

CONSUMER ELECTRONICS GLASS — TECHNICAL FAQ

PP2® SiO₂ Glass Protection Platform

Single-Pass & Dual-Layer Architectures for Consumer Glass

1. What is the PP2 platform?

PP2 is an **inorganic, chemically bonded SiO₂ glass-protection platform** designed for **consumer electronics glass**, including:

- Cell phones
- Tablets
- Camera lenses
- Eyeglasses
- Touch displays and wearable glass

It is a **surface-engineering system**, not a film, not tempered glass, and not a peel-off protector.

2. What problem is PP2 designed to solve?

Consumer electronics glass is exposed to:

- Constant touch and wiping
- Skin oils and acids
- Microfiber abrasion
- Pocket grit and dust (silica)
- Repeated cleaning

PP2 is designed to improve:

- Scratch and micro-abrasion resistance
 - Smudge and fingerprint resistance
 - Ease of cleaning
 - Long-term surface feel and appearance
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3. Is PP2 a film or a “screen protector”?

No.

PP2:

- Does **not** form a plastic or ceramic film
- Does **not** peel or delaminate
- Chemically bonds to the glass surface
- Operates at a **micro- to sub-micron scale**

Performance comes from **chemical bonding and silica network formation**, not thickness.

4. What architectures exist in the PP2 platform?

The PP2 platform supports **two architectures**, selected by **use case**, not chemistry:

Single-Layer System — PP2

A single-pass, wipe-on SiO₂ treatment that provides strong baseline protection.

Dual-Layer System — PP2 + PP2AR

A two-step system consisting of:

- **PP2 (Base Layer)** → adhesion, flexibility, surface feel
- **PP2AR (Armor Topcoat)** → abrasion resistance and wear protection

Both use the **same SiO₂ chemistry family**, delivered through different architectures. [\[MASTER BOM...PP2 PP2AR | Word\]](#), [\[MASTER BOM PP2 PP2AR | Word\]](#)

5. What does PP2 (single-layer) provide by itself?

PP2 alone delivers:

- Excellent adhesion to aluminosilicate glass
- High optical clarity (no haze when applied correctly)
- Hydrophobic and oleophobic surface behavior
- Improved scratch resistance vs untreated glass
- Smooth, slick surface feel

PP2 **absolutely works on its own** and already outperforms most single-layer “liquid glass” competitors. [[What GARD...elf single | Word](#)]

6. Where does PP2 (single-layer) reach its limits?

This is a **physics limitation, not a chemistry flaw**.

PP2 alone is vulnerable to:

- Microfiber abrasion
- Pocket grit and dust
- Repeated wiping that slowly creates micro-scratches
- Gradual haze formation over time

This is the **same failure mode** seen in all single-layer glass coatings.

7. What does PP2AR add in the dual-layer system?

PP2AR exists for one reason:

To take abrasion off PP2.

PP2AR provides:

- Higher silica network density
- Higher surface hardness
- Much better microfiber abrasion resistance
- Improved resistance to pocket grit
- Slower haze development

Importantly:

- PP2AR does **not replace** PP2's feel or adhesion
- It **protects PP2 from wear**, acting as a sacrificial armor layer

This mirrors proven architectures used in:

- Automotive clearcoats
- Camera lens hardcoats
- OEM display coatings. [\[What GARD...elf single | Word\]](#)

8. Is single-layer “worse” than dual-layer?

No — it is a **deliberate tradeoff**, not a failure.

Factor	PP2 (Single-Layer)	PP2 + PP2AR (Dual-Layer)
Application steps	1	2
Ease of use	Maximum	Lower
Abrasion resistance	Good	Excellent
Longevity under wiping	Moderate	High
Cost	Lower	Higher
Best fit	Consumer retail	Professional programs

9. Where does each system make the most sense commercially?

Your instinct is exactly right:

PP2 + PP2AR (Dual-Layer)

Best for:

- Carrier protection programs (Verizon, AT&T, etc.)
- Retail phone-care services
- Kiosks and service counters
- Professional application environments

Why:

- Maximum durability
- Justifies premium pricing
- Reduced return and complaint risk

PP2 (Single-Layer)

Best for:

- Direct-to-consumer sales (Amazon, online retail)
- DIY consumer applications
- Fast, simple “wipe-on” use cases

Why:

- Simplicity drives adoption
 - Still delivers strong performance
 - Lower friction for consumer use
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10. Does PP2 require UV or heat curing?

No.

Both PP2 and PP2AR:

- Cure at **ambient temperature**
- Require no UV lamps
- Require no baking or heat

This is critical for:

- Retail environments
 - Field application
 - Consumer usability. [[MASTER BOM...PP2 PP2AR | Word](#)]
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11. Does PP2 affect screen clarity or touch sensitivity?

No.

When applied correctly:

- No haze
- No color shift
- No reduction in touch response
- No optical distortion

The system is designed to be **optically neutral**.

12. Is PP2 PFAS-free?

Yes.

The PP2 platform:

- Is **PFAS-free**
 - Does not rely on fluorinated silanes or surfactants
 - Achieves performance through **silica network engineering**, not fluorine. [\[MASTER BOM...PP2 PP2AR | Word\]](#)
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13. What is the designed failure mode?

For both architectures:

Gradual surface wear, not peeling, cracking, or delamination.

This allows predictable performance decline without cosmetic failure.

14. Key takeaway

PP2 is a single SiO₂ glass-protection platform delivered through two architectures. Single-layer PP2 maximizes simplicity and consumer adoption, while dual-layer PP2 + PP2AR maximizes durability for professional and carrier programs — without changing the underlying chemistry.
