

Product Usage Guide (Polyfix Dental Resin Stain Kit)*Model: PRS-S-R Series (R01-R21) | Brand: ZonMed PRS*

1. Product Overview

Polyfix is a light-curing (385-405 nm) thixotropic coloring gel system for external characterization of dental prostheses. It is designed for staining and aesthetic finishing of PMMA, PEEK, composite resin and 3D-printed denture bases. The system comprises 21 intermixable shades (R01-R21) that can be blended for precise color matching.

2. Key Features

- High Color Stability - nano-inorganic pigments; dE < 2.0 after aging, no fading.
- Fast Curing - <=30 s surface cure, 30-50 s full cure (depending on thickness).
- Intelligent Color Matching - 21 intermixable shades covering gingival, dentin, effect and finish categories.
- Nano Technology - nano silica for antibacterial, wear- and corrosion-resistance; thixotropic gel that does not slump.
- HEMA-Free / MMA-Free formulation (per manufacturer).
- PRS Open Ecosystem - compatible with the vast majority of dental LED curing lights; open system, no printer lock-in.

3. Technical Specifications

Item	Specification
Type	Light-curing thixotropic gel
Composition	Polyurethane Acrylate + UDMA (72869-86-4) + Methacrylate Resin + photoinitiator (270586-78-2) + Inorganic Pigments
Viscosity	1000-3000 cps (thixotropic, brushable)
Color System	21 shades (R01-R21)
Curing Wavelength	385-405 nm
Curing Time	30-50 s (0.07-0.15 mm); multi-layer: cure each layer individually
Coating Thickness	0.07-0.5 mm per layer; thin multiple layers (no single thick coat)
Hardness (cured)	>= 70 Shore D
Bond Strength	>= 25 MPa to PMMA / composite (after sandblasting)
Color Stability	dE < 2.0 after 7 days water immersion + UV aging
Storage	5-25 C, sealed, light-proof, upright; use within 6 months after opening

4. Shade System (R01-R21)

Grouped by colour family:

Family	Shade Codes	Typical Use
Gingiva / Soft Tissue	R01 Bright Red, R02 Dark Red, R03 Pink, R04 Light Pink	Gingival tissue matching, vascular accents, papilla and mucosal characterization
Dentin / Body	R05 Sepia, R06 Bronze, R07 Khaki, R08 Orange, R09 Yellow	Dentin chroma, cervical warmth, occlusal groove and fissure shading
Effect / Characterization	R10 Green, R11 Dark Green, R12 Dark Blue, R13 Light Blue, R14 Lilac, R15 Black, R16 Grey, R17 Beige, R18 White	Hue adjusting, incisal halo, value up/down shifting and micro-characterization
Auxiliary / Finish	R19 Diluent, R20 Glaze, R21 Glaze (Soft)	Viscosity adjustment, high-gloss and soft protective finishing

Individual Shades

Code	Shade Name	Usage & Application
R01	Bright Red	Replicate vivid vascular details and mucosal accents.
R02	Dark Red	Deepen gingival contours, root-area shadows and pigmentation.
R03	Pink	General gingival tissue matching and papilla contouring.
R04	Light Pink	Simulate light gum tissue, mucosal highlights and soft-tissue transitions.
R05	Sepia	Accentuate fissures, occlusal grooves and deep dentin chroma transitions.
R06	Bronze	Mature dentin undertones, cervical aging and warm chromatic intensity.
R07	Khaki	Neutralize high brightness; mimic age spots and brownish-green hue shifts.
R08	Orange	Internal warmth, mamelon highlights and natural dentin brilliance.
R09	Yellow	Youthful dentin characterization and occlusal fissure highlights.

R10	Green	Internal characterization; neutralize unwanted chromatic shifts.
R11	Dark Green	Deep fissure staining, value modification and natural contrast detail.
R12	Dark Blue	Neutralize high chroma; deep incisal halos and cool translucent depth.
R13	Light Blue	Subtle incisal transparency and cool opalescent halo; value adjustment.
R14	Lilac	Fine-tune reddish-blue undertones and high brightness values.
R15	Black	Maximum value down-shifting and sharp fissure delineation.
R16	Grey	Mimic wear facets, metallic masking accents and age-related effects.
R17	Beige	Subtle cervical transitions, root exposure simulation and soft blending.
R18	White	Enamel calcification spots, incisal halo effects and high-value surfaces.
R19	Diluent	Adjust viscosity and flow of the resin stains.
R20	Glaze	High-gloss protective surface sealant.
R21	Glaze (Soft)	Satin-soft, flexible protective finish for flexible/elastic materials.

5. Usage Instructions

Step 1 - PPE - Wear nitrile gloves, anti-splash goggles and a KN95 mask. Work on a ventilated bench.

Step 2 - Mixing - Take the needed amount of gel. If too thick, add 1 drop of Diluent (R19) and adjust to a honey-like consistency. Close the cap immediately after use to prevent ambient-light curing.

Step 3 - Coloring - Use a fine brush; apply thin, even coats (small amount, multiple times). For multi-layer work, let the previous layer level before overlaying. Recommended thickness: 0.07-0.5 mm per layer. Do NOT apply a single thick coat - it may cause incomplete internal curing.

Step 4 - Curing - Use a 385-405 nm dental LED curing light. Standard curing: 30-50 s; extend time for thicker layers. For multi-color work, cure each layer individually, then perform one final overall cure.

Step 5 - Finishing - After full curing, lightly polish with fine sandpaper or a polishing wheel to increase surface durability and gloss.

Note (R21): R21 Glaze (Soft) is specifically designed for flexible resins and elastic materials (e.g. flexible denture bases); curing time is adjusted to 150 seconds.

6. Handling & Safety Precautions

- Uncured gel may cause skin irritation, serious eye irritation and (in susceptible individuals) skin/respiratory sensitization. Avoid contact with skin and eyes.
- Wear nitrile gloves (>0.11 mm), anti-splash goggles and, where ventilation is inadequate, an organic-vapor respirator.
- Do not eat, drink or smoke while handling. Wash hands thoroughly after handling.
- Avoid contact with strong oxidizers, concentrated acids/bases, and high-intensity UV light.
- If on skin: wash with plenty of water. If in eyes: rinse cautiously for several minutes and seek medical attention; if irritation persists, get medical advice.
- Keep out of reach of children; store away from UV curing equipment. Professional dental laboratory use only.

7. Storage, Shelf Life & Transportation

Parameter	Specification
Storage Temperature	5-25 C, cool and dry
Storage Conditions	Keep sealed and protected from light; keep upright; max stack 1.2 m; store in a locked cabinet away from children and UV curing equipment
Shelf Life	See product label; use within 6 months after opening
Transportation	Ship as ordinary dental chemical goods; keep sealed, light-proof, at room temperature; avoid direct sun and rough handling

8. Disposal

- Uncured waste: classify as dental chemical hazardous waste; seal and entrust to a licensed waste handler for incineration.
- Cured waste: dispose of as general dental solid waste per local regulations.
- Do NOT pour liquid waste into sewer systems or mix with household garbage.
- Empty containers may retain residue; handle as hazardous waste unless thoroughly cleaned and cured.



9. Compatibility & Ecosystem

- Compatible curing lights: all 385-405 nm dental LED curing lights.
- Compatible substrates: ZonMed PRS 3D printing resins (best); PMMA, PEEK and composite resins.
- Printer: open system - printer-independent, no lock-in.
- Ecosystem: part of the ZonMed PRS Ecosystem - Resin (print) + Stain Kit (color) + Glaze (gloss).

10. Disclaimer

Except where prohibited by law, the manufacturer assumes no liability for damages resulting from improper use, failure to follow these instructions, or use outside the recommended applications. All operators should be trained in dental laboratory chemical safety procedures.