

Fabrication of Essix Retainers

Essix plastic has been accepted worldwide for its strength, clarity, size and cost. It's proven, consistent and guaranteed.

impressions

The hallmark of the Essix appliance is the accuracy of the impression, thus, Raintree Essix recommends a polyvinyl siloxane (PVS) impression system. They are a bit more expensive, but the negligible increase in cost is more than justified by better fitting appliances and fewer remakes.

Raintree's PVS *system* is dispensed in two parts

Part 1. The base and catalyst of heavy bodied putty are mixed together to comprise a base layer. Press the putty into the anterior tray.

Part 2. The second layer, called a "wash", may either be dispensed directly onto the undercuts gingival to contact points and then seat the tray with the putty in it (Fig. 1).

Or, the wash may be dispensed onto the tray with the putty and then seated in the patients mouth (Fig. 2).

TIP: Squirt a small amount of wash on the patient's wrist to test for setting.

When removing the tray, always dislodge the tray from the posterior, not the anterior handle (Fig. 3).

(*Cavex Alginate #CA37* is recommended for those practices that insist on using an alginate.)

casting

Prepare the impression before pouring the stone into it.

1. Spray the impression with Essix *Debubblizer #21008* (Fig. 4). Shake out excess.

ANTERIOR CAST TIP: *Block off the impression, distal to the cuspids, with pop-top tabs retrieved from cola cans. Angulate them in the impression so that when the cast is poured, the distal ends*

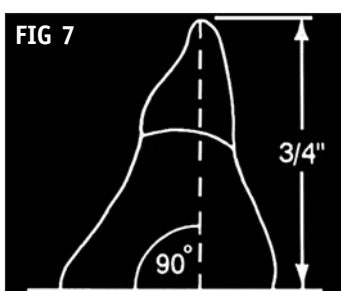
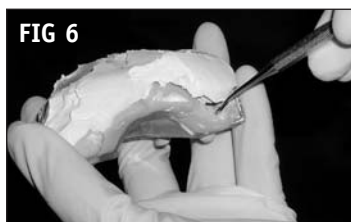
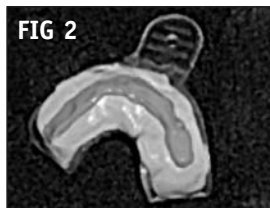
will taper from the base of the cast to the occlusal plane (Fig. 5).

Essix Die Stone #16005 is the hardest, most dimensionally stable stone on the market.

Once the cast is dry, remove the pop-top tabs and use the *Essix Cast Removing Instrument #18742* to pry the cast from the impression (Fig. 6). Trim the cast to minimal dimensions with distal ends tapered toward the occlusal plane. The long axis of the incisors should be perpendicular to the base of the cast (Fig. 7). Do not block out undercuts unless they are severe. Likewise, if the undercuts are a bit swollen, they can be accentuated by scraping the cast. Cast discrepancies such as incisal edge chips should be filled in with acrylic or *Block Out Compound #18300*. Do not use wax – it will melt during thermoforming.

NOTE: If the gingiva is excessively swollen, it may be best to use a conventional appliance until the swelling recedes.

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thermoforming

Raintree Essix recommends a vacuum thermoforming machine for all its applications. *The Essix Machine #85000* (Fig. 8) is not only compact and inexpensive, but need only be plugged in – no compressed air is necessary. (The Essix machine has been specifically designed to allow optimal suction beneath the cast.) The VACUUM MAXIMIZERS™ #85999 further enhance the suction beneath the cast depending on the cast size (Fig. 9).

When heating any plastic, preheat the machine before using! Heating times may vary with current fluctuations or length of time the heating element has been on.

Essix C+®

Features

- ◆ 1.0mm (.040") thickness
- ◆ Contact clarity
- ◆ Flexible
- ◆ Durable
- ◆ Withstands bruxing
- ◆ Will not crack or bubble
- ◆ Up to 2 years of wear
- ◆ Does not accept bonding agents
- ◆ Excellent for:
 - Retention
 - Tooth movement

Basic Retainer Vacuum Instructions

1. Pre-heat the vacuum machine for at least 3 minutes or until the heating element is a solid orange color.
2. Place the plastic into the frame on

- the vacuum machine and the model on the base plate. Do not place model directly in center, offset 1/4".
3. Swing the heating element over the plastic. Observe the plastic as it heats.
4. Essix C+ rises toward the heat source, then becomes wavy as it lowers from the raised position (Fig. 10).
5. The waves will start to flatten out into its original flat position – this is the optimal thermoforming time. *Do not let Essix C+ sag.*
6. Move the heating element away from the plastic.
7. Turn on the vacuum, then lower the plastic over the model.
8. Push into the plastic at each undercut with the *Essix Accentuator #18943* (Fig 11).
9. Immediately spray the plastic encased model with *Essix Freeze Spray #22000* (Fig. 12). This is an essential step. Not only does it cool the plastic, prohibiting further thinning, but it “shrinks” the material around the cast, realizing a tighter fit.
10. Let vacuum continue to run until plastic is cool.

- ◆ Brilliantly clear
- ◆ Rigid
- ◆ Accepts bonding materials
- ◆ Up to 6 months of wear
- ◆ Excellent for:
 - Retention
 - Tooth movement
 - Bite planes
 - Splints made with acrylic

Basic Retainer Vacuum Instructions

1. Pre-heat the vacuum machine for at least 3 minutes or until the heating element is a solid orange color.
2. Remove the blue film on both sides of the sheet of plastic before thermoforming.
3. Place the plastic into the frame on the vacuum machine and the model on the base plate.
4. Swing the heating element over the plastic. Observe the plastic as it heats.
5. Essix A+ should sag approximately 1/2" to reach optimal retention.
6. Move the heating element away from the plastic.
7. Turn on the vacuum, then lower the plastic over the model.
8. Let vacuum continue to run until plastic is cool.

Thickness	Vacuum Heat Time	Biostar® Code
1.0mm (.040")	45 Seconds	163

Essix A+™

Features

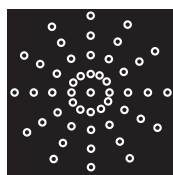
- ◆ 0.5mm (.020") to 3.0mm (.120") thickness
- ◆ Protective blue film on both sides

Thickness	Vacuum Heat Time	Biostar® Code
0.5mm (.020")	20 seconds	93
0.75mm (.030")	25 seconds	103
1.0mm (.040")	30 seconds	113
1.5mm (.060")	40 seconds	133
2.0mm (.080")	45 seconds	163
3.0mm (.120")	50 seconds	193

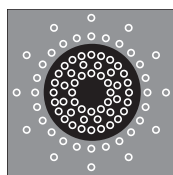
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FIG 8



Conventional baseplate configuration



Essix Vacuum Machine

FIG 9

There are more holes and the holes are bigger than most other vacuum machines.

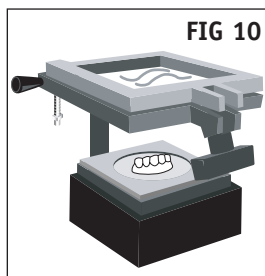


FIG 10

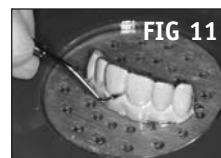


FIG 11



FIG 12

Essix Embrace®

Features

- ◆ 0.75mm (.030") and 1.0mm (.040") thickness
- ◆ Clear and Rigid
- ◆ Up to 16 months of wear
- ◆ Accepts bonding agents
- ◆ Excellent for:
 - Retention
 - Minor splints
 - Bite planes

Basic Retainer Vacuum Instructions

1. Pre-heat the vacuum machine for at least 3 minutes or until the heating element is a solid orange color.
2. Place the plastic curved side up into the frame on the vacuum machine and the model on the base plate.
3. Swing the heating element over the plastic. Observe the plastic as it heats.
4. Essix Embrace will completely flatten – this is the optimal thermoforming time.
5. Move the heating element away from the plastic.
6. Turn on the vacuum, then lower the plastic over the model.
7. Let vacuum continue to run until plastic is cool.

Thickness	Vacuum Heat Time	Biostar® Code
0.75mm (.030")	35 Seconds	133
1.0mm (.040")	40 seconds	143

Essix U-C-Me™

Features

- ◆ Same characteristics as Essix C+ only it glows in the dark

Basic Retainer Vacuum Instructions

1. Pre-heat the vacuum machine for at least 3 minutes or until the heating element is a solid orange color.

2. Place the plastic into the frame on the vacuum machine and the model on the base plate. Do not place model directly in center, offset 1/4".
3. Swing the heating element over the plastic. Observe the plastic as it heats.
4. Essix C+ rises toward the heat source, then becomes wavy as it lowers from the raised position.
5. The waves will start to flatten out into its original flat position – this is the optimal thermoforming time. *Do not let Essix C+ sag.*
6. Move the heating element away from the plastic.
7. Turn on the vacuum, then lower the plastic over the model.
8. Push into the plastic at each undercut with the *Essix Accentuator #18943*.
9. Immediately spray the plastic encased model with *Essix Freeze Spray #22000*. This is an essential step. Not only does it cool the plastic, prohibiting further thinning, but it “shrinks” the material around the cast, realizing a tighter fit.
10. Let vacuum continue to run until plastic is cool.

Thickness	Vacuum Heat Time	Biostar® Code
1.0mm (.040")	45 Seconds	163

troubleshooting

The retainer fits the cast, but does not fit the patient. The problem lies with the impression.

1. If/when using an alginate impression material, the mold must be poured immediately (within 5 minutes). Otherwise the impression will expand, thus distorting the duplication.
2. The stone used must be dry. Store stone in a closed container in a dry room. Stone will absorb atmospheric

humidity and expand the cast.

3. Casts should be trimmed properly – no more than 3/4" (Fig. 13). Trim away the palate of full arch impressions.

The plastic did not adapt well to the cast.

1. Always use a VACUUM MAXIMIZER for vacuum machines.
2. If using a Biostar, do not embed the cast in beads. Use the flat base plate.
3. Cast should be trimmed properly – no more than 3/4" (Fig. 13). Trim away the palate of full arch impressions.

The lingual, palatal edge lifts away from the cast.

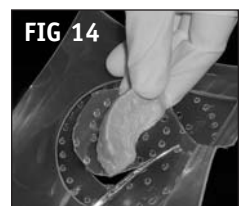
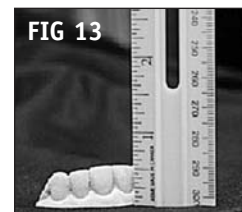
1. Plastic must be cooled immediately, spray with *Freeze Spray* after thermoforming.
2. Or, use Gordon contouring or Weingart pliers to bend the edge toward the palate.

trimming an essix appliance

Anterior Retainers

1. Cut away the excess plastic using the *Essix Mayo Scissors #18001*. Then cut out a “tab” on the lingual and labial (Fig. 14) to pull the plastic away from the cast.

continued...



2. Cut the distal ends off using the *Essix Lab Knife #18800* (Fig. 15).
3. Pull the tabs to remove the cast from the plastic.
4. Cut straight across from canine to canine. Approximately 1mm on the gingival of the lingual and 2-3mm on the gingival of the labial (Figs. 16a & 16b).
5. Round out the edges cutting towards the incisal edge of the canines (Fig. 17a). Resulting retainer (Fig. 17b).

Full Arch Retainers

1. Trim away all excess plastic (Fig. 18).
2. Cut off the distal third of the terminating molar (Fig. 19) using the *Essix Precision Electric Heat Knife #88550*, the *Essix Wheel Saw #18320*, or cut the distal ends off using the *Essix Lab Knife #18800*.
3. Trim the plastic to approximately 1mm onto the gingiva on the lingual

and labial. This can be done using a *Wheelsaw #18320* on a *Dremel #DR001* or a *Precision Electric Heat Knife #88550* and cutting the plastic directly on the cast (Fig. 20). Or, first removing the plastic from the cast and trimming the edge with *Mayo Scissors #18001*.

4. The plastic can be gently pried from the cast with the *Essix Cast Removing Instrument #18742* working from the molars towards the canines (Fig. 21).
5. Have the patient seat the appliance and bite down on double-sided articulating paper. Grind away any high spots on the retainer in order that the anteriors will occlude (Fig. 22).
6. The edges of the retainers can be polished using the *Essix Border Polishers #18970* or *Essix Polishing Brushes #18981, #18982 and #18983* on a *Dremel #DR001* (Figs. 23 and 24).

contraindications and limitations of essix appliances

Essix appliances should be coincident with patient behavior. If the patient has displayed poor hygiene and a casual attitude about treatment, it might be better to place a bonded appliance, wait for the tissue to normalize (and perhaps for the patient to mature a bit) and use an Essix as an exit appliance, i.e. after the bonded appliance is removed.

If the patient displayed severe pretreatment rotations of the anterior teeth, it would be advisable to consider fiberotomies, and retain with a bonded cuspid-to-cuspid appliance. This precludes the incisor jiggling between non-wear during the day and the wear while sleeping. Again, it would be prudent to use the Essix as an exit appliance – after the bonded appliance or Hawley is discontinued.

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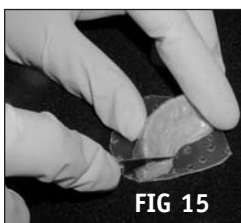


FIG 15

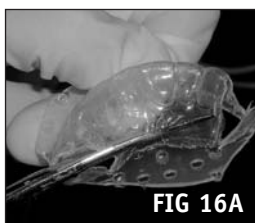


FIG 16A

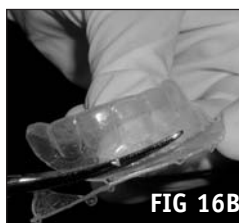


FIG 16B



FIG 17A



FIG 17B

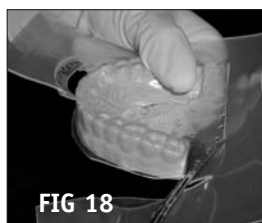


FIG 18

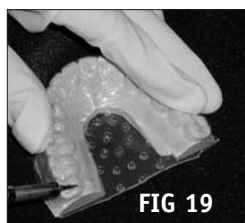


FIG 19

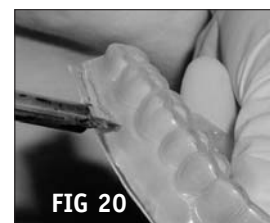


FIG 20



FIG 21

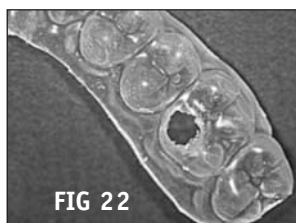


FIG 22

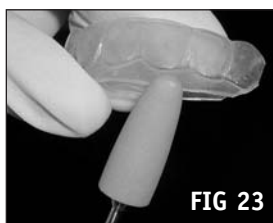


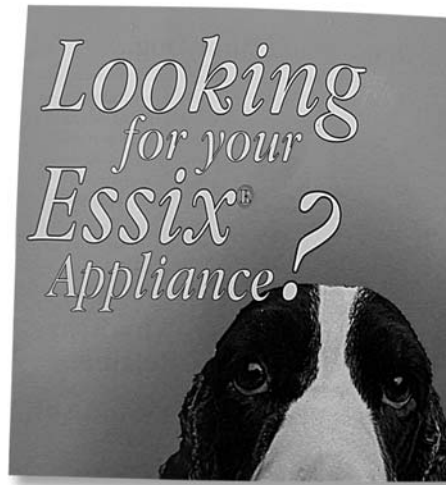
FIG 23



FIG 24

help your patients care for their essix appliances

The *Essix How to Care for Your Appliance Brochure #99S60* is a perfect handout to give to patients. Included on the back of the brochure is an area to imprint your office information, as well as a handy wearing schedule where the orthodontist may indicate how the appliance should be worn. The text of the brochure is as follows:



Don't Blame Your Dog . . .

The number 1 reason for retainer loss is pets. If left out, animals will often chew up the appliances. Other causes of retainer loss are due to melting (placing the retainer too close to curling irons and hot curlers) or misplacement (from wrapping the appliance in a napkin that is mistakenly thrown away). To avoid these hazards, always keep your appliance in the case provided by your doctor.

Why Wear Retainers?

Retainers, as the name implies, retain the teeth in the corrected position. Failure to wear retainers as directed, even for a short period of time, may cause the teeth to shift into pretreatment position. It is very important that you follow the specific instructions given to you to maintain satisfactory results.

Your Wearing Schedule

It is imperative to adhere to your retention schedule. If not followed, your teeth may shift to the extent that you may need to be retreated. *Consult back panel for your wearing schedule.*

Cleaning

Do not brush appliance with toothpaste – it dulls the plastic and may crack the appliance. To maintain the brilliance of your appliance, use soap and water* or *Essix Retainer Brite® #RB-TP*. For best results, follow your doctor's recommendation.

*Not hot water

Retainer Tips

1. Retainers should not be worn while eating.
2. Always bring your retainers with you for each appointment. If a retainer is lost or damaged, you will be charged for replacements or repairs.
3. If you miss a few nights, wear the retainer full time and bite down to seat if fully. The teeth may be a little sore, but should realign in a short period of time. If they do not, call your doctor.
4. If your retainer ever becomes loose (if you can flip it out with your tongue), discontinue wear and call your doctor immediately.
5. Do not chew gum – it sticks to the plastic.

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essix retention letter to patients/parents

Raintree recommends giving your patients written instructions for the care and schedule of wear for their retainers since, often times the patient will forget verbal instructions. A simple letter to the patient like the one to the right or the *Essix How to Care for Your Appliance Brochure* is perfect as well.

Sample letter:

Dear Patient/Parent,

I would like to thank you for your efforts in helping us treat your malocclusion. The appliances are off, your smile is delightful, and I trust you are as satisfied as I am with the results. However, to maintain the finished result, it is imperative that you adhere to your retention schedule. If it's not followed, your teeth may shift to the extent that re-treatment, with additional expense, would be involved. As we discussed, this can be avoided by simply wearing your retainers as directed. My staff and I will help you to adhere to the following guidelines:

- ◆ Follow the prescribed schedule of wear (insert specific instructions). Retainers may not be worn while eating or drinking – certain foods will stain your appliance.
- ◆ When wearing the retainers at night only, they must be worn every night.
- ◆ Clean the retainer with Retainer Brite cleaning tablets. Do not brush the retainer with toothpaste, it will cause the plastic to crack and dull.
- ◆ If an edge of the retainer irritates your gums, trim with a scissors or smooth with an emery board.
- ◆ Store the retainer, in the case that was supplied by the office, when it is not in your mouth.
- ◆ If the retainer is lost, call the office immediately (insert phone number). Replacement retainers can be provided at a nominal fee.
- ◆ If you miss a night or two, wear the retainer full time, and bite down to seat it fully. The teeth will be sore, but will soon realign.
- ◆ Place a bead of fluoride gel in the retainer once a week (prior to bedtime) and leave in overnight. This will make your teeth stronger.
- ◆ If your retainer becomes too loose, call us immediately and discontinue wearing.

Again, my thanks for being a wonderful patient. Be sure to beam that delightful smile on everyone.

Sincerely,

Dr. (Insert signature)

Retention By Telephone

Let the patient know that the reason you are checking retention by phone is because the Doctor respects their time, but is concerned about how they are maintaining their finished results.

The person making the call should be familiar with the patient's history, i.e., when they finished treatment and any special comments that the Doctor noted when retention was initiated. Be prepared for some chitchat.

The following items should be checked during the phone conversation

- ◆ Are they wearing the Essix appliance as prescribed?
- ◆ Does the appliance still fit well?
- ◆ Are they cleaning the appliance with Retainer Brite or warm water? Remind the patient not to use toothpaste or a toothbrush that has toothpaste on it – this will dull the plastic and possibly crack it.
- ◆ Are there any spots where the appliance has cracked or worn through?
- ◆ Are they still seeing the General Dentist for routine check-ups?
- ◆ Do they, for any reason, wish to schedule an appointment with the Doctor? If so, schedule the appointment. If it is the Doctor's choice to see the patient at the next recall time, tell the patient that they should call the office in a few months to schedule an appointment.

- ◆ The patients should be informed not to wait for the next retention call if any problems should arise – they should call the office immediately.

At the conclusion of the call, again mention the Doctor's concern for maintaining the finished result and remind the patient that you will be contacting them again in a few months.

Note: Although retention could possibly be checked via e-mail, a dialogue with a staff member is more meaningful and establishes a more personal contact.

