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Sci-Pharm Catalog No. 50-10
Light-Cure Composite
Restorative

TECHNICAL BULLETIN



Visible Light-Cure Radio-Opaque Resin-Based Dental Restorative Material

Recommended for use in Class III, IV, and V restorations and for limited use in posterior occlusal restorations where esthetics are of primary importance.

KIT CONTAINS:

- Restorative in five shades, 25g (5g per shade)
- Enamel Bonding Agent, 6g
- Enamel Conditioner/Etching Agent, 13cc
- Accessories and Instructions



Federal Law restricts this device to sale by or on the order of a dentist

OUTSTANDING FEATURES OF THE MATERIAL

- Exceeds the requirements of ADA/ISO specifications for composite restoratives.
- High filler content contributes to low shrinkage, low water sorption, low coefficient of thermal expansion and good wear resistance.
- Excellent X-ray opacity for future diagnosis.
- Very good polishability.
- Outstanding color stability.
- Virtually non-existent oxygen inhibited layer.
- Does not require refrigeration.
- When used in conjunction with CuRAY® Dentin/Enamel Bonding Agent (Cat. No. 50-120), "adhesive" Class V restorations can be made with minimum cavity preparation.
- Broad shade selection for optimal color matching.

Your CuRAY-Fil® kit contains restorative pastes in the following shades			
Shade Designation		Matches Shade Number of:	
	Catalog No.	Trubyte/Bioform	Lumin/Vacuum
Light	50-102	51,59	A1
Universal	50-103	65,66,67	A2
Gray/Brown	50-106	92,93	D3
Yellow/Brown	50-107	55,56,68	B3
Dark Brown	50-113	82	A4

PROPERTIES OF THE CURED RESTORATIVE Requirements of American Dental Association Revised Specification No. 27

Test	ADA/ISO Requirement	CuRAY-Fil Test Results
Ambient Light Sensitivity	Material will show no signs of polymerization after exposure to 10000 lux light for 60 sec.	Pass
Depth of Cure	Not less than 1mm & no more than .5mm below the value stated by the manufacturer	(as shown in table on page 2)
Flexural Strength	S>N	S=120 MPa (17,400 PSI) N=91.6 MPa (13,300 PSI)
Water Sorption	Less than 50 micrograms/mm ³	15.4 micrograms/mm ³
Water Solubility	Less than 5 micrograms/mm ³	3.44 micrograms/mm ³
Shade	Match color standard	Pass
Color Stability	1mm sample disk will show no more than slight discoloration after exposure to 5000 K color, 10000 lux light source	Virtually no discoloration
Radio Opacity	Ta/Ts>1	1.2
Compressive Strength	Not specified	273 MPa (39,600 PSI)
Tensile Strength	Not specified	39.7 MPa (5760 PSI)

NOTE: ADA Specification No. 27 specifies minimum requirements for all resin-based filling materials, however, it does not address their application for occlusal restorations.

STORAGE AND SHELF LIFE

Store at temperatures not exceeding 75°F (24°C). When stored under such conditions, the material has a shelf-life of 2 years.

ADDITIONAL TECHNICAL INFORMATION REQUIRED BY THE ADA REVISED SPECIFICATION NO. 27

1. Principal organic component of material: Bis-GMA and aliphatic dimethacrylate resin blend
2. Particle sizes of inorganic filler: 100% below 20 microns, 90% below 10 microns, 50% below 2 microns
3. Volume % of filler in the restorative material: 66%

Additionally, the following shades are available as separate items:			
Shade Designation		Matches Shade Number of:	
	Catalog No.	Trubyte/Bioform	Lumin/Vacuum
Extra Light	50-101	59	B1
Light Yellow	50-105	52	B2
Light Gray	50-104	91	C1
Dark Gray	50-112	96	C4
Light Brown	50-114	69	A3
Medium Brown	50-115	77	A3.5

Quality Management System Certified to
ISO 9001 and ISO 13485

CE Marked Products

GENERAL INFORMATION

Sci-Pharm's *CuRAY-Fil*® is composed of a blend of a fine X-ray opaque glass and sub-micron silica fillers. Such a combination allows for a high filler/resin ratio and provides excellent X-ray opacity without impairing polishability. Consequently, *CuRAY-Fil*® offers the advantages of microfilled restoratives while retaining the superior properties of the highly-filled composites, including excellent mechanical properties, high filler concentration and low polymerization shrinkage. Due to its unique dense and resilient consistency, the handling of *CuRAY-Fil*® bears some resemblance to amalgam. It can be condensed into a cavity against a mylar matrix band.

CLINICAL PROCEDURES/INSTRUCTIONS FOR USE

Cavities are prepared in the conventional manner. In deep restorations, the use of calcium hydroxide base is recommended. Sealing the dentin with cavity varnishes compatible with composite restoratives, such as Sci-Pharm's *Universal Cavity Varnish* (Cat. No. 70-03) or *CuRAY®-Dentin/Enamel Bonding Agent* (Cat. No.50-120), is recommended for providing better protection against marginal leakage and when post-operational tooth sensitivity may be expected; best marginal integrity is achieved by etching the enamel surrounding the cavity and applying bonding agent prior to inserting the restorative paste.

Class I: Etch the enamel surrounding the cavity with enamel conditioner for one minute. Wash and dry. Apply Bonding Agent over the enamel margins and cure for 10 seconds. Place restorative material with a tapping movement and cure. In very deep cavities, curing in more than one layer may be required.

Class III: The use of a mylar strip is recommended for interproximal separation and as a matrix. Use of Bonding Agent in the manner described above prior to placing the restorative is mandatory.

Class IV: The use of Bonding Agent over etched enamel is a necessary step in this kind of restoration. To provide adequate bonding strength, a relatively large area of enamel should be etched and primed with Bonding Agent. For this reason, butt joints are generally not recommended. Greatly improved retention is achieved by extending the bonding area 2 - 3mm around the fracture.

Retention may also be increased by beveling or tapering the adjacent enamel, or by making small undercuts on the lingual side of the tooth. Also, application of *CuRAY®-Dentin/Enamel Bonding Agent* over the exposed dentin is highly recommended. In some situations, the use of pins placed in the dentin may be necessary. The use of crown forms should be restricted to very thin and transparent types.

A typical Class IV restoration procedure consists of the following steps:

1. Prophylaxis of the tooth (or teeth) to be restored. Operational preparation of the enamel for better crown form acceptance may follow.
2. Prefitting of the crown form, if used.
3. Application of enamel and (optionally) dentin conditioners to the area to be bonded, followed in one minute by washing and drying.
4. Application of bonding agents to the etched enamel and conditioned dentin, followed by curing for 10 seconds.
5. Application of restorative and curing.
6. Finishing.

Class V: After cavity preparation, fill the cavity with restorative paste, place the mylar matrix, and cure. On heavily discolored teeth, application of Sci-Pharm's *CuRAY-Mask*® Opaquer (Cat. No. 50-40) prior to application of *CuRAY-Fil*® will improve the esthetics of the restoration. If minimum cavity preparation is desired, apply *CuRAY®-Dentin/Enamel Bonding Agent* (Cat. No. 50-120), prior to placement of the restorative, on dentin and enamel margins in a manner described in the instructions for this product.

A simple experiment may help determine the depth of cure obtainable with your instrument. Cut about 8mm of plastic tubing or drinking straw of 4 - 6mm internal diameter and fill with restorative paste. Place in a vertical position and irradiate with your light for the period of time expected to produce the desired depth of cure. Cut the side walls of the tube and remove the material. Using a sharp blade, remove all uncured portion of the material from the bottom and measure the thickness of the cured layer.

RECOMMENDED CURING TIME (WITH CONVENTIONAL CURING INSTRUMENTS)		
Shades	Depth Of Cure	Curing Time*
Extra Light, Light, Light Gray and Light Yellow	3mm	30 seconds
	3mm - 7mm	40-60 seconds
Universal, Gray/Brown, Light Brown	2mm	30 seconds
	4.5mm	60 seconds
Dark Gray, Medium Brown and Dark Brown	1.5mm	30 seconds
	3.5mm	60 seconds
*With Optilux 500 curing light (by Demetron Corp.) or equivalent		

HELPFUL HINTS

DISPENSING: *CuRAY-Fil*® is packaged in a syringe with a snap-off cap. Dispense the material by turning the screw clock-wise. Slow turning is recommended in order to avoid waste. Remove the material dispensed at the tip of the syringe and turn back the screw (counterclockwise) in order to suck back the excess. Replace the cap.

ENAMEL CONDITIONER: After drying, the properly conditioned (etched) area should have a chalky-white appearance. Highly mineralized teeth may require an additional two-minute etching to obtain this effect.

(CAUTION: Avoid contact of enamel conditioner with soft tissue or dentin. If accidental spill occurs, wash immediately.)

BONDING AGENT: The material sets leaving a very thin layer of uncured liquid on the surface which should not be wiped off. This layer will provide better adhesion to the restorative applied thereafter.

OPAQUING PASTE: On heavily discolored teeth, the application of an opaque, masking layer is recommended. The opaquing paste has a lighter, more fluid consistency. A thin layer should be applied, preferably with a disposable brush, over the discolored area, cured for 20 seconds and followed with the application of the restorative. Order Sci-Pharm Cat. No. 50-40, *CuRAY-Mask*® Opaquer set.

INSTRUMENTS: For handling convenience, the use of teflon instruments for placing the restorative into the cavity is recommended. Place the restorative using short tapping strokes. Avoid spatulating.

MYLAR STRIP: Whenever possible, cure through a mylar strip to obtain maximum surface smoothness and time savings.

FINISHING: Finish in conventional manner using your favorite abrasive for composites. For best results, follow with polishing using polishing paste for composite restoratives, such as Sci-Pharm's *Luster*®, Cat. No 50-05.