3M Iso-Temp Temporary Material (Project 98-02) (09/98)

Composite resin provisional materials have gained recent popularity. These materials are an improvement compared to acrylics because the composite temporary materials shrink less, are less exothermic, demonstrate improved esthetics, and may be repaired with light-cured composite restorative resins. Although overall improved materials as compared to acrylics, the composite resins do exhibit some disadvantages. The first is increased cost. Second, clinicians may find composites problematic in that their viscosity usually cannot be altered and they exhibit a sticky, air-inhibited surface which may complicate clinical handling. Examples of composite temporary materials include Protemp Garant (ESPE), Luxatemp (DMG), and Integrity (Caulk).

3M recently introduced Iso-Temp Temporary Material. 3M markets Iso-Temp as a "simple alternative to traditional self-cured provisional materials." 3M lists Iso-Temp as a multi-phase, automixed material composed of ethoxylated bis-GMA, multi-functional methacrylate esters, and glass fillers. The result is purported to be a creamy, low-viscosity material that is compatible with current methods of temporization. Iso-Temp offers several minutes of flexible-stage working time allowing removal without locking into undercuts. The Iso-Temp setting reaction is described by 3M as undergoing three stages. Stage 1 is described as a highly flowable state which is readily molded in a matrix. Stage 2 is illustrated as formation of an extended flexible stage. It is in Stage 2 that the material may be removed and excess material grossly removed with crown and bridge scissors. Stage 3 is the formation of a highly cross-linked, rigid polymethacrylate network. Iso-Temp is advertised as compatible with both direct and indirect techniques. However, 3M's technique description is heavily weighted towards the direct technique. The mixed material is dispensed into the matrix or impression and seated intraorally. Working time for this step is stated as one minute. Iso-Temp should be removed from the mouth after three minutes (four minutes if using alginate impression). 3M states that Iso-Temp may be left in the mouth for up to six minutes, if desired. At this step, the material may be grossly trimmed with crown and bridge scissors. After this initial trimming, Iso-Temp should be returned intraorally for fit verification. At this time a 10-second, visible light occlusal "tack cure" is acceptable to reduce possible distortion.

After fit verification, the temporary is removed from the mouth and each unit light cured for 30 seconds. After final cure, the temporary is finished and polished in the usual manner. It is interesting to note that 3M recommends the final impression should be made before Iso-Temp temporary fabrication in order to avoid impression inhibition caused by this material. For worn or older temporary repair the older temporary should be roughened and undercuts placed in the repair area. Also, light cured composite restorative material can be used to repair old or new Iso-Temp temporaries. Based on 3M estimates, one cartridge should be sufficient to make 38 single-molar and 20 three-unit bridges. Iso-Temp's marketed advantages include direct automixed delivery to the matrix; operator control/extended working time in flexible stage; light cure on demand; minimal odor, shrinkage, heat generation; and good wear resistance and esthetics. Iso-Temp is available in four Vita® shades: A1, A2, A3.5, and C2.

Manufacturer:
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Suggested Retail Price:
$210.00 IsoTemp™ Provisional Restoration
Material Introductory Kit (Item # 4500)
Contents:

- 56-gm cartridge A2 resin
- 56-gm cartridge A3.5 resin
- 30 mixing tips
- One 10:1 ratio Impression Gun Plunger
- Instructions
- Laminated technique cards

Government Price:

$126.00 IsoTemp™ Provisional Restoration
Material Introductory Kit (Item # 4500)
(Contents same as above)

ADVANTAGES

+ Manufacturer's instructions very readable with adequate detail and technique description.
+ Packaging configuration and dispensing system well-liked by users.
+ Automix cartridge system provides homogenous material mix.
+ Minimal heat production.
+ Good esthetics and translucency as judged by clinical evaluators.
+ Unique flexible stage that allows gross contouring.
+ Material can be visible light cured when desired.
+ Good-to-excellent marginal integrity.
+ Adequate working time.
+ Convenient laminated instruction cards.

DISADVANTAGES

- Material lacks sufficient radiopacity.
- More clinical time involved compared to similar auto cured materials.
- Thin initial viscosity may produce thin and friable margins.
- Flexible stage requires some "learning curve".
- Flexible stage reported to exhibit brittle tendency.
- Reported difficulty repairing with either additional material or visible light cured composite resin.
- Cannot be utilized for emergency "block" temporary fabrication.

SUMMARY AND CONCLUSIONS:

Iso-Temp is an ethoxylated Bis-GMA provisional crown and bridge material that features automix delivery and is purported to be compatible with most provisional matrix systems. It has a unique flexible stage that allows gross contouring but can also be fully polymerized when desired by visible light curing. DIS laboratory tests revealed that Iso-Temp displayed minimal curing heat production and satisfactory working time. However, this material lacks adequate radiopacity. Clinical users liked the material's packaging, automix delivery system, esthetics, and marginal integrity. Evaluators found Iso-Temp may require more clinical steps and time than other systems, required a "learning curve" in handling the sometimes brittle flexible stage, and demonstrated some difficulty when attempting repair. All evaluators rated Iso-Temp as above average and most would recommend its purchase for their clinic's general use. **Iso-Temp** is rated **Acceptable** for federal service dental clinic use.

UPDATE Since this evaluation was completed, 3M ESPE has discontinued Iso-Temp and is now marketing Protemp 3 Garant, a bis-acryl resin evaluated by DIS in 2002.