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How to Use FE: Functional Extrinsic – Silicone Coloring System

1. OVERVIEW

The Functional Extrinsic Pigment System (FE) is designed for realistic surface coloration of cured medical-grade silicones. This system refines hue, adds skin-like detail, and enhances the realism of prosthetic devices — all without altering intrinsic coloration.

FE Extrinsic Pigments (KT-199) are finely milled, silicone-compatible pigments engineered for precision tinting. These pigments are used in combination with approved solvent carriers that momentarily open the silicone surface, allowing pigment infusion before evaporation.

Recommended Carriers:
- A-840 (CCH Solvent) – Preferred and safest option. Excellent performance, low toxicity, and stable handling.
- FE-100 – Factor II solvent with strong pigment solubilization characteristics.
- I-301 ETF – Effective traditional solvent, but limited availability.

2. MATERIALS REQUIRED

Component	Description	Recommended Product
Extrinsic Pigments	Silicone-compatible pigment system for surface coloring	FE: Functional Extrinsic – Silicone Coloring System (KT-199)
Solvent Carrier	Opens silicone pores for pigment infusion	A-840 (preferred), FE-100, or I-301
Sealants	Protect and finish extrinsic coloration	TS-564, A-564, MD-564
Brushes	Fine sable or synthetic paintbrushes	No. 2–6, fine tip
Mixing Pad	Disposable wax-free pad for pigment thinning	Factor II Mixing Sheets

Curing Unit	Heat source for sealing	Oven capable of 100 °C (212 °F)
Cleaning Agent	Surface degreaser before painting	A-830 (Acetone) or Ethyl Acetate (B-3808)

3. PREPARATION

1. Trim & Finish: Refine prosthesis edges and remove flash.
2. Surface Cleaning: Wipe thoroughly with A-830 (Acetone) or B-3808 (Ethyl Acetate), avoiding skin contact with cleaned surfaces.
3. Inspect Base Color: Extrinsic pigmentation refines tone and surface detail; if base color is significantly incorrect, remake the intrinsic coloration.

4. COLOR MIXING

1. Dispense small amounts of FE Pigments onto a clean mixing pad.
2. Thin with solvent — A-840 (recommended), FE-100, or I-301 — until a translucent wash consistency is achieved.
3. Mix gently until uniform; record ratios for consistency.
4. Discard unused mixtures after each session — do not reuse.

Tip: For maximum safety and consistent performance, use A-840 (CCH Solvent). It provides effective pigment dispersion while minimizing volatile fume exposure.

Optional Equipment: For even pigment blending, a Vortex Mixer (AC 100–240 V | 2800 rpm | 130 × 125 × 70 mm) can be used for 3–5 seconds to homogenize pigment and solvent.

5. APPLICATION PROCEDURE

1. Apply the pigment wash using a fine brush in thin, even layers.
2. Allow each layer to flash off (solvent evaporation) before applying the next.
3. Build tone gradually for a natural effect.
4. Avoid heavy, wet applications that may reduce sealant bonding.
5. Once complete, let the prosthesis air-dry fully before sealing.

Tip: When using A-840, drying is slightly slower than with older solvents — this provides more working time and smoother blending.

6. SEALING PROCEDURE

Follow the same three-step sealing process (TS-564, A-564, MD-564) and curing cycle as outlined below.

1. First Seal (TS-564): Apply a thin, even coat and allow to dry.
2. Second Seal (A-564): Apply a light, uniform layer; tamp gently with gauze for an even sheen.
3. Matting Layer (MD-564): After A-564 dries, apply a thin coat to reduce gloss.

Cure each sealant layer at 100 °C (212 °F) for 15 minutes, allowing full cooling between coats.

7. CURING

Sequentially cure all sealant layers at 100 °C for 15 minutes. Proper curing ensures pigment stability and long-term finish durability.

8. SAFETY & HANDLING

- Use all solvents in a well-ventilated area or under fume extraction.
- A-840 is the preferred solvent due to its low hazard rating and reduced volatility.
- Wear nitrile gloves and eye protection.
- Avoid inhalation of vapors and skin contact.
- Dispose of solvent-contaminated pads properly.
- Always consult the A-840, FE-100, and TS/A/MD-564 SDS for detailed safety and handling guidance.

9. FINAL INSPECTION

- Confirm smooth, even coloration and matte finish.
- Ensure no residual tackiness.
- Verify seal adhesion and surface integrity.

10. KEY NOTES

- Apply pigments sparingly — thin, layered washes yield the best realism.
- Over-pigmentation can reduce seal strength.
- Maintain meticulous cleaning and curing practices for consistent, professional results.

11. REFERENCES

Based on Factor II Technical Protocols and FE Extrinsic Coloring Guide (KT-199, QA-TS-07).