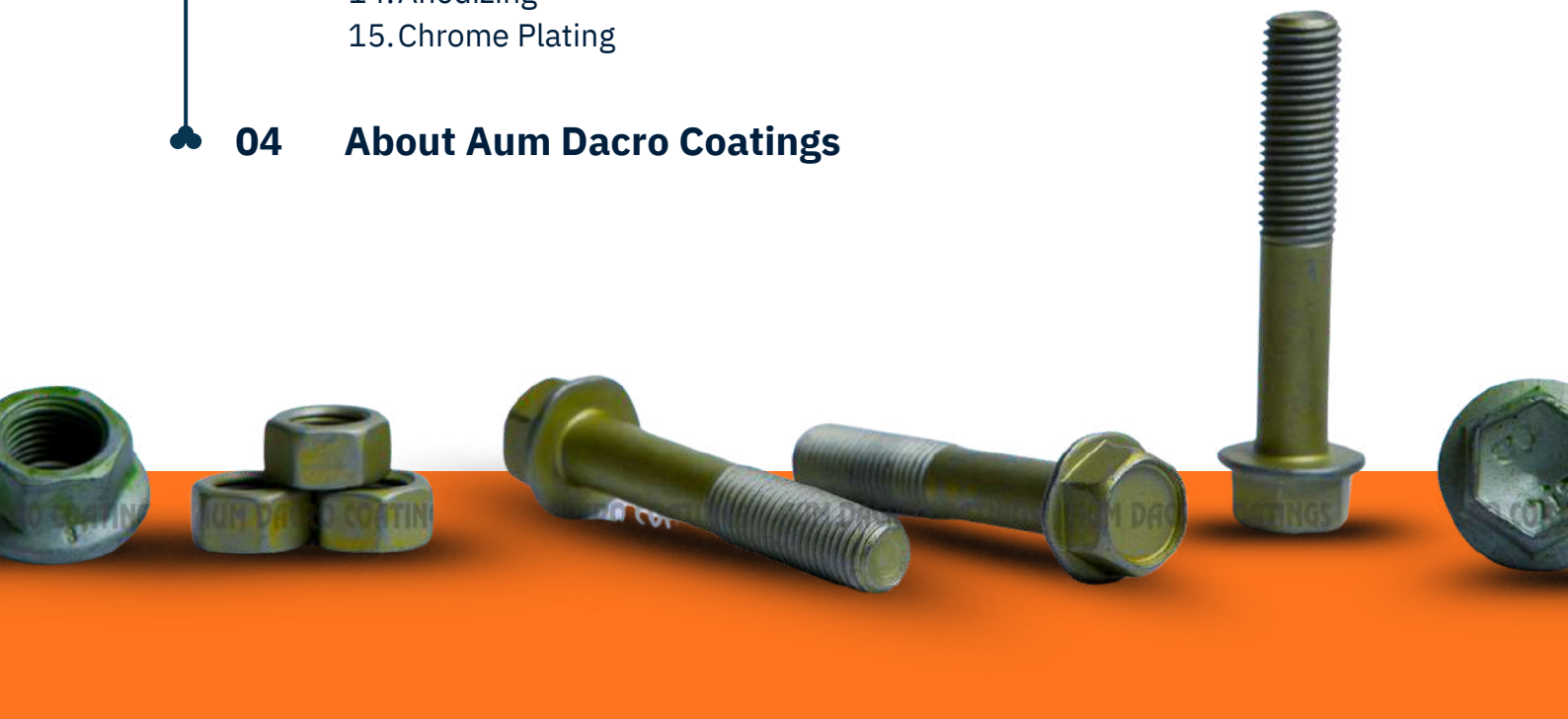


What is Corrosion?

Corrosion is the natural process by which a metal slowly deteriorates when it reacts with its environment—most commonly oxygen, moisture, or chemicals.
In simple terms:
👉 **Metal + air/water = rust or damage over time**

Example:
Iron reacts with oxygen and water to form rust, weakening the metal and reducing its life.

Why it matters:
Corrosion can lead to loss of strength, poor appearance, part failure, and high maintenance costs—which is why protective coatings like zinc flake, chrome plating, and paints are used.

Why Corrosion Matters:

- **Weakens components → safety risk**
- **Increases maintenance costs**
- **Reduces reliability and lifespan**

Road salt used in winter can speed up corrosion up to 10×, which is why underbody protection is critical.

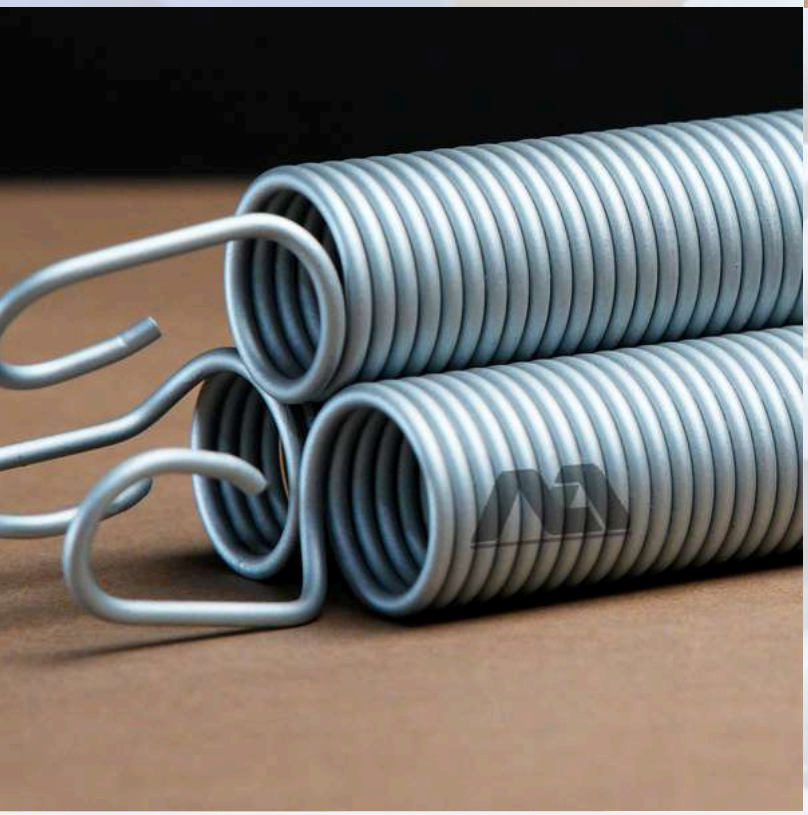
WHAT IS
SURFACE FINISHING?

Surface finishing is the process of altering a metal's surface to make it:

- **More corrosion-resistant**
- **More wear-resistant**
- **More attractive**
- **Easier to paint or assemble**

KEY PURPOSES:

- **Protection** (against rust, wear, or heat)
- **Aesthetics** (color, gloss, shine)
- **Functionality** (conductivity, friction reduction, solderability)



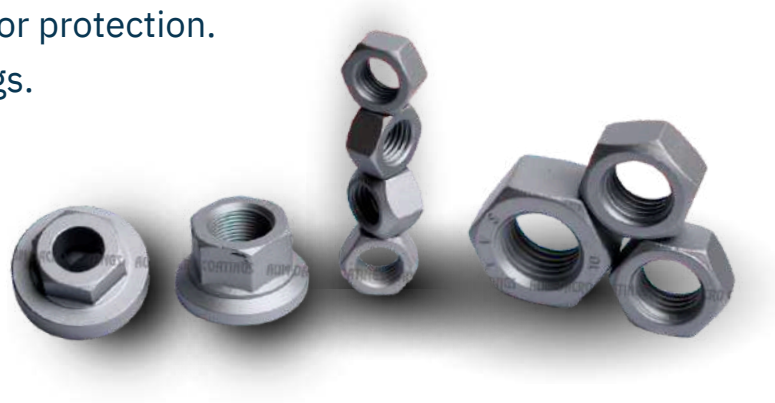
REAL-WORLD EXAMPLE:

- A car bolt is coated with Geomet for corrosion.
- A mobile connector is gold plated for conductivity.
- A bicycle frame is powder coated for looks.

TYPES OF **SURFACE FINISHES!**

01 Zinc Plating

What it is: Electro-deposition of zinc onto metal parts.
Why it's used: Cheap, simple, good for indoor protection.
Example: Screws, brackets, hardware fittings.



Advantages:

- Shiny appearance
- 200–400h salt spray resistance

Limitations:

- Hydrogen embrittlement risk on high-strength bolts
- Limited protection outdoors

02 Zinc-Nickel Plating

What it is: Alloy plating with 12–15% nickel for superior corrosion resistance.
Example: Fuel system parts, brake lines.

Benefits:

- 5–10× better corrosion resistance than zinc plating
- Excellent performance in cyclic corrosion tests
- Suitable for automotive underbody

Limitations:

- Higher cost
- Complex process.

03 Tin Plating

Purpose: Used for electrical & food-contact components.
Example: Terminals, cans, electrical connectors.

Pros:

- Bright finish
- Excellent solderability
- Non-toxic
-

Cons:

- Poor corrosion resistance compared to zinc-nickel
- Can develop “whiskers” (tiny metal filaments)

04 Silver Plating

Did You Know?

Silver is used in every spacecraft electrical system for reliability.

Purpose: For high conductivity and reflectivity.
Example: Battery terminals, RF connectors, aerospace parts.

Pros:

- Best electrical conductivity of all metals
- High thermal conductivity

Cons:

- Expensive
- Tarnishes over time

05 Gold Plating

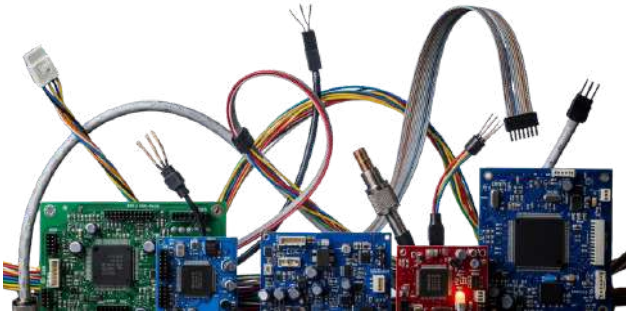
Purpose: Premium finish for electronic and luxury parts**.**
Example: Circuit boards, jewelry, luxury switches.

Pros:

- Never corrodes
- Superb conductivity

Cons:

- Very costly
- Used only in small thickness (0.1–2 microns)



06 Hot-Dip Galvanizing

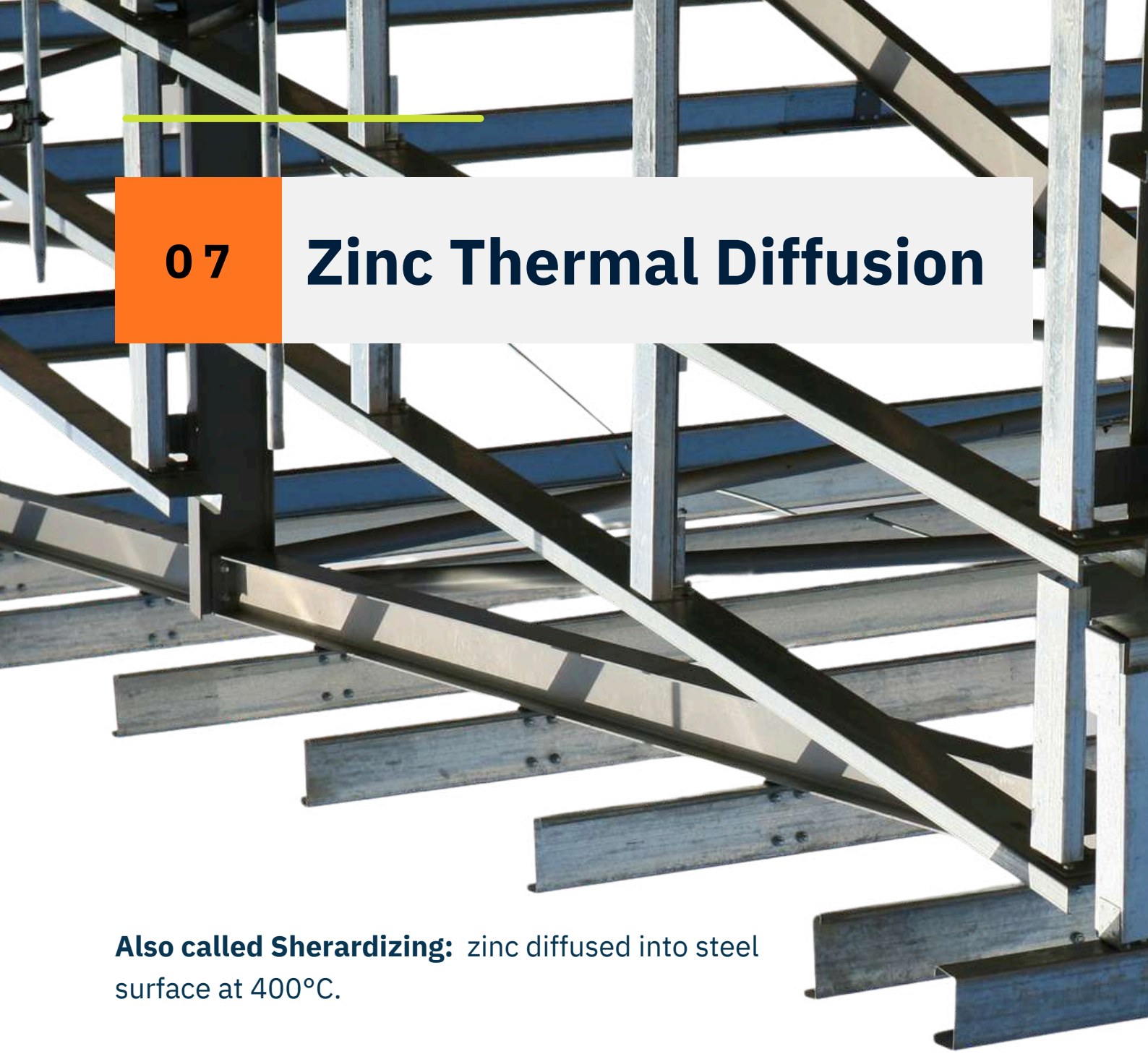
Purpose: Dipping steel in molten zinc at ~450°C.
Example: Bridges, guard rails, structures.

Pros:

- Thick, durable coating (50–80 microns)
- Self-healing at scratches

Cons:

- Rough appearance
- Not suitable for precision parts



07 Zinc Thermal Diffusion

Also called Sherardizing: zinc diffused into steel surface at 400°C.

Applications: Fasteners, springs, tools.

Example: Bridges, guard rails, structures.

Pros:

- Thick, durable coating (50–80 microns)
- Self-healing at scratches

Cons:

- Rough appearance
- Not suitable for precision parts

08 Zinc Flake Coating

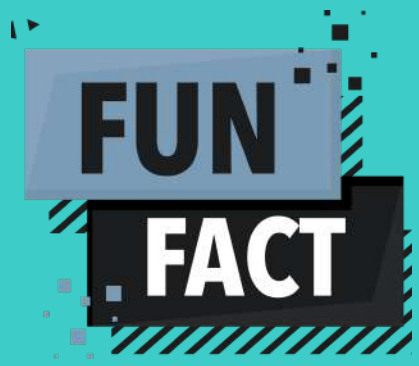
The Science Behind Staying Rust-Free

Corrosion is the silent enemy of metals. From automobiles and wind turbines to construction fasteners, every metallic part exposed to the environment eventually faces rust..

Key Features

- Chrome-free and eco-compliant (RoHS, REACH, PFAS-free)
- High corrosion resistance even in harsh salt spray environments
- Thin film coating (typically 5–20 µm) with excellent adhesion
- Compatible with a wide range of fasteners and components
- Consistent friction values for reliable torque-tension performance

A zinc flake coating thinner than a human hair can resist corrosion for 1,000+ hours in salt spray testing.



GEOMET® coatings protect steel without adding thickness, threads fit perfectly, no re-tapping needed.

GEOMET® Coatings
Sustainable Strength in Every Layer

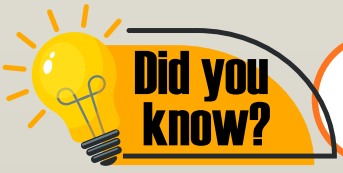
How It Works

GEOMET® coatings are water-based, non-electrolytic zinc-aluminum flake coatings applied through dip-spin or spray processes. They form a dense, overlapping network that prevents rust formation and resists chemicals, temperature fluctuations, and abrasion.

Aum Dacro Expertise

Aum Dacro is a certified GEOMET® applicator, offering multiple variants such as:

- **GEOMET® 500 –** Standard corrosion resistance
- **GEOMET® 720LS –** Low sliding friction topcoat
- **GEOMET® 321 –** Optimized for fasteners
- **GEOMET® 720HP –** High-performance automotive-grade system
- **ZINCROKOTE® –** Custom variant for enhanced durability



Zinc flake coatings: the choice of brands that demand durability

DELTA® Coatings

From Dörken MKS, DELTA® coatings are known for their two-part protection system: a zinc flake basecoat that provides cathodic protection and an organic topcoat that adds chemical, UV, and mechanical durability.

Popular Systems

- **DELTA-PROTECT®** – High-performance basecoat series
- **DELTA-SEAL®** – Friction-controlled, colored topcoat options
- **DELTA-TONE®** – For large parts and heavy-duty use

At **AUM KORRO TECH**, we use DELTA® systems for clients requiring consistent torque values, corrosion resistance, and aesthetic finishes.

Zintek® Coatings

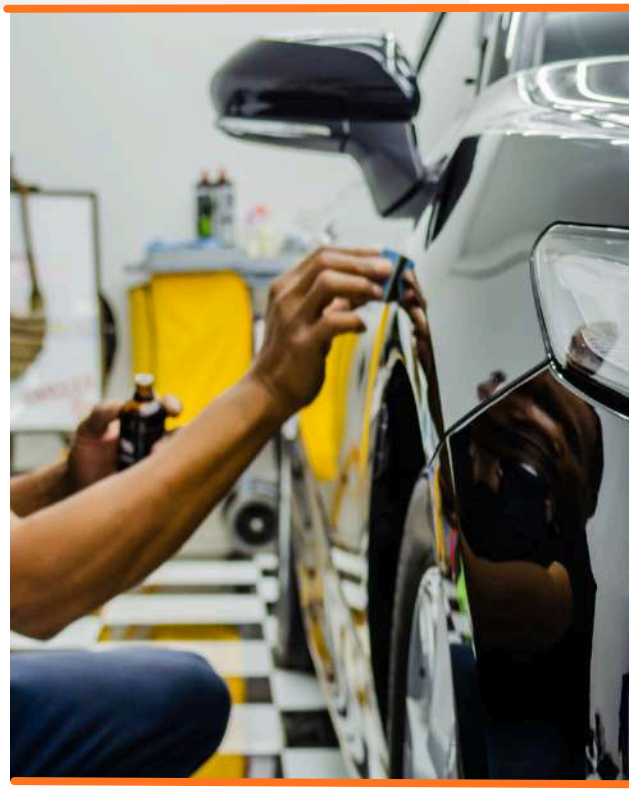
Developed by Atotech, the Zintek® family represents next-generation modular zinc flake coatings. These systems combine flexible basecoats and topcoats that can be customized for friction control, color, and corrosion resistance.

System Highlights

- **Zintek® One HP, 200 XT, and 300 H**P – Core basecoat series
- **Zintek® Top XT and Techseal Black SL VA** – High-durability topcoats
- **Excellent performance** under automotive OEM specifications (VW, Daimler, GM)

Zintek® coatings are designed for precision, repeatability, and sustainability, making them a preferred solution for critical fasteners and assemblies.

09 Cathodic Electrodeposition (CED) Coating



How it works: Also known as e-coating, the component is dipped in a bath; an electric current deposits paint.

Example: Car body undercoat, radiators, chassis parts.

Benefits:

- Uniform coating, even on corners
- Excellent adhesion
- Good base for powder coating

Cons:

- Requires electricity & curing ovens

10 PTFE Coating

Used for: Non-stick, low friction, chemical resistance.

Example: Fasteners in chemical plants, cookware, valves.

Benefits:

- Extremely low friction
- Resistant to chemicals, heat

Cons:

- Poor UV resistance
- Lower hardness

11 Powder Coating

Process: Dry powder sprayed electrostatically & baked.
Applications: Appliance bodies, wheels, furniture.

Pros:

- Durable, chip-resistant, colorful
- Zero VOC emissions

Cons:

- Only for parts that can withstand baking (~200°C)

Example: Alloy wheels, gym

12 Flock Coating

What it is: Applying short fibers (nylon, polyester) to surfaces using adhesive & electrostatic charge.

Used for: Car interiors, glove boxes, jewelry boxes.

Pros:

- Soft texture, decorative
- Reduces noise/vibration

Cons:

- Cosmetic, not protective

13 Phosphating

Purpose: Base layer for painting or CED coating.

Example: Car bodies, shock absorbers.

Pros:

- Enhances paint adhesion
- Provides mild corrosion resistance

Cons:

- Not a standalone finish

14 Anodizing (for Aluminum)

Process: Electrochemical oxidation of aluminum surface.

Example: Laptops, kitchenware.

Pros:

- Decorative colors
- Hard, wear-resistant surface

Cons:

- Only for aluminum

15 Chrome Plating

Use: Decorative and corrosion-resistant finish.

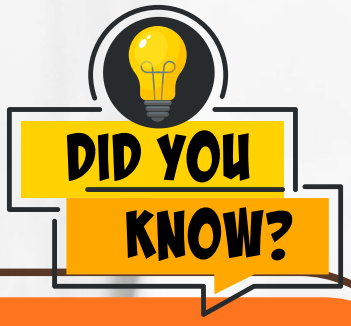
Example: Car mirrors, motorcycle parts.

Pros:

- Mirror-like shine
- Good corrosion resistance

Cons:

- Environmental issues (hexavalent chrome)
- Expensive wastewater treatment



Chrome plating isn't just for shine—its ultra-hard surface significantly reduces wear and friction, which is why it's widely used on automotive parts, hydraulic rods, and industrial components, not just decorative items.

Leadership Reflections

Sanjay Chitlangia, CEO

“At Aum Dacro, we don’t just build a business, we build a culture. Rooted in honesty, transparency, consistency, freedom, and empathy, our values guide every decision, every innovation, and every relationship. Together, we’ve created more than a workplace; we’ve built a family that believes in doing the right thing, embracing change, and finding joy in every achievement. Let’s continue to move forward with integrity, purpose, and happiness, always.”

Ekansh Chitlangia, Director

“At Aum Dacro, technology is not just a tool, it’s our driving force. Our digital transformation has reshaped how we work, bringing complete transparency, precision, and speed across every operation. From developing in-house apps to implementing real-time data systems, we’ve built a foundation where decisions are driven by insight, not instinct. As we move forward, AI and machine learning will further empower our teams to predict challenges, optimize performance, and innovate smarter. Our goal is simple, to create a connected, intelligent, and sustainable coating ecosystem where technology and people grow together.”

Contact us **TODAY !**

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