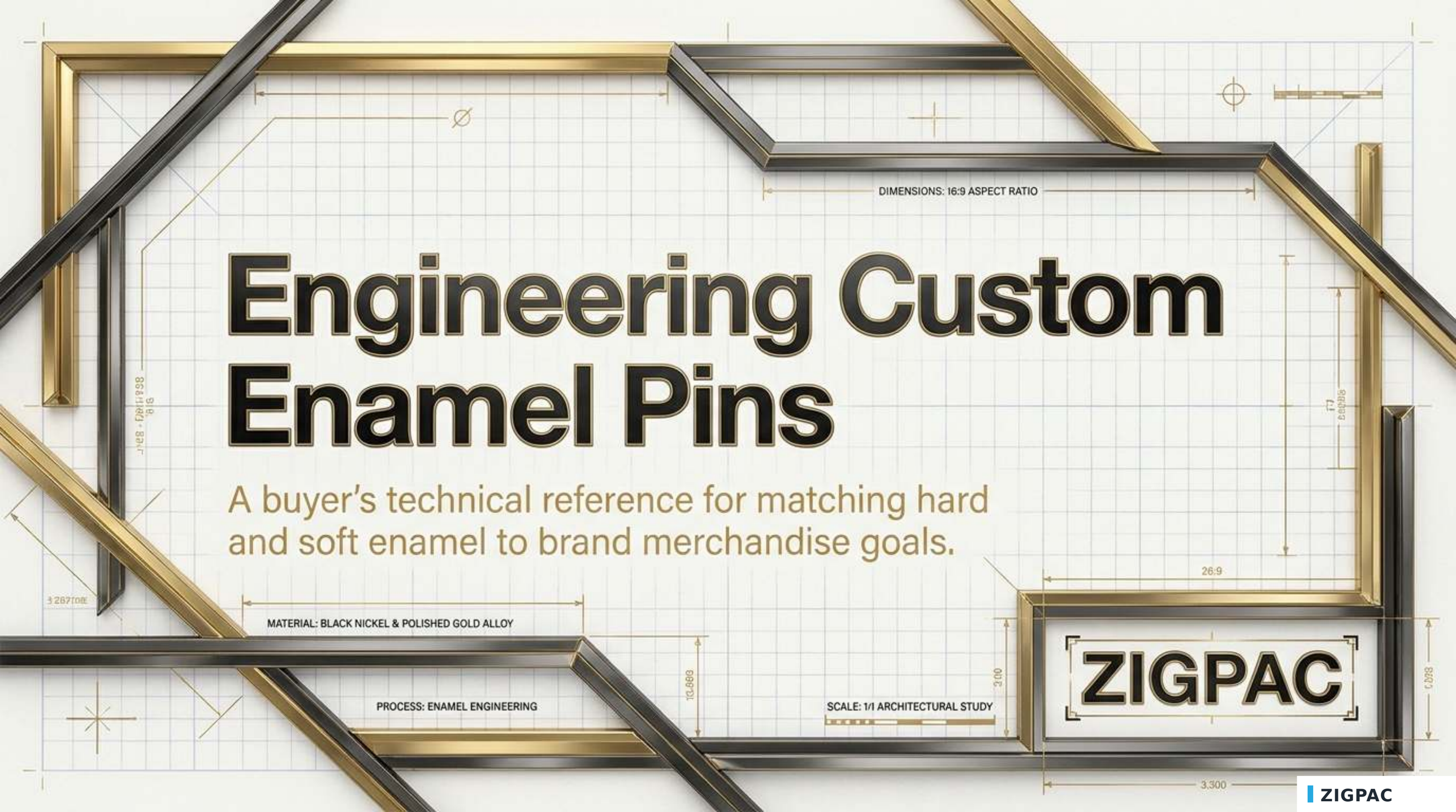
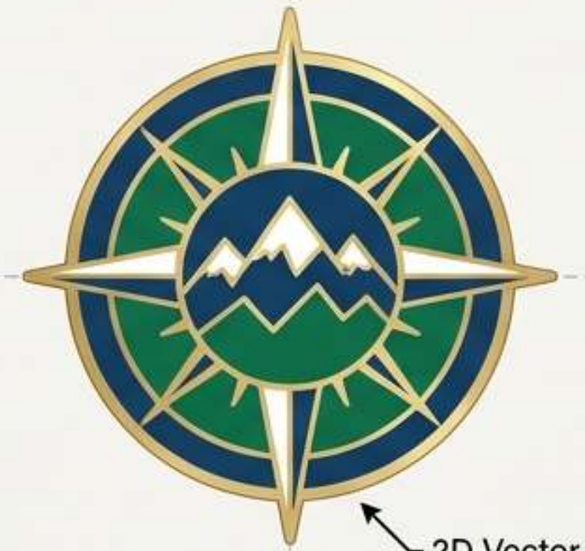

DIMENSIONS: 16:9 ASPECT RATIO
Engineering Custom Enamel Pins
A buyer's technical reference for matching hard and soft enamel to brand merchandise goals.
26:9
MATERIAL: BLACK NICKEL & POLISHED GOLD ALLOY
PROCESS: ENAMEL ENGINEERING
SCALE: 1/1 ARCHITECTURAL STUDY
ZIGPAC
3,300

Photos hide the tactile reality of enamel pins

Digital Expectation



2D Vector Representation.
Perfect smoothness.
Zero dimensionality.

Physical Reality



Hard Enamel.
Flush surface.
High reflection.
polished finish.

Soft Enamel.
Recessed fill.
Raised metal ridges.
Dimensional shadows.

Most buyers meet the hard-versus-soft question on a supplier page showing two attractive photos and a price gap.

The usual reaction is to choose hard enamel because it looks premium, or soft enamel because it is cheaper.

Insight: Neither shortcut considers the artwork, the audience, or the event date. A digital photo cannot convey surface tension, scratch resistance, or production timelines.

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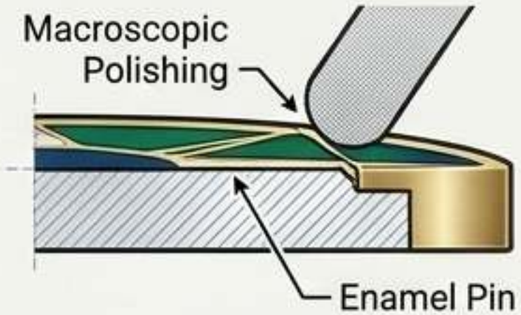
The compounding costs of a wrong guess



Compromised Artwork

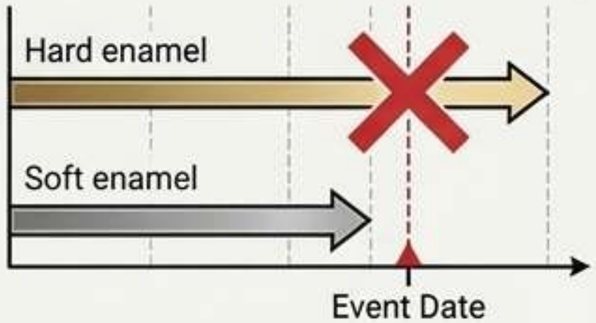
A logo with delicate hairline strokes can lose those strokes entirely when a hard enamel pin goes through the final polishing stage.





Missed Event Dates

A trade-show order can miss its critical ship date because the polished construction of hard enamel runs on a longer standard production schedule.





Misaligned Value

A retail collector line manufactured in soft enamel to save money can be rejected by buyers who specifically expect a level, glossy face.



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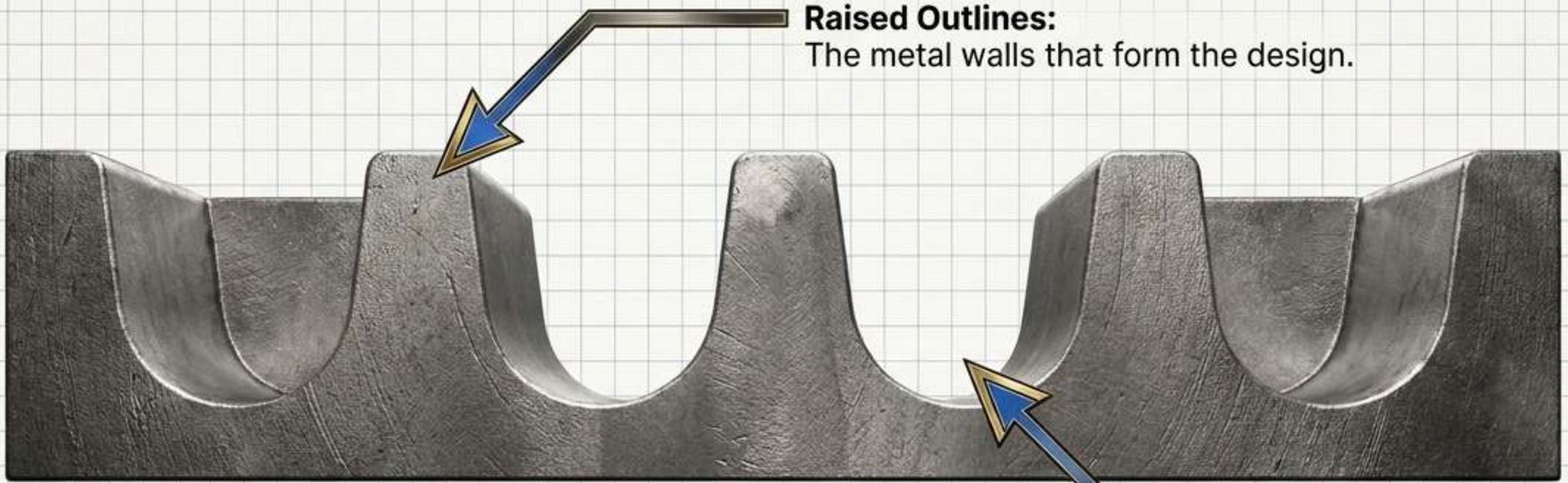
Every pin begins with the exact same metal foundation



The only difference between hard and soft enamel is how far the color fills these recessed cells, and what happens to the metal afterward.

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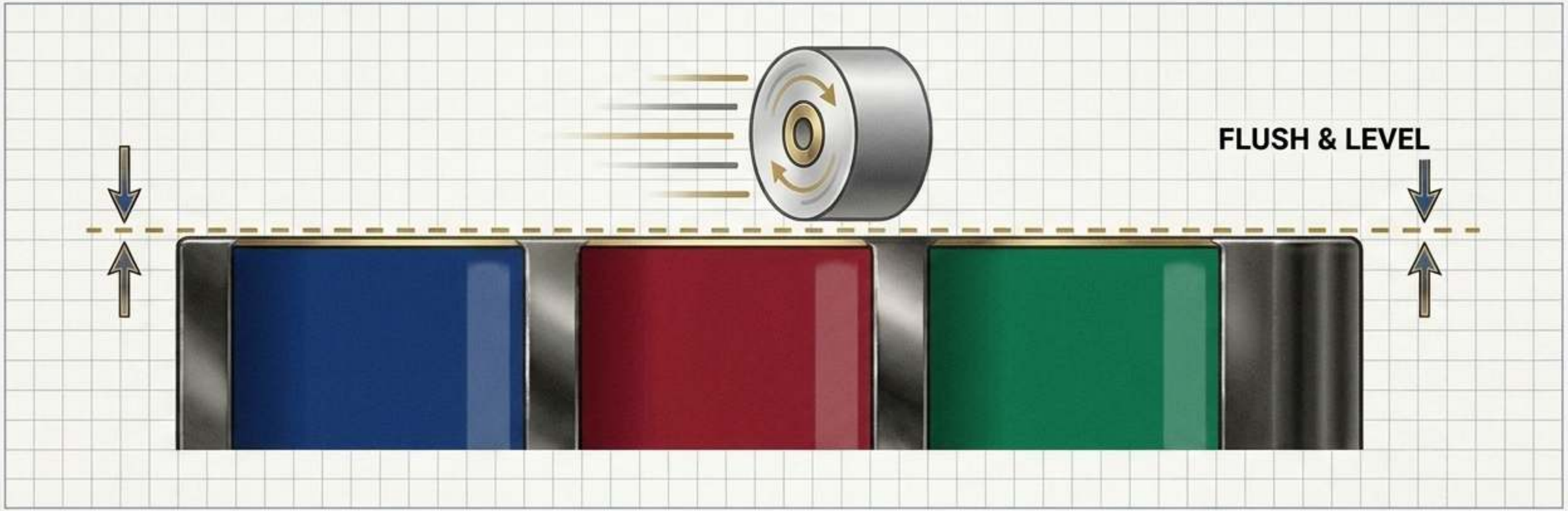
Hard Enamel: Filled and polished flat



The Process:

Color is built up in the cells, then the entire pin is polished until the enamel sits perfectly level with the metal lines.

The Feel:

A smooth, reflective, jewelry-like face. Running a fingertip across it reveals almost no step between metal and color.

The Trade-off:

Polishing removes material from both the metal and the enamel. The tops of the metal lines are ground down.

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Soft Enamel: Color sits below the metal ridges



The Process:	The Feel:	The Advantage:
Color fills the cells partway. The pin is completely unpolished, allowing the original raised metal lines to keep their full height.	A ridged, dimensional surface. You can physically feel the texture.	Because nothing is sanded smooth, delicate metal hairlines retain their full structural integrity.

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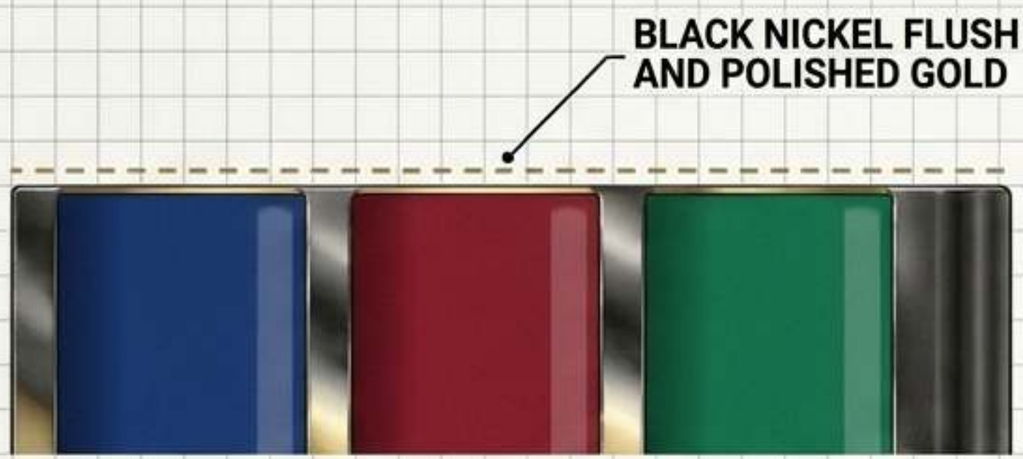
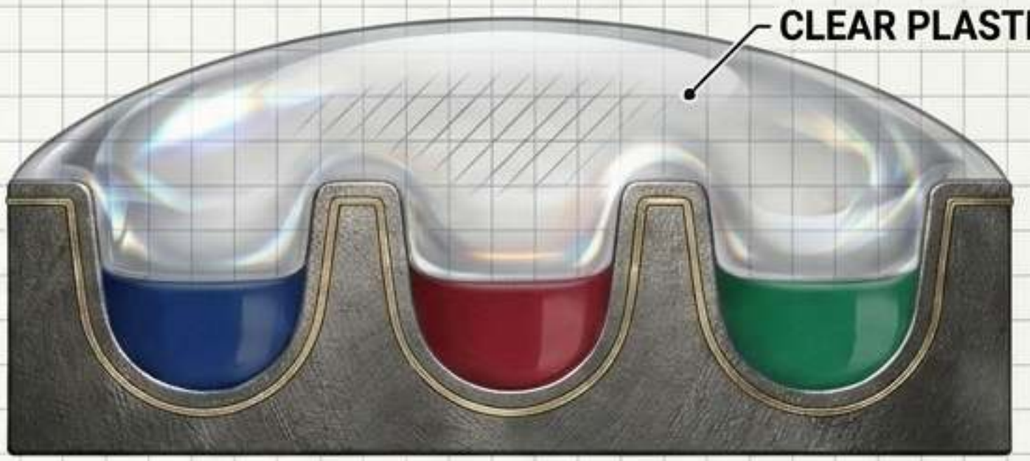
The Epoxy Dome does not replicate Hard Enamel

Hard Enamel (Level)



Soft Enamel + Epoxy Dome



Buyers often add a clear epoxy layer to soft enamel to get closer to a glossy look without paying hard enamel prices. Collectors can immediately tell the difference.

- **The Surface:** Leaves a domed, rounded surface, not a level, polished one.
- **The Trade-off:** Removes the tactile contrast that makes soft enamel distinctive.
- **The Risk:** May yellow, crack, or age over time.

Rule of Thumb: Sensible for loose giveaways; leave it off for texture-led art.

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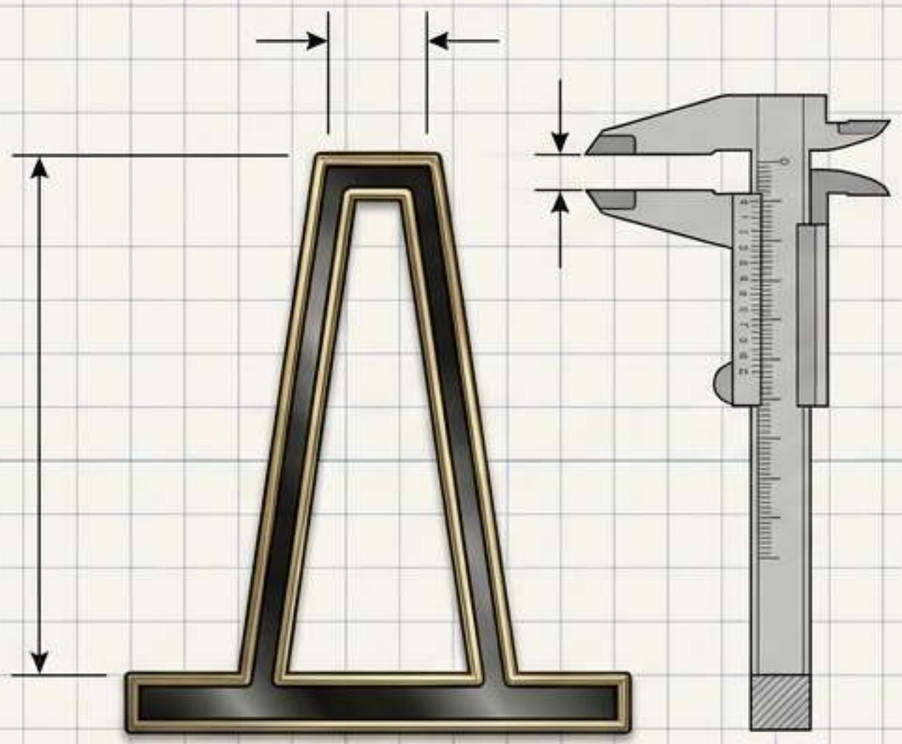
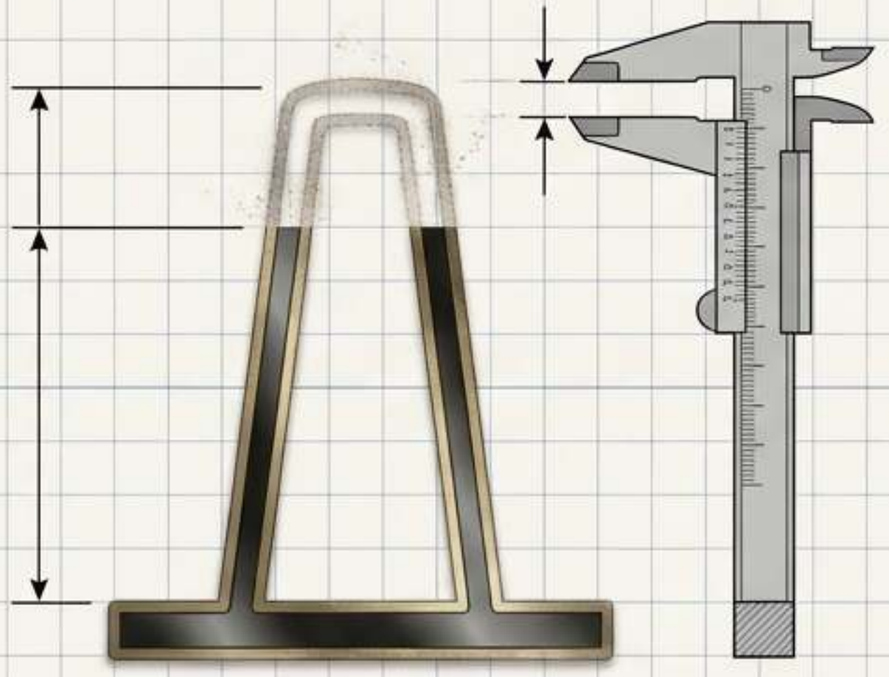
The **Polishing Penalty** limits delicate artwork



Before Polish / Soft Enamel



After Polish / Hard Enamel

There is no universal minimum line width for **hard enamel**. Because the tops of **the metal lines** are ground down during leveling, delicate lines and very small details can thin out or disappear entirely.

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The **15-minute** artwork diagnostic check



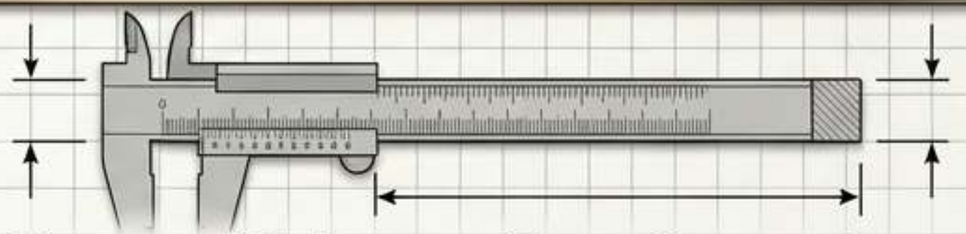
Check True Scale:
View art at actual finished size (100% zoom). Large monitor detail often merges into a blur at physical pin scale.



Enforce Closed Cells:
Every single color area must be fully enclosed by a metal line. Open shapes and soft edges cannot translate to enamel.



Flag Gradients:
Standard enamel fills one flat color per cell. Photo shading or gradients require a printed/UV pin.



Measure Minimums: For soft enamel, reference 0.2–0.3 mm metal lines, 0.3 mm color areas, and minimum 6 pt text.
6 pt text. Hard enamel lines will be flagged on the eProof if polishing risks them.

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Volume dramatically alters the per-unit cost gap



Insight 1: Per-piece cost falls sharply with volume for both styles.

Insight 2: A 500-piece hard enamel run ($1.30/ea) actually costs less per pin than a 100-piece soft enamel run ($1.50/ea).

Disclaimer: Baseline tiers only. Mold, setup, special plating, and freight are confirmed on project quote.

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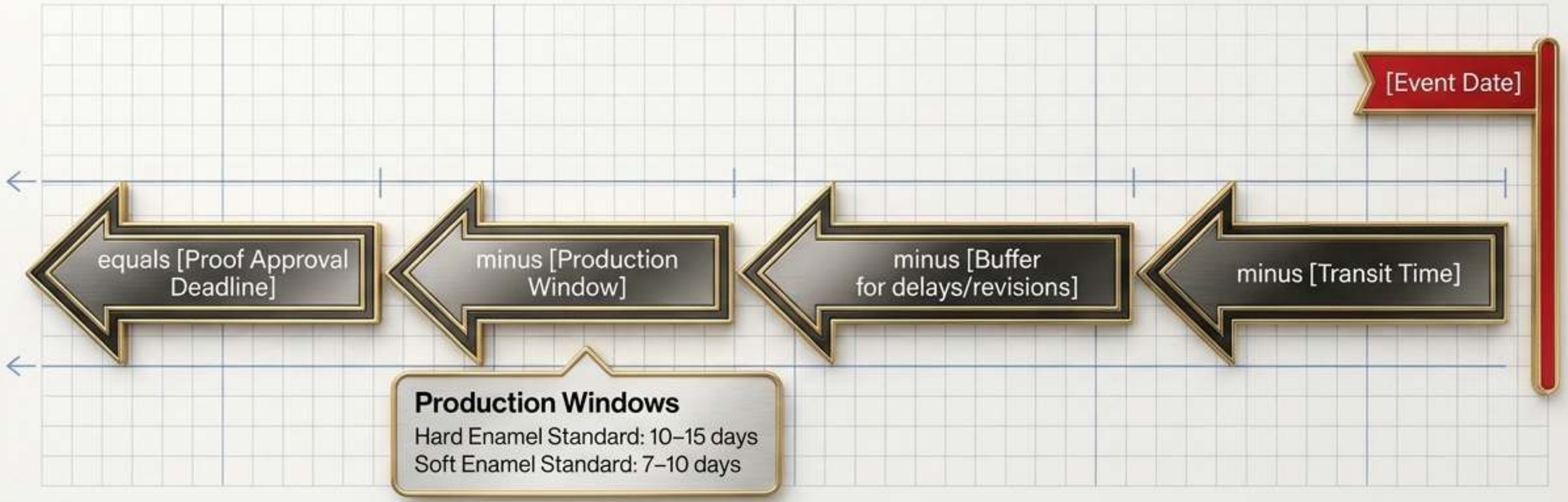
Reverse-engineering the event timeline



If the reverse-math leaves only the soft enamel window, the date has made the choice for you. Late artwork changes force new tooling and restart the clock.

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The Master Specification Matrix

Specification	Hard Enamel	Soft Enamel
Surface	Smooth, level, reflective	Raised metal, ridged texture
Polishing	Polished flat	Not polished; keeps full height
Fine Lines	Polishing may reduce lines	Holds ~0.2–0.3 mm lines
Wear Profile	Flatter look, spreads contact	Raised metal takes contact first
Plating Look	Flush outlines	Lines stand out, highly visible
Speed	10-15 days standard	7-10 days standard

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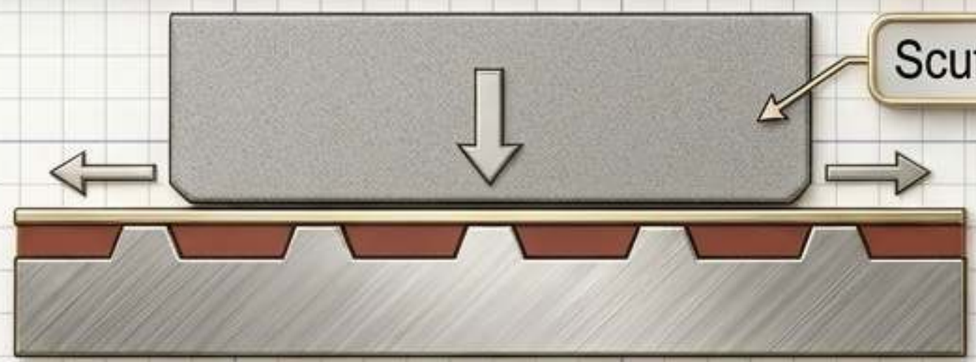
Wear, tear, and scratch behavior in practice

Hard Enamel



A level face spreads contact evenly across both metal and enamel. Preferred for pins worn daily on lanyards or uniforms.

Soft Enamel



Raised metal lines take the first scuffs. Recessed color is physically sheltered but can collect grime in the corners.

Reality Check: No independent standard rates enamel pin scratch resistance by construction type. Base metal, plating, and quality control matter more than the name.

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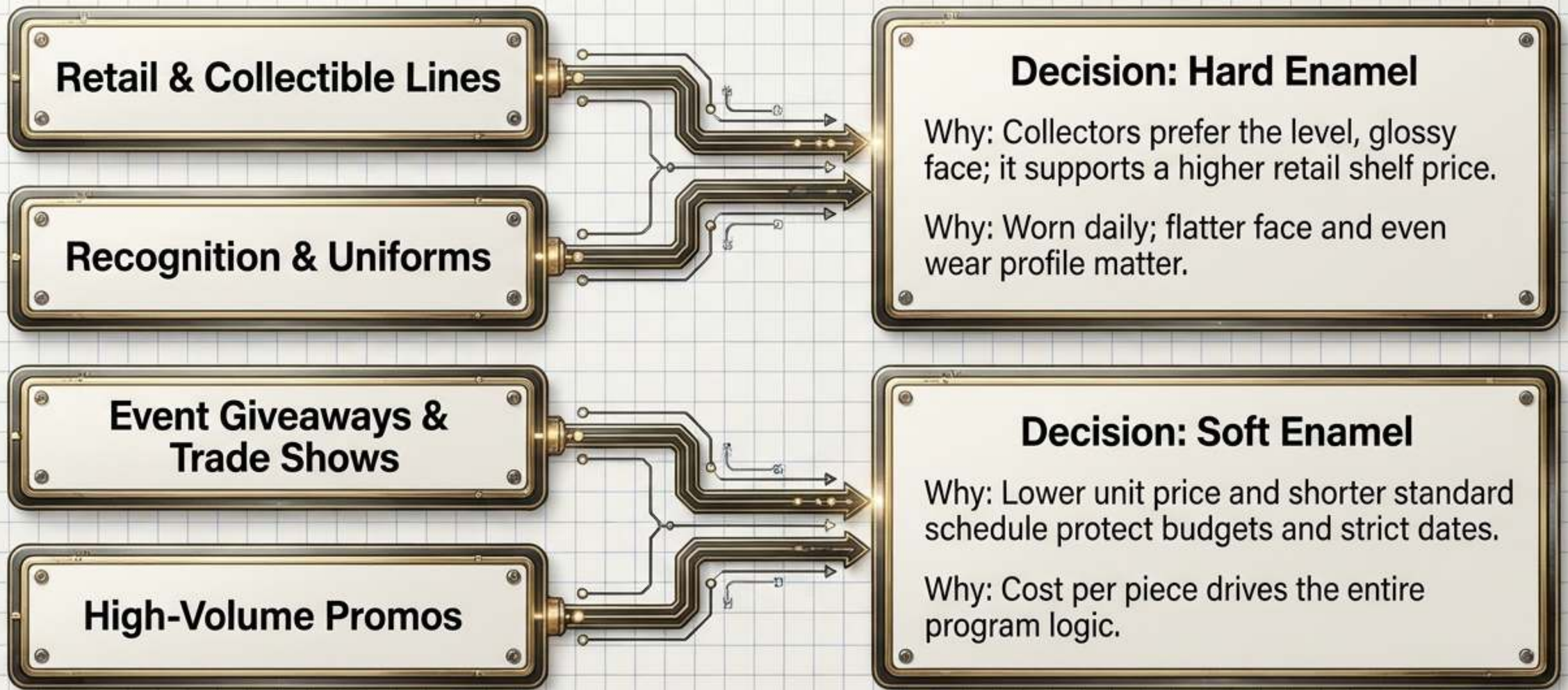
The Merchandise Matchmaker



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The Three Golden Rules of Pin Selection

01 The Value Rule

If the pin is sold for profit, collected by enthusiasts, or worn every day -> Start with Hard Enamel.

02 The Logistics Rule

If the pin is given away in high volume, or required on a tight event date -> Start with Soft Enamel.

03 The Canvas Rule

If the art inherently relies on extreme hairlines, gradients, or high relief -> Let the art decide (Soft Enamel or Printed).

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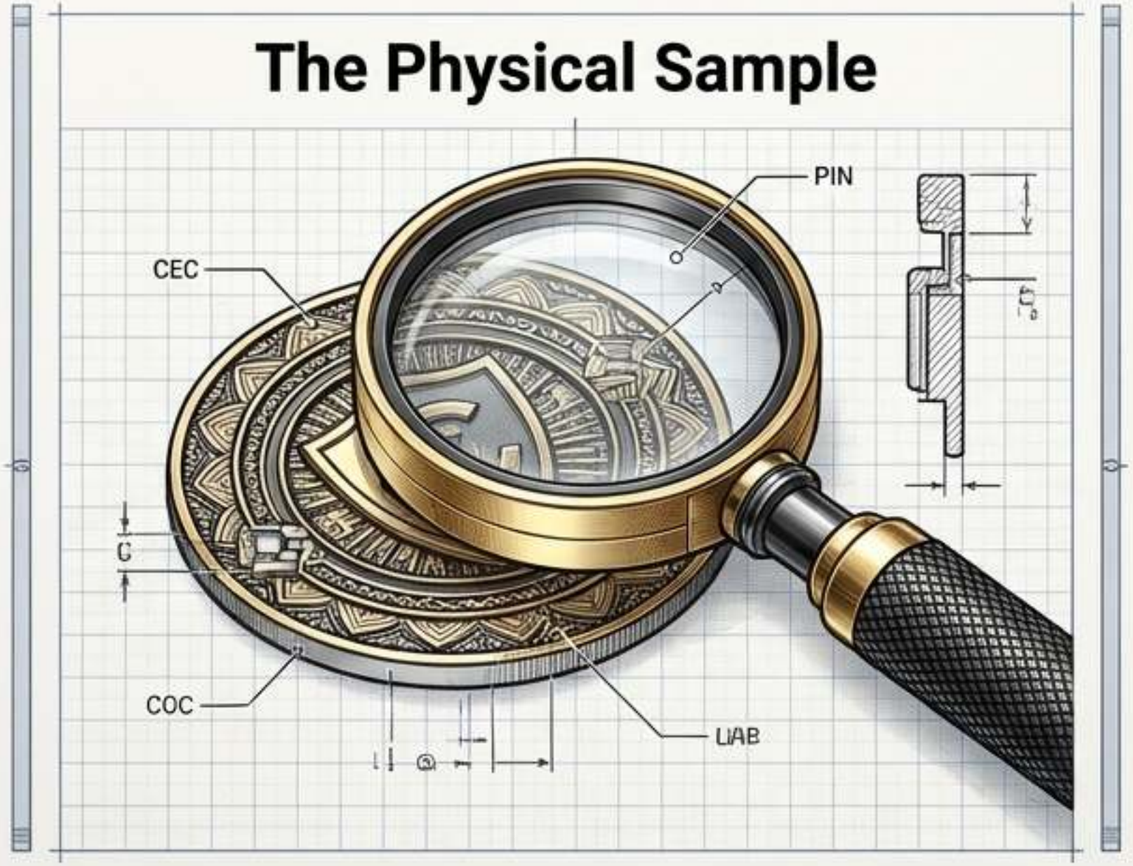
Quality control and compliance checkpoints

The Physical Sample



Always approve an eProof, but when brand colors, skin tones, or fine metalwork are critical, demand a physical sample before bulk production (US$5–30). It is cheap insurance. Agree on acceptance criteria in writing beforehand.

Safety & Compliance



If pins will go to children at school, family, or sports events, they may be classified as children's products. U.S. CPSC toy safety guidance and total lead content rules apply separately to substrates and surface coatings. Flag this during the quote phase.

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The Quote-Ready Brief Checklist

Always ask for hard and soft enamel quoted side-by-side on the same spec. Provide:

- ☐ Vector artwork files (AI, EPS, or PDF)
- ☐ Finished physical size and total number of colors
- ☐ Exact Pantone references for critical brand colors
- ☐ Preferred plating and attachment style (e.g., rubber clutch, butterfly, magnet)
- ☐ Backing card or specific packaging requirements
- ☐ Total quantity and the non-negotiable in-hand date

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Zigpac provides free eProofs with every order. Final MOQ, price, and schedule are confirmed directly on your quote.