

THE DENTAL ADVISORTM

Improving Patient Care Through Research & Education



Hard and Soft Tissue Lasers

Lasers have been available in the dental profession for over 20 years with applications for a number of clinical procedures. The technology varies from hard tissue to soft tissue for restorative procedures and has recently gained popularity as a tool for hygienists in periodontal therapy.

This issue of THE DENTAL ADVISOR discusses the use of lasers in dentistry, clinical applications, including hygiene procedures, and provides a comparative table of diode lasers.

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RATINGS:

Excellent + + + + +
Very Good + + + +
Good + + +

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From the Desk of Dr. Bunek, Editor-in-Chief



Not long ago, if during a procedure I decided to use a soft tissue laser, I would completely stop working so my assistant could haul a big cart into the operatory, plug in the unit, and set up the laser. Although it only took five minutes, it was cumbersome and not an efficient use of my time. Instead, I found myself asking my assistant for other materials and instruments, such as retraction cord because it was E-A-S-Y! Things sure have come a long way since then, particularly for diode lasers. Improvements in size, cost and ease of use have now made them an integral part of my everyday practice.

As I have increased my use of digital impressions in the last four years, I have also increased the use of my diode laser. Since the digital scanners still cannot read through soft tissue, gingival retraction is imperative for a good impression. I still use retraction cords and pastes, but with lasers, such as *NV Microlaser (Zila)*, I can prep the tooth, pick up the portable cordless laser (which is the size of a pen), pick a setting, and I am ready to go. No big cart, no cords, no time wasted. It is so easy to use and tremendously effective. In many situations, a diode laser has become my preferred method. Due to the simplicity of use and portability, I use diode lasers for a variety of other soft tissue applications as well.

In this month's issue, we focus on the many uses of lasers in dentistry. In this issue Mary Yakas, Drs. Lori Brown and Peter Yaman and Dental Hygienist Angie Mott discuss the application of lasers in soft and hard tissue procedures, as well as provide clinical tips for use. Thank you to Drs. Gytis Udry and William Stevenson for sharing a few clinical cases with us. As always, I welcome your comments and suggestion; you can reach me at drbunek@dentaladvisor.com. Thanks for your continued support and reading!

Hard and Soft Tissue Lasers

The term laser stands for Light Amplification by Stimulated Emission of Radiation, which is a device that produces and amplifies light. The type of tissue that can be modified is determined by the wavelength of the laser, measured in nanometers (nm).

Types of Lasers In Dentistry

There are two applications of lasers used in dentistry: hard tissue and soft tissue lasers.

Hard tissue lasers

utilize small bursts of energy and interact with water to remove tooth structure with extreme precision. All hard tissue lasers can also treat soft tissue, offering versatility. The compromise comes in the high cost and large size of these multi-use machines.

Hard tissue lasers include the Erbium YAG and the Erbium chromium YSGG.

Soft tissue lasers

operate in a wavelength that is highly absorbable by water and hemoglobin. They are often used for soft tissue management of any type. Blood vessels and nerve endings are sealed while the laser penetrates the soft tissue. Tissue heals much faster than traditional surgery, and patients experience less post-operative discomfort.

Soft tissue lasers include CO₂, Nd:YAG, and Diode.

Although lasers have been available in dentistry for many years, the adoption of the technology in clinical practice still remains low. Traditional treatment uses a handpiece or instrument which provides a tactile sense for a clinician. A dental laser does not offer the same feel in hand and requires a learning curve.

How Lasers Work

Many lasers are equipped with a separate aiming beam, which can either be laser or conventional light. The aiming beam is delivered co-axially along the fiber or waveguide and shows the operator the exact spot where the laser energy will be focused. This feature is useful for a clinician when the familiar tactile sensation is absent.

There are two basic modes of wavelength emission for dental lasers:

1. **Continuous wave** emission means that laser energy is emitted continuously and produces constant tissue interaction. CO₂ and diode lasers operate in this manner. The continuous wave can be interrupted, or pulsed.
2. **Free-running pulse** emission occurs with very short bursts of laser energy due to a flashlamp pumping mechanism. The usual pulse durations are in the low hundreds of microseconds, and there is a relatively long interval between pulses. Nd:YAG, Er:YAG, and Er,Cr:YSGG devices operate as free-running pulsed lasers.

When using a laser handpiece for soft tissue cutting, the tip must be *initiated* to focus the laser energy at the tip of the fiber. This is commonly done by activating the laser while placing the fiber tip on dark blue articulating paper. The color is picked up onto the tip, and laser energy is focused where the dark pigment is located, initiating the cutting capability.

An *uninitiated* tip used for non-cutting procedures such as hemostasis and aphthous ulcer treatment.

Advantages and Disadvantages of Dental Lasers

Dental laser use has grown in recent years as lasers have become more user friendly. Diseased tissue can be pinpointed with a laser during a procedure and in many cases reduce or eliminate the amount of anesthesia required. In addition, patient post-operative discomfort is reduced because of the absence of cutting with a conventional instrument.

Hard-tissue laser devices can selectively remove diseased tooth structure because a carious lesion has a much higher water content than healthy tissue, and water is the primary absorber of that wavelength of laser energy. Lased dentin has no smear layer and the cavity preparation has been disinfected. This reduces the number of steps needed in bonding. The precision offered could be an advantage over a traditional dental air or electric handpiece, which can introduce microfractures in the tooth.

Some disadvantages are present with any laser system. A modification of technique because of the way a laser feels in hand requires a learning curve. In addition, overheating the tissue as well as possible air embolisms are risks of using a laser improperly. Utilizing a laser is not as fast as using a handpiece and the delivery system is a bit more cumbersome. Cost remains high for these systems, and many doctors question the necessity and return on investment over traditional methods.

Laser Safety

It is critical that all dental team members involved in clinical care be properly trained in laser use, including and especially the operator. It is wise to assign a Laser Safety Officer in the practice who can maintain the unit, accessories, and inspects the laser regularly for malfunction. This person can also schedule regular trainings for the team in Laser safety and use. Protective eyewear for both the patient and all team members should be worn to protect against reflected energy. High-volume suction must be used for the plume formed and all infection control procedures must be followed.

Training and Education

As with any technology, proper training and continuing hands-on education is critical to success in practice. Most laser manufacturers will provide training or videos to get you started in using a laser in practice. For those seeking additional training or certification with lasers, an excellent resource is the Academy of Laser Dentistry (ALD). They work with all laser users and a variety of different lasers. For more information, visit www.laserdentistry.org.

A co-author of this issue, Angie Mott, RDH offers in-office training for dental professionals, and is endorsed by the Academy of Laser Dentistry. She can be contacted at (918) 231-0491 | angie@laserrdh.com

Lasers in Hygiene

Hygienists often ask how lasers can be used in the hygiene appointment. Lasers cannot be used by dental hygienists to cut tissue (in most states). Procedures that may be able to be completed, depending on your state practice act, could include bacterial reduction, sulcular debridement, and bacterial decontamination. These procedures will allow the tissue a chance to heal and create new attachments to form, allowing the pocket to be maintained easier. Another use of a laser may include treatment of herpetic lesions or aphthous ulcers. These procedures are great practice builders, as patients are very pleased with the results that the laser can provide.

Whichever laser you use, make sure you know what you, as a dental hygienist, are able to do with a laser in your state. This begins with your State Dental or Dental Hygiene Practice Act. It is up to you to interpret your State Practice Act and determine if you can utilize a laser in your practice.

Diode Lasers

Diode lasers have become extremely popular due to their ease of use and management of soft tissue. Many cosmetic-oriented dentists find that tissue is easy to sculpt using these devices. Recently, lower cost, portable lasers with disposable tips have been introduced to the marketplace, making lasers a more affordable option for clinical practice and an advancement over electrosurgery.

Product	Company	Treatment Wavelength	Power	Presets	Controls	Storage	Tips	Rating
Epic 10	BIOLASE				Touchscreen	Portable	Fiber	na
iLase	BIOLASE	940 nm	5 W	12	Buttons	Portable		na
 NV Microlaser	Zila	810 nm	2 W	8	Buttons	Cordless	Disposable	96%
Odyssey 2.4G Diode Laser	Ivoclar Vivadent	810 nm	0-5 W	3	Buttons	Counter	Fiber	na
 Odyssey Navigator	Ivoclar Vivadent	810 nm	0-3 W	30	Touchscreen	Portable	Disposable	97%
Picasso	DENTSPLY/AMD	810nm	0.1-7 W	8	Touchscreen	Counter	Disposable	na
Picasso Lite	DENTSPLY/AMD	810nm	2.5 W	3	Buttons	Counter	Fiber	na
Precise LTM	CAO Group	810 nm	5 W	4	Buttons	Counter	Fiber	na
Sapphire	Den-Mat Holdings	808 nm	5 W	No	Buttons	Portable	Fiber	na
SIROLase Advance	Sirona Dental Systems	970 nm	7 W	Up to 24	Touchscreen	Counter	Disposable	na
SIROLase Xtend	Sirona Dental Systems	970 nm	5 W	Not reported	Touchscreen	Portable	Disposable	na

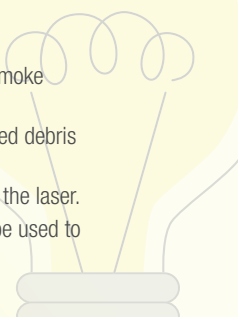


TDA Recommends: *Diode Lasers*

- **NV Microlaser** (Zila)
- **Odyssey Navigator** (Ivoclar Vivadent)

Clinical Tips: Diode Laser

- Use a narrow (surgical) suction tip to eliminate smoke plume and odor during use.
- Use a gauze moistened with water to wipe charred debris from the tip.
- Do not use any solutions containing alcohol with the laser.
- A microbrush dipped in hydrogen peroxide can be used to scrub the lasered tissue after treatment.



Common Uses for Lasers:

Restorative and General Dentistry

- Gingival troughing for crown impressions
- Gingivectomy for esthetic enhancement
- Hemostasis and coagulation
- Caries removal
- Treatment of aphthous ulcers

Periodontics

- Soft tissue crown lengthening
- Sulcular debridement of periodontal pockets
- Soft tissue curettage

Oral Surgery

- Gingival incision and excision
- Fibroma removal
- Frenectomy
- Implant exposure

Orthodontics

- Exposure of unerupted teeth
- Removal of hyperplastic gingiva

Endodontics

- Incision and drainage of abscess
- Pulpotomy

Did You Know?

Diode lasers may be safely used on soft tissue next to metal, including gold, amalgam, orthodontic brackets, and titanium implant components.

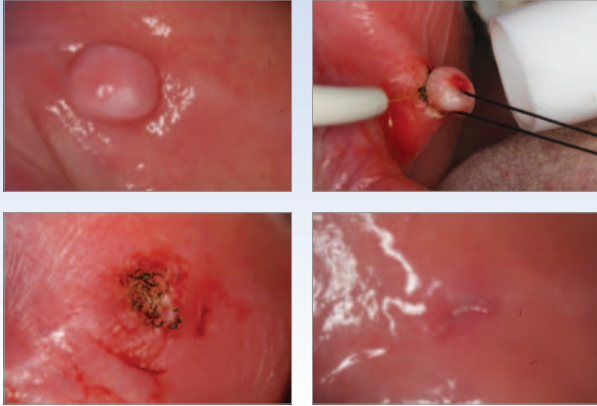
Problems & Solutions

1

FIBROMA REMOVAL

Clinical Situation: The patient presented with a traumatic fibroma located on her right buccal mucosa. The fibroma measured approximately 5 mm diameter. Options for removal included excisional biopsy with a scalpel or removal using the *Odyssey Navigator* (Ivoclar Vivadent).

Solution: After administering local anesthetic, the fibroma was removed using the Navigator soft tissue laser. The removal was atraumatic and completely healed within 24 hours.

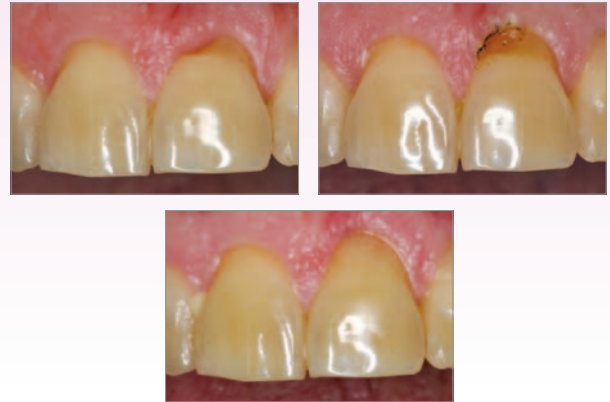


2

GINGIVECTOMY

Clinical Situation: The patient presents with an abrasion lesion located at the cervical of tooth #9. Sulcular tissue is covering the area resulting in excessive plaque retention. Wanting to restore the lesion with composite resin, the tissue must be moved via retraction cord or removed using a soft tissue laser.

Solution: Using the soft tissue laser, *Odyssey Navigator* (Ivoclar Vivadent), the sulcular tissue was removed, exposing the abrasion lesion. No sulcular bleeding was experienced, allowing for very easy placement of the composite resin.

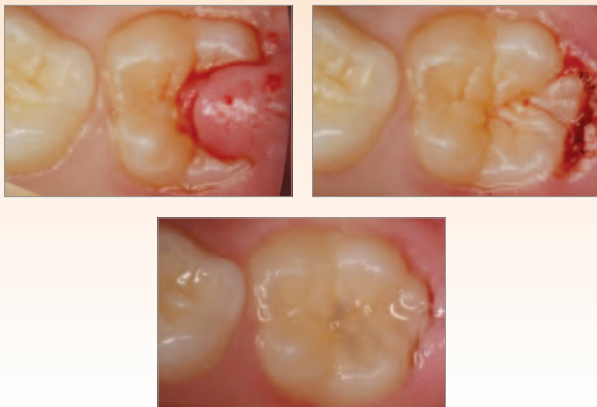


3

OPERCULECTOMY

Clinical Situation: A 6-year-old girl presented with excessive, inflamed tissue covering the occlusal 1/3 of tooth #19. The patient experienced a lodged popcorn hull in the area, resulting in hyperplastic tissue. After discussing options with the parent, it was decided that removal of the excess tissue with the *Odyssey Navigator* (Ivoclar Vivadent) would be most effective.

Solution: After local anesthetic, the tissue was removed without bleeding or discomfort. The parent reported no post operative pain after anesthetic wore off. Tissue was completely healed in 24 hrs.



4

GINGIVECTOMY

Clinical Situation: Patient presents with older failing anterior composites that are leaking and collecting stain. Patient also has a complaint of teeth being misaligned and gum line looking irregular.

Solution: A *Picasso* laser (DENTSPLY/AMD) was used to perform a gingivectomy and adjust the gingival contours on teeth 6, 7, 9, and 11. A diode laser was used to control tissue removal with very little heat produced and no bleeding. The finished e.max veneers show the changed gingival zeniths of the final restorations.



5

GINGIVAL RETRACTION

Clinical Situation: Patient presents with a cracked tooth and open mesial contact on tooth 30. She has a history of sensitivity to epinephrine and chronic gingival inflammation on the mesial of 30.

Solution: A *Picasso* laser (DENTSPLY/AMD) was used to remove the inflamed mesial tissue. Using a diode laser also avoided having to use a cord with epinephrine, while it also exposed the sulcus and margins in order to help facilitate making a final impression.



* Thank you to Dr. Gytis Udrys (cases 1 thru 3) and Dr. William T. Stevenson (cases 4 and 5) for sharing their expertise.

ALL-BOND UNIVERSAL

Bisco Dental Products
(800) 247-3368, (847) 534-6000 | www.bisco.com

Description

ALL-BOND UNIVERSAL is a single-component, light-cured bonding agent that combines etching, priming and bonding in one bottle. It may be used in self-etch, total-etch or selective-etch bonding techniques. Compatible with all dental materials, **ALL-BOND UNIVERSAL** is an ethanol/water-based adhesive containing MDP. It bonds to dentin, cut and uncut enamel. It is fully compatible with light-cured, self-cured and dual-cured resin composites and can be used for the bonding of both indirect and direct restorations, for porcelain repairs and as a protective varnish for glass ionomer-based restorations. **ALL-BOND UNIVERSAL** is also indicated for desensitization of preparations prior to provisionalization/immediate dentin sealing and for the desensitization of exposed root surfaces. The kit contains a 6 mL bottle of adhesive, a 5 g syringe of Select HV Etch, a high viscosity etchant and accessories. **ALL-BOND UNIVERSAL** was evaluated by 19 consultants in over 900 uses. It received a 96% clinical rating.

Suggested Retail Cost	
Kit	\$130.00
Refill	\$110.00

Clinical Observations

Instructions/Packaging

ALL-BOND UNIVERSAL has many indications which are thoroughly explained in the instructions for use. The laminated technique card was found to be a very good chairside reference for common procedures such as direct composite restorations. The packaging of **ALL-BOND UNIVERSAL** in a plastic dropper bottle with a screw-on cap is simple and neat. The 6 mL size is a larger volume than many other adhesives. No refrigeration is required, making it convenient to store.

Dispensing/Application

The low viscosity of **ALL-BOND UNIVERSAL** makes it easy to dispense from the bottle. A gentle squeeze produces single-drop delivery. Care must be taken to avoid additional pressure on the bottle, which could express too much liquid. Excellent surface wettability is achieved by the low viscosity of the adhesive. It coats the tooth well and leaves a glossy surface after light curing.

Clinical Procedure

ALL-BOND UNIVERSAL can be used with or without a phosphoric acid etchant for direct bonding procedures. Whether used in a self-etch or total-etch technique, two coats of adhesive followed by air drying are required. Light curing time is 10 seconds. When bonding indirect restorations, the adhesive must be applied on the inner surface of the restoration and light cured. Some confusion was noted regarding the manufacturer's recommendation that a separate ceramic primer (silane) should be used on silica-based ceramic veneers instead of **ALL-BOND UNIVERSAL**.

Versatility

The usefulness of **ALL-BOND UNIVERSAL** for various restorative procedures was rated excellent by consultants. Having one adhesive that can be used for self-etch, total-etch, direct, and indirect bonding procedures simplifies the clinical procedure. Its compatibility with self- and dual-cured composites without a separate dual-cure activator reduces the inventory of materials required in the office.

Retention

The durability of bond during the evaluation period was rated excellent.

Sensitivity

No instances of post-operative sensitivity were noted.

+++++



Consultants' Comments
"Easy to use and works for everything!"
"Less technique sensitive than other adhesives."
"The built in desensitizer eliminates one step from our previous protocols."
"Works great with my dual-cure core material."
"Low viscosity wets the tooth well."
"Film thickness does not interfere with seating of indirect restorations."
"Application of two coats makes the procedure longer."
"No silane is included for priming silica-based ceramics."

ALL-BOND UNIVERSAL *(cont.)*

Summary

ALL-BOND UNIVERSAL provides a one-bottle solution for most clinical bonding procedures. It is easy to apply and spreads on the tooth to a thin, even coat. Thirty-seven percent of consultants rated **ALL-BOND UNIVERSAL** better than other universal bonding agents; 53% reported it was equivalent. Seventy-four percent would switch to **ALL-BOND UNIVERSAL** and 90% would recommend it to a colleague.

Clinical Tips

- Dispense immediately before use and recap tightly after use - it evaporates quickly.
- Use the included high-viscosity **SELECT HV ETCH** for the selective-etch technique.
- The tooth surface should be moist before applying **ALL-BOND UNIVERSAL**. ■

MiniBlaster

Johnson-Promident/Deldent

(845) 589-0210 | www.johnsonpromident.com | www.deldent.com

Description

MiniBlaster is a fully autoclavable, hand-held clinical sandblaster. It is designed to simultaneously deliver a narrow stream of abrasive powder and air to enhance adhesive procedures by increasing the micro-retention of bonding surfaces. The air-flow control valve is designed for use with an index finger by both right- and left-handed clinicians. The nozzle rotates to the clinician's desired direction using the directional ratchet system. The **MiniBlaster** comes with an in-line pressure stopcock, quick disconnect feature, and an installation kit for connection to the dental unit. The **MiniBlaster** can connect to any standard high or low speed tubing (including 2-, 3-, 4-hole adaptors and *Sirona*, *Kavo*, and *W&H* dental units) via a full range of hook-up and adaptor options and should be operated at 80-100 psi. The **MiniBlaster** uses 50-micron aluminum oxide abrasive, although 90-micron particles can be used for procedures requiring aggressive cement removal. The **MiniBlaster** is indicated for the preparation of intra-oral surfaces prior to composite restorations and porcelain repairs and extra-oral surfaces prior to adhesive bonding procedures such as the removal of residual cement from crowns, bridges, orthodontic bands and brackets, for roughening metal/porcelain surfaces, and for etching endodontic posts. The powder chamber and the rear connector are removable, allowing the entire unit to be packaged and sterilized. An extension nozzle is available and offers 360° range for access to hard-to-reach areas. **MiniBlaster** was evaluated by six consultants in 172 uses. This sandblaster received an 86% rating.

Suggested Retail Cost \$289.00/unit

Equipment Features

MiniBlaster is a lightweight sandblaster unit that produces smooth delivery of abrasive. The ability to install it on the dental unit is unique and is especially useful in offices that do not have an existing air line in the lab. Installation was challenging, and consultants suggested that it be delegated to a service technician. Operation of **MiniBlaster** is simple with the fingertip control. The position of the button and angle of the nozzle make it more useful outside the mouth than intraorally. Resistance to clogging was rated very good. Thirty-three percent of consultants found **MiniBlaster**

++ ++



Consultants' Comments

"Ergonomic and lightweight."

"Works well and the abrasive powder does the job adequately"

"Small instrument, easy to hold and manipulate for intra-oral use."

"Be aware that it will create overspray in the operatory."

"I would like a connector that lets me move this from my dental unit to the lab."

"Does not have enough force to remove all cement from crowns."

to be better than other sandblasters they had used and 33% found it to be equivalent. Thirty-three percent would switch to **MiniBlaster** and 67% would recommend it.

Clinical Tips

- Isolate with cotton rolls or a rubber dam for all intra-oral procedures.
- Have chairside installation performed by a service technician.
- Use a dust box or HVE to collect powder.
- The jar needs to be held upright for the unit to function. It cannot be turned to reach all areas of the mouth. ■

GC FujiCEM™ 2

GC America, Inc

(800) 323-7063, (708) 597-0900 | www.gcamerica.com



Description

GC FujiCEM 2 is a resin modified glass ionomer luting cement. Compared to original *GC FujiCEM*, it has increased bond strength to tooth structure and restorative materials. **GC FujiCEM 2** is indicated for permanent cementation of all types of metal-, resin-, alumina- and zirconia-based inlays, onlays, crowns, bridges, and endodontic posts. Working time is two minutes 15 seconds, and intraoral setting time is four minutes and 30 seconds. It is available in a light yellow shade and comes packaged with one 13.3g *GC Paste Pak* cartridge, 20 mixing tips and one **GC FujiCEM 2 Dispenser**. Refills are also available with either two cartridges and 44 mixing tips in an automix package or two cartridges and a mixing pad for the hand mixing package. **GC FujiCEM 2** was evaluated by 33 consultants over a two-month period. This product received a 96% clinical rating.



Consultants' Comments

"The fluoride release is reassuring."

"No post-op sensitivity."

"Easy to clean excess cement."

"Excellent retention!"

"GC FujiCEM 2 is our go to cement for all restorations that do not require esthetic cementation."

"Faster setting time would be an improvement."

"Include narrow intraoral tips for post cementation."

Clinical Observations

Instructions/Packaging

Full written instructions accompany **GC FujiCEM 2**, and an explanation of the clinical procedures are presented. A brief technique card is also included. The cement cartridges, mixing tips and dispenser are all pink and are packaged in a pink box. This color coordination makes it easy for the dental assistant to confirm that proper components are being used together.

Delivery System/Mixing

The *GC Paste Pak* cartridge is easy to load in the plastic **GC FujiCEM 2 Dispenser** by twisting to lock it in place. Dispensing the material is accomplished by pushing the plunger until the desired amount of cement is expressed. The cement may be extruded through an automix tip or it may be dispensed onto a pad for hand mixing. The mixing tips are unique to GC products and attach by aligning a pin and tab onto the cartridge. A firm push is necessary to click the tip into place. The tip locks into place, and some dental assistants found it difficult to place and remove them.

Viscosity/Handling

GC FujiCEM 2 has a creamy consistency and spreads to a low film thickness that allows complete seating of restorations with little pressure. Working time is adequate for multi-unit restorations. Setting time was rated average for self-curing cement. Many consultants noted that they would like a faster setting time.

Removal of Excess Cement

Excess cement is easiest to remove if allowed to fully set. Many consultants liked cleaning the tooth at about a minute and a half when the cement had a soft set. After the full setting time, cement at the margins peels off cleanly with an explorer. The majority of consultants rated removal of excess cement as excellent.

Esthetics

The color of the cement is an opaque, light ivory shade that is visible during clean-up. Esthetics was not considered critical since this cement is not indicated for use under translucent all-ceramic crowns.

Retention

No failures of cemented restorations were noted during the evaluation period. Laboratory testing by THE DENTAL ADVISOR found a significantly stronger bond of **GC FujiCEM 2** to dentin compared to *GC FujiCEM*.

Suggested Retail Cost \$175.00/Intro Kit

GC FujiCEM™ 2 (cont.)

Shear Bond Strength, MPa (SD)

Material	Ground Enamel	Dentin
GC FujiCEM Automix (Lot #0703121)	7.9 (4.1)	2.4 (0.8)
GC FujiCEM 2 Automix (Lot #1106284)	15.3 (2.0)	6.1 (2.1)

Flexural Strength, MPa (SD) and Modulus, GPa (SD)

Material	Flexural Strength	Flexural Modulus
GC FujiCEM Automix (Lot #0703121)	27.0 (6.4)	3.4 (0.2)
GC FujiCEM 2 Automix (Lot #1106284)	31.6 (6.5)	2.7 (0.2)

Summary

GC FujiCEM 2 is an excellent cement for many types of indirect restorations. Fifty-two percent of consultants rated it better than other resin modified glass ionomer cements they had used and 39% rated it equivalent. Seventy percent would switch to **GC FujiCEM 2** and 91% would recommend it.

Clinical Tips

- For optimal adhesion apply **GC Fuji PLUS CONDITIONER** to the tooth for 20 seconds, rinse and blot dry before cementing the restoration with **GC FujiCEM 2**. This step is optional.
- The **GC FujiCEM 2** Dispenser is not intended for use with other **GC Paste Pak** products. ■

Diapaste

DiaDent Group International

(877) 342-3368, (604) 451-8851 | www.diadent.com

Description

Diapaste is a calcium hydroxide and barium sulfate root canal treatment material. It is intended for use in infected root canals, for pulp capping and as an intracanal medicament. **Diapaste** does not separate or solidify and is supplied pre-mixed in syringes. Indications include treatment of infected root canal, apexification, temporary root canal filling, vital pulpotomy, temporary pulp capping, root canal filling for primary teeth and disinfection after pulp extirpation treatment. The paste is water soluble and radiopaque. The complete kit includes a 2g syringe of **Diapaste** with 20 disposable tips. **Diapaste** was used by 16 consultants in 198 clinical procedures. This product received a 91% clinical rating.

Suggested Retail Cost \$33.00/complete kit

Product Features

Diapaste is a useful product for many endodontic indications, and consultants liked having a choice without iodoform. Patient pain relief was the most highly rated feature. The product is easy and convenient to dispense from the syringe delivery, and the flexible disposable tips are narrow enough to reach well into the canal, providing good access. The thin straight tips can be easily bent according to preference. The tips are packaged in a strip of hygienic blister packs that the consultant reported were difficult to separate and open. The low viscosity paste maintains a homogeneous consistency in the syringe, and it remains soft for easy removal when necessary. Forty-four percent of consultants rated **Diapaste** better than other root canal medicaments they have used and 44% rated it equivalent. Fifty-six percent would switch to **Diapaste** and 81% would recommend it to a colleague. ■

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Consultants' Comments

"Highly radiopaque."

"Pre-mixed paste saves time."

"Tips are flexible."

"A variety of tip sizes would be useful."

BeutiSealant

SHOFU DENTAL CORP.

(800) 827-4638, (760) 736-3277 | www.shofu.com

Description

BeutiSealant is a fluoride-recharging pit and fissure sealant. It is BPA- and HEMA-free and incorporates *Giomer* technology. The manufacturer states that *Giomer* have been shown to slow demineralization, promote remineralization, provide fluoride uptake, neutralize acid, and decrease cariogenic bacteria production. **BeutiSealant** is indicated for the preventive sealing of pits and fissures in the primary and secondary dentition. A self-etching primer is provided and eliminates the need for phosphoric acid etchant. The primer contains acidic monomers in an acetone/water solvent. **BeutiSealant** cures in 20 seconds with a halogen light unit and in 10 seconds with an LED light-curing unit and is available in a white shade. **BeutiSealant** kit contains 1.2g syringe of sealant (estimated by manufacturer to seal up to 100 teeth), 3 mL bottle of primer, 15 needle tips, 50 brushes, and 25 V-dishes. **BeutiSealant** was evaluated by 19 consultants in over 400 uses and earned a 94% clinical rating.

Suggested Retail Cost

\$81.12/Kit

Clinical Observations

Instructions/Packaging

Written instructions clearly outline the clinical procedure for placement of **BeutiSealant**. Shofu's website offers in-depth information on their *Giomer* materials. All necessary components for sealant placement are packaged in the kit. The requirement for refrigeration of the primer was considered an inconvenience, and it separated that component from the rest of the kit.

Delivery System

The **BeutiSealant** syringe is easy to handle and dispenses the material without dripping or oozing. The narrow, 27-gauge tips allow precise placement of sealant into the grooves, and the tip can be used to spread the material without using a separate instrument. The primer's simple plastic bottle provides drop-by-drop dispensing of the liquid onto the deep, narrow wells provided in the kit.

Application

Application of **BeutiSealant** involves a few short steps. Primer is applied to the tooth for five seconds and air dried; sealant is applied and light cured for 10-20 seconds. This quick procedure with no rinsing was considered a great benefit for treating pediatric patients. The low-viscosity sealant flows well into pits and fissures.

Curing Time

Curing time for **BeutiSealant** was considered standard for halogen lights. The quicker time with high-powered LED lights is a positive feature.

Appearance

The white color is opaque and is visible on the tooth surface. The majority of consultants preferred an opaque sealant, but some would like a transparent option, especially for use in adult patients. The radiopacity of the sealant material is an added benefit.

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Consultants' Comments

"Precise placement means less adjustment."

"Good flow into pits and grooves."

"No etching or rinsing."

"Quickest sealant procedure ever!"

"A primer that does not require refrigeration would be more convenient."

Adaptation

BeutiSealant flows well and wets the primed tooth surface, resulting in very good adaptation and smooth margins.

Retention

No clinical failures were noted during the evaluation period. Consultants commonly used sealants with phosphoric acid etchant, and they expressed interest in confirming the long-term retention results of **BeutiSealant** were competitive with acid etched sealants. Laboratory testing by THE DENTAL ADVISOR found that **BeutiSealant** had a shear bond strength of 19.0 MPa to unground enamel and 23.4 MPa to ground enamel. Bond strength in excess of 18 MPa is considered desirable.

Summary

BeutiSealant is easy to use and eliminates the need for phosphoric acid etching and rinsing. Seventy-four percent of consultants rated it better than other pit-and-fissure sealants they had used and 26% rated it equivalent. Ninety percent would switch to **BeutiSealant** and 84% would recommend it.

Clinical Tips

- Ensure that the enamel surface is clean before application.
- Maintain a dry field through common isolation techniques.
- Thoroughly coat enamel surfaces to be sealed with primer. ■

Bio-Pure Evacuation System “Restore”

Bio-Pure Products, Inc.

(888) 596-6546 | www.biopureproducts.com

Description

Bio-Pure evacuation system treatment is designed with a proprietary microbial formula to restore vacuum line suction to full pump capacity and eliminate daily trap cleaning. **Bio-Pure** has a neutral pH and is safe for all pump equipment including amalgam separators. The microbial formulation is 100% all natural ingredients and continues to clean between uses. The system includes two components: **Bio-Pure Complete Evacuation System Restorative** and **Bio-Pure Complete Evacuation System Cleaner**. **Bio-Pure Restorative** is intended to be used over 3 weeks to “Restore” vacuum suction by removing all the accumulated biofilm build-up. After this initial treatment, **Bio-Pure Cleaner** should be used regularly to maintain clean lines. Both components are supplied as powders that must be mixed with water. **Bio-Pure** was used by 23 consultants in 429 uses. It received an 88% clinical rating.

Suggested Retail Cost

6 oz. “ Restore ” 8 ops in 3 weeks	\$49.80
14 oz. Maintain 8 ops for 5 weeks	\$79.80
48 oz. Maintain 8 ops for 4 1/2 months	\$226.40

Product Features

Bio-Pure provided very good effectiveness in cleaning evacuation lines, and this was the highest rated feature. Seventy percent of consultants said that it eliminated the need for daily cleaning of traps. Sludge from blood, tissue and prophy paste was greatly reduced. On a routine basis, the product was not as easy to use as liquids or other forms that dissolve more readily. Fifty-seven percent of consultants found **Bio-Pure** to be better than other evacuation line cleaners they had used and 35% found it to be equivalent. Seventy-eight percent of consultants would switch to **Bio-Pure** and 87% would recommend it to a colleague.

Office #	Improvement in suction time
1	41.5%
2	3.6%
3	17.9%
4	42.2%
5	18.4%
6	12.5%

Results From Six Offices

In six of the offices in which the **Bio-Pure** system was evaluated, pre-treatment and post-treatment suction times were compared. The time required to suction 32 ounces of **Bio-Pure** in a specified operatory was recorded before the initial treatment. After use of **Bio-Pure** for shock and maintenance for approximately three months, times were recorded in the same operatories. Overall, an average of 23% improvement in suction time was found.

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Consultants' Comments

- “A noticeable improvement in the quality of our suction.”
- “The initial treatment removed a lot of debris.”
- “I do not have to clean the traps daily anymore.”
- “I prefer this type of all-natural product over chemical cleaners.”
- “Unpleasant odor.”
- “I would like a pre-mixed solution, tablet or unit-dose packets rather than jars of powder that have to be measured.”
- “Provide clear directions and more distinctive names for easier differentiation between the products.”
- “Include a sturdy bottle for mixing.”

Clinical Tips

- **Bio-Pure Complete Evacuation System Restorative** is a “soak” and not a “flush” like all other products. Start this system at a time when the office will not be in use the next day.
- Do not store in direct sunlight or in a cold storage container.
- Powder dissolves better in warm water. ■

M3 UltraFast

Midmark Corporation
(800) 649-6275, (937) 526-3662 | www.midmark.com

Description

The **M3 UltraFast Automatic Sterilizer** is a steam-flush pressure-pulse sterilizer. It features one-step loading operation, push-button cycle selection and an automatic door. The door tray is stainless steel and has an ergonomically designed handle for balance and comfort. The **M3 UltraFast** has a top-fill water reservoir with a water level sensor and a front reservoir drain with on-board drain tube storage. A condensate tank that traps expelled steam is intended to be housed in a cabinet below the sterilizer. The tank has a quick release lid, a carrying handle and a water level sensor to indicate when full. The **M3 UltraFast** has three pre-programmed cycles (wrapped, unwrapped, and low temperature), an automatic door that opens to begin the drying process, and chamber surface heaters that remove moisture during the dry cycle. An LCD display indicates cycle selected, exposure time, temperature and pressure. **M3 UltraFast** also features on-board user instructions and interactive training CD. **M3 UltraFast Automatic Sterilizer** was evaluated by seven consultants in over 1500 uses during an eight-month period. This sterilizer received a 91% clinical rating.

Suggested Retail Cost \$5,995.00/Unit

Equipment Features

M3 UltraFast is a very good sterilizer for quick turnaround of a low volume of instruments and handpieces. Unwrapped instruments can be sterilized in six minutes; wrapped instruments require 10 minutes. Drying time is in addition to sterilization times. Operation of the unit is simple via a touchpad and LCD display on the front of the unit. A single tray is approximately 12"x7"x1" and has a handle that stays cool to the touch. Water capacity is 1.2 gallons. The condensate tank is designed like a pitcher for easy emptying, which is required after 11-12 cycles. Storing the condensate tank in a cabinet below the sterilizer, as the manufacturer recommends, is convenient, but a significant amount of steam escapes and may affect the cabinet material. After loading the tray, the door closes automatically when the cycle is started,

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- ### Consultants' Comments
- "Fast and great for handpieces."
 - "Quiet unit."
 - "Easy to load and unload."
 - "Instruments are very hot at the end of the cycle."
 - "The condensate tank lid is very hard to take on and off."
 - "Takes up a lot of counter space for a small-capacity unit."

and it opens automatically when sterilization is complete. Forty-three percent of consultants found **M3 UltraFast** better than other sterilizers they had used, and 43% found it to be equivalent. Eighty-six percent of consultants would switch to **M3 UltraFast**, and 100% would recommend it.

Clinical Tips

- Use steam-distilled water.
- Allow cooling time before sterilized instruments are used. ■



THE DENTAL ADVISOR'S Speaker's Bureau

Lecture Topics

The Speakers' Bureau offers continuing education courses on a wide variety of topics for dentists, hygienists, assistants, lab technicians, and office teams. Each topic can be 1-2 hour, half-day and full-day lectures. Topics can be combined and adapted for a custom presentation.

Sable Access S4500KL Sable Rotamax S6500KL

Sable Industries Inc.

(800) 368-8106 | www.sableindustriesinc.com

Description

Sable high-speed handpieces are available in two styles, the **Access™ S4500KL** mini head and the **RotaMax™ S6500KL** torque head. These fiber optic highspeed handpieces are designed to provide maximum air driven power with smaller head sizes for optimal comfort and visibility. Sable handpieces have a durable titanium finish and ceramic bearings that deliver vibration-free performance while running longer at a lower decibel level. The handpieces have a 25,000 LUX fiber-optic illumination, a triple water spray system and a push button chuck mechanism. Sable handpieces are *KaVo*-compatible and work with the existing power optic system via the *MULTIflex*-style coupler. **Sable Access** and **RotaMax** highspeed handpieces are backed by a one-year warranty. Thirteen consultants evaluated these handpieces with a six-hole, 360° *KaVo Multiflex LUX* type coupler in 712 uses. These highspeed handpieces received a 91% clinical rating.

Suggested Retail Cost

**Sable Access S4500KL
& Rotamax S6500KL**
\$599.00

Equipment Features

Sable Access™ S4500KL and **RotaMax™ S6500KL** high-speed handpieces were used by consultants for a variety of clinical procedures. The handpieces fit securely onto *KaVo*-style couplers for quick-connect convenience. The finish and balance were highly rated, as was the light weight of both handpieces. The mini-head is 1.5mm shorter than the full-size head, and both provide adequate torque for most procedures. Light and water output were rated very good to excellent. Some individual issues such as a sticky chuck, stalling motor, and bur run-on were noted. Thirty-one percent of consultants rated **Sable Access** and **RotaMax** equivalent to other highspeed handpieces they had used and 54% rated them to be equivalent. Fifty-four percent would switch to Sable Access and RotaMax and 77% would recommend them. ■

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Consultants' Comments

"Great handpieces to keep as a back-up or in hygiene rooms."

"Small heads provide great access."

"Feels nice in my hand."

"Lightweight, good water spray and plenty of light."

"I would like to see some long-term reports."

"The noise level seems comparable to other handpieces, but it has a higher pitch."



Editors' Note

Watch for long-term performance results of **Sable Access™ S4500KL** and **RotaMax™ S6500KL** in an upcoming issue of *THE DENTAL ADVISOR*.

*To book a Dental Advisor speaker,
or for more information, contact:*

Jennifer Ireland, Lecture Coordinator

(734) 665-2020 ext. 107

jennifer@dentaladvisor.com

Gelato Propphy Paste

Keystone Industries
(856) 663-4700 | www.keystoneind.com

Description

Gelato Propphy Paste with fluoride (1.23% fluoride ion) contains a unique blend of cleaning and polishing agents. **Gelato Propphy Paste** was reformulated prior to this evaluation and is designed to apply smoothly without splatter and rinse easily. It is indicated for application during standard cleaning and polishing dental hygiene procedures. **Gelato Propphy Paste** with fluoride delivers a wide variety of flavors including pina colada, orange sherbet, mint, cherry, bubble gum, and raspberry in three grits (fine, medium and coarse). **Gelato Propphy Paste** is packaged in 200-count boxes of individually sealed, single-use cups. The manufacturer recommends the use of fine grit for gentle cleansing and polishing and for use with children; medium grit for normal plaque removal, cleaning and polishing; and coarse grit for medium to heavy plaque and stain removal. Dye-free and x-coarse varieties are also available. **Gelato Propphy Paste** was evaluated by 35 consultants in over 2500 uses. This prophylaxis paste received a 91% clinical rating.

Suggested Retail Cost \$25.95/200-count box

Product Features

Gelato Propphy Paste offers a variety of flavor options that are enjoyed by patients. The paste has a creamy consistency that is easy to pick up with the prophylaxis cup and spreads smoothly on the teeth without splatter. Hygienists who would normally select fine prophylaxis paste for routine use found that the medium grit **Gelato Propphy Paste** produced the same level of stain removal. Coarse paste was required for removing moderate to heavy stain. Unit-dose cups are color coded with flavor labels that are easy to read. Forty percent of consultants found **Gelato Propphy Paste** was better than other prophylaxis pastes they had used, and 43% found it to be equivalent. Sixty-three percent of consultants would switch to **Gelato Propphy Paste**, and 80% would recommend it. ■

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Consultants' Comments

- "Does not splatter."
- "Mild flavors."
- "Easy to rinse."
- "Patients liked the flavor variety."
- "Cups are color-coded and easy to open."
- "Does not feel gritty in the mouth."



Infection Control with Dr. John Molinari

Choices for Instrument Cleaning: Good, Better and Best

Reprocessing of dental instruments incorporates a basic infection control principle: Clean before sterilization. If instruments are not properly cleaned, remaining debris can interfere with microbial inactivation during the sterilization cycle—thus, the sterilization cycle may be compromised. Several options for instrument cleaning are available: manual scrubbing (good), automated equipment such as ultrasonic cleaners (better), or instrument washers/ washer-disinfectors (best).

Manual instrument cleaning, may be "good" at removing remaining debris on instruments; however, it is the least effective method of cleaning and it is not without risks. The CDC recommends using work practice controls (i.e., long handled brush) to minimize contact with sharp instruments IF manual cleaning is necessary. Fortunately, this cleaning method is used much less frequently in dental facilities today due to documented risk of exposure incidents.

A "better" option of instrument cleaning is the use of ultrasonic units, found in the majority of practices. This automated method is more effective than manual scrubbing and decreases the likelihood of exposure incidents. Pre-soaking and scrubbing also typically are not required, while productivity and cleaning effectiveness

ZONEfree

DUX Dental

(800) 833-8267, (805) 488-1122 | www.duxdental.com

Description

ZONEfree is a zinc-oxide, non-eugenol temporary cement intended for the cementation of temporary crowns and bridges. According to the manufacturer, this product is the only translucent zinc-oxide non-eugenol temporary cement on the market due to its proprietary prismatic nanofillers. Because it is eugenol-free, **ZONEfree** does not inhibit the polymerization of resin luting cements used on the permanent restoration. Excess temporary cement can be removed after 2:00 minutes in the mouth and the final set time is 2:30 minutes (see Editors' Note). **ZONEfree** comes packaged in an auto-mix, dual-barrel syringe that is pre-equalized, resulting in less waste, as no extrusion of material is necessary prior to tip placement. Eight mixing tips are included. **ZONEfree** was evaluated by 28 consultants in 464 uses. This temporary cement received an 88% clinical rating.

Suggested Retail Cost

\$45/package

Product Features

The translucent quality of **ZONEfree** allows it to be used under esthetic restorations including thin veneers. It does not produce the shine-through often seen with more opaque cements. Dispensing with the auto-mix syringe is neat and easy, with less waste since there is no need to extrude material before use. The cement has a creamy consistency that is smooth to spread, and working time is adequate for multiple units. Setting time was longer than desired (see Editors' Note), but even when fully set, clean-up of excess cement received positive comments from nearly all consultants who evaluated **ZONEfree**. Removal of temporary crowns required little effort with easy cleanup of the prepared tooth. Some failures of temporary crown retention were reported. Forty-six percent of consultants rated **ZONEfree** better than other temporary cements they had used, and 21% rated it equivalent. Fifty-four percent of consultants would switch to **ZONEfree**, and 75% would recommend it.

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Consultants' Comments

"Cleans up better than most temporary cements."

"Good esthetics."

"Great color and translucency; I would use this for all of my temporary cementations in aesthetic areas."

"I would like a quicker setting time."

Clinical Tips

- Petrolatum or mineral oil can be added when less strength is desired.
- Stabilize the provisional restoration during cleanup to avoid dislodging it.
- Wait the recommended time before removing excess cement. ■



Editors' Note

Since this evaluation, the formulation of this product has changed. The setting time has been shortened. Excess temporary cement can be removed after 1:30 minutes in the mouth and the final set time is 2 minutes.

are enhanced. In recent years, technological advancements have facilitated a "best" category of instrument cleaning in the form of instrument washers and washer-disinfectors. These also improve cleaning effectiveness and decrease personnel sharps risks. One significant feature, however, is that these units accommodate more instruments than ultrasonic units, and thus are being installed in more schools, clinics, and practice settings. Instrument washers and washer-disinfectors also eliminate the need for pre-soaking or scrubbing, and personnel often state that they streamline the cleaning process. Washer-disinfectors also have high-temperature cycles, allowing the unit to achieve thermal disinfection in addition to cleaning.

It is very important to note here that household dishwashers are not synonymous with instrument washers and may not be utilized in clinical settings to clean sensitive medical instruments. The FDA evaluates and regulates all medical equipment including instrument washers. Although they may appear similar, household dishwashers are neither designed nor intended to process contaminated medical instruments, and therefore do not have FDA approval as medical devices.





Feather Light LED

UltraLight Optics, Inc

(323) 316-4514 | www.ultralightoptics.com

Description

Feather Light LED is a lightweight headlight that attaches to the clinician's loupe frame and delivers an intense beam of white light. **Feather Light LED** weighs only 4 g (0.13 oz) and is crafted from aircraft-grade aluminum alloys, making it the lightest and smallest LED loupe-light available. **Feather Light LED** has a solid state LED light rated to last 50,000 hours and a brightness adjustment on the battery pack. A removable orange composite filter can be rotated into position over the light when needed. **Feather Light LED** is available with a large selection of customized mounting brackets to fit all brands of loupes as well as personal eyeglasses and goggles. The lithium-ion battery pack has an on/off toggle and is available with an optional touch sensor, promoting hands-free operation. The initial battery charge takes 3.5 hours and will last up to 8 hours. **Feather Light LED** was used by 35 consultants, including dentists and dental hygienists, in over 3000 uses during a three-month evaluation period. This product received a 91% clinical rating.

Product Features

Feather Light LED is extremely lightweight with a small diameter that does not block clinician's field of view. Consultants who evaluated this light were using a variety of different styles of loupes. Compatible mounting brackets were provided. Mounting instructions and stability varied depending on the brand and style of loupes being used. Most consultants chose to install the orange composite filter and found that it effectively shielded the light for extended working time with light-sensitive materials. A simple plastic coil included with the light keeps the cord secured to the arm of the glasses, and a clip is provided for attaching the cord to the operator's clothing. A break-away connector in the middle of the cord is a positive safety feature to prevent damage to the unit should the cord become caught and pulled accidentally. Consultants were provided with the touch sensor model of **Feather Light LED**. The sensor is responsive to a light touch of the arm or elbow, contributing to infection control. Many consultants experienced touching the sensor and inadvertently turning the light off during a procedure. Light intensity was rated excellent, and often the brightness could be reduced and still provide adequate illumination. Forty-nine percent of

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Consultants' Comments

"Lightweight – I do not feel like any additional weight is on my glasses."

"Battery charge lasts all day."

"Bright, focused light."

"Reduces the need for the operatory light."

"Touch sensor is a little too sensitive at times."

consultants rated **Feather Light LED** better than other loupe lights they had used and 20% rated it equivalent. Sixty-nine percent of consultants would switch to **Feather Light LED** and 83% would recommend it.

Clinical Tips

- Do not overcharge the battery or let it completely empty before recharging.
- The charger can be used to power the light during use if the battery is discharged or unavailable. ■



Editors' Note

After the evaluation was completed, the manufacturer reduced the touch sensitivity by 200% to make it more user friendly.

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