The newest Indirect Bonding Reference Manual is now available. This manual is designed to serve as a reference guide for practices that are using (or considering using) Indirect Bonding. The manual covers key aspects of the technique and illustrates each step of the process, showing current systems used for bracket placement in the laboratory and for bonding in the clinic. Adhesives from Reliance Orthodontic Products are featured in this manual.
Indirect Bonding (IB)

Reference Manual

Clinical Bonding Techniques
Laboratory Procedures
Supplies and Materials
About Specialty Appliances

Specialty Appliances is a full-service orthodontic laboratory located in Atlanta, Georgia. Since its founding in 1981, Specialty Appliances has developed a complete product line that includes retainers and spring retainers, metal appliances, functional appliances, splints, and labial and lingual Indirect Bonding services. We are proud of the quality of our laboratory work and our outstanding customer services, and we invite your practice to try Specialty Appliances for your laboratory requirements.

Indirect Bonding Update

Indirect Bonding has been used throughout the profession for more than 25 years. While many practices were initially successful with Indirect, problems arose that prevented the technique from becoming an industry standard. Over the years, however, advances such as customized bracket placement, specialized adhesive systems and transparent transfer trays have helped Indirect Bonding become a highly accurate and dependable system that doctors now rely on with the highest of confidence.
Using Specialty Appliances
Indirect Bonding Services
How to Get Started

1. Models
   We recommend using orthodontic stone instead of plaster whenever possible. Our experience has shown that stone gives an added level of accuracy in the model pour-up and is more durable to work with in the laboratory. The precision necessary with Indirect Bonding is directly related to the fit of the custom pads to the dental model and teeth and the best results are achieved by the use of the best practices and materials.

2. Brackets
   We are able to place appliances from any manufacturer (these should be sent to Specialty Appliances with your models and Rx form). We also have brackets from American Orthodontics available from our inventory. For your convenience, these are available on a per-case basis. Please contact us for pricing information on American Orthodontic appliances or your Indirect cases.

3. Rx Form
   The Specialty Appliances Indirect Bonding prescription form should include the doctor’s name and address, the patient’s name, the date shipped and the anticipated date for appliance placement. On the diagram of the teeth, please indicate which teeth are to be bonded, banded, extracted or not treated. Detailed bracket placement information can also be specified, as well as instructions for fabricating and sectioning the transfer trays.

4. Specialty Appliances Indirect Bonding Educational Support
   The newest Indirect Bonding Reference Manual is now available. This manual is designed to serve as a reference guide for practices that are using (or considering using) Indirect Bonding. The manual covers key aspects of the technique and illustrates each step of the process, showing current systems used for bracket placement in the laboratory and for bonding in the clinic. Adhesives from Reliance Orthodontic Products are featured in this manual.

5. Indirect Bonding Video Training Program – Your’s Free from Specialty Appliances
   We are also pleased to present a comprehensive video program that demonstrates the entire clinical application of Indirect Bonding, featuring Dr. Terry Dischinger and his staff. Dr. Dischinger has used Indirect Bonding for many years, in the process refining a Bonding technique that produces predictable results and can be taught to other practices. In this video, we demonstrate both light and auto-cure bonding methods. This program is a must for your entire staff so please contact Specialty Appliances today for your free copy.
Purpose and Organization of this Manual. This manual is designed to serve as a reference guide for practices that are using or considering Indirect Bonding. The manual covers key aspects and illustrates various parts of the technique, showing several current systems used for bracket placement in the laboratory and bonding in the clinic. We also present information to help you get started using our Indirect Bonding service.

Table of Contents  Specialty Appliances and Indirect Bonding

- FEATURES AND BENEFITS OF INDIRECT BONDING  P. 4
- OVERVIEW – About Indirect Bonding Today  P. 5
- GETTING STARTED with Indirect in Your Office  P. 6
- GETTING STARTED – Specialty Appliances Rx Form  P. 7
- IN THE LABORATORY at Specialty Appliances  P. 8-11
- CLINIC BONDING OVERVIEW  P. 12-13
- PREPARING THE TEETH  P. 14-15
- CLINICAL BONDING – Clean Base with Auto Cure "Paste"  P. 16-17
- CLINICAL BONDING – Custom Base with Auto Cure "Sealant"  P. 18-19
- CLINICAL BONDING – Custom Base with Auto Cure "Paste"  P. 20-21
- CLINICAL BONDING – Custom Base with Light Cure "Sealant"  P. 22-23
- CLINICAL BONDING SUMMARY  P. 24
- CLINICAL BONDING – Custom Base Dr. Dischinger's Technique  P. 25-34
- INDIRECT BONDING PROCEDURES – Dr. Anoop Sondhi  P. 35, 36
- PREPARATION OF BONDING TRAYS – Dr. Anoop Sondhi  P. 37
- SUPPLIES AND MATERIALS  P. 38, 39
- CONTACTS AND LINKS  P. 40
Several Benefits of Indirect Bonding

Certainly the primary advantage associated with indirect bonding is accuracy in bracket placement. Having the advantage of placing brackets on a construction model instead of the patient has always made sense from a positioning standpoint. Another advantage discussed in many practices is the efficiency in delivering the brackets at the initial appointment. Some offices report as little as half the doctor’s time required for bonding, when using indirect compared to the direct method. In addition, when done properly, indirect bonding offers an extremely clean and hygienic method of placing brackets.

Specialty Appliances Indirect Bonding Services

Specialty Appliances’ technicians have worked with all the major manufacturers’ bracket systems, including standard prescription appliances, self ligating brackets and esthetic and ceramic appliances. Using precision bracket placement tools and equipment, and with carefully constructed references lines on each tooth, we can routinely place brackets with an extremely high degree of accuracy. Our Indirect service is also designed to provide fast and consistent delivery times – on average, your cases are completed and returned within 10 -14 days from the time you ship them to Specialty.

Implementing Indirect Bonding in Your Practice

In the past, practices considering Indirect had to master both the laboratory and clinical aspects of the technique. Now, Specialty Appliances offers an accurate, reliable and cost-effective Indirect Bonding laboratory service so practices can focus on their primary objective – delivering high quality treatment to their patients. This manual is designed to assist your practice in implementing Indirect by demonstrating and detailing proven clinical procedures. We also provide information on products, equipment and materials from other support companies in order to insure your success in utilizing Indirect.
Overview of the Indirect Bonding Technique

Original Indirect Bonding Technique – "Sugar Daddy"

The original Indirect Bonding technique used the "sugar daddy" system to place brackets on the models in the laboratory. This technique employs a temporary bonding medium, such as caramel candy, to secure brackets to the model. Once the trays are made this material is rinsed from the back of the brackets, leaving the mesh pad exposed for application of bonding adhesive in the clinical delivery. The most common problem with this technique is excess flash, the result of too much bonding material being used.

Although the basic concept remains the same, over the years several refinements have proven to be very effective in improving Indirect Bonding. Below we discuss the refinements and improvements that will make using Indirect Bonding in your practice successful and consistent.

Custom Base Refinement and Advantages

A major refinement in the process occurred with the application of the bonding adhesive to the brackets in the laboratory, and the term "custom base" technique was coined. Because the "custom base" technique incorporates the buildup of composite in the laboratory, a thin layer of adhesive is all that is required clinically to bond the brackets to the teeth. This technique is very appealing in terms of hygiene associated with the final bracket delivery since excess flash is eliminated. It does however have certain associated issues due to the precise fit of the custom base pads to the dental surfaces. Practices must provide impressions and models that are 100% accurate and make sure the suggested clinical bonding procedures are well understood and followed precisely.

Clear Transfer Trays and Adhesives

The other significant improvement has been the development of materials used to fabricate the Indirect Bonding transfer trays. Clear vinyl trays made on a pressure-forming machine such as the Biostar from Great Lakes Orthodontics have largely replaced the original silicone tray materials. These trays provide a clear field of vision and can be easily sectioned to facilitate clinical delivery. Practices currently using light cured adhesives will find Indirect Bonding easy to adapt as the clear trays make possible the use of light cured materials. This is especially true when using the newer "fast lights" which can cure the adhesive in as little as 5 seconds. In addition, any type or brand of brackets can be used with light or auto cure adhesives and Indirect Bonding.
Getting Started in Your Office - Models and Shipping

How do you get started using Indirect Bonding with Specialty Appliances? The information in this section includes details on impressions and models, laboratory turn-around times, and completing the Specialty Appliances Indirect Bonding prescription form.

Impressions and Models

We continually emphasize the importance of accurate impressions and models. Every practice strives for excellence in all impressions and models, but the precision fit of the Indirect Bonding trays and custom base pads demands the necessity for 100% accuracy. A busy practice may take impressions throughout the day for various appliances, and these are often poured up at the noon hour or at the end of the day. With Indirect Bonding, these impressions need to be poured immediately—within thirty minutes of taking the impression. If impressions cannot be poured immediately, we recommend Kromopan alginate for Indirect Bonding impressions. It is accurate and stable if poured within 48 hours.

Bonding or Banding Molars – Important Appointment Sequence

With Indirect Bonding, we have seen an increase in the number of clinicians who bond posterior teeth. Additionally, the entire arch (including molars) can be bonded in a single appointment. Today’s bonding materials are quite strong and the “custom base” technique used in our laboratory provides for a significant “footprint” of the adhesive on the molars. In practices where the teeth will be banded, however, there must be absolutely no tooth movement prior to the delivery of the Indirect Bonding trays. If spacers are placed after the impressions for Indirect Bonding are taken, any slight movement of the teeth could jeopardize the fit of the custom trays. For this reason, when teeth are banded we recommend placing the spacers after the case has been bonded.

Shipping Your Cases to Specialty

Most offices using Specialty Appliances for their Indirect Bonding schedule the patient for delivery of the Indirect Bonding trays ten to fourteen days after the initial impression is taken, allowing three days at Specialty and two to three days mailing time each direction. It is possible to expedite Indirect Bonding cases on request. We ask that you contact our Customer Services personnel prior to sending your special cases and alert us to your “Rush” status. Please make sure to wrap models securely in “bubble wrap” to avoid breakage. When enclosing brackets with your models, please place them on a “sticky card” with clear tape over them or use a plastic bracket case that holds each bracket in its proper place.
Case Information and Brackets to Be Used

The first section of the Specialty Appliances Indirect Bonding prescription sheet deals with basic case information. Included is the doctor's name and address, the patient's name, the date shipped to Specialty Appliances and the date requested for appliance placement. On the diagram of the teeth, please indicate which teeth are to be bonded, banded, extracted, or not treated at all. Also indicate if you have enclosed the brackets, or if they are to be supplied by Specialty Appliances. We will place any manufacturers’ brackets you send with the case; as an option, we have a complete inventory of brackets from American Orthodontics, including the TIME self-ligating and ceramic brackets.

Bracket Placement Information

On our prescription form, there is a section where detailed instructions may be provided regarding bracket placement. Many practices have provided us with standard guidelines for their typical vertical heights, and provide additional instructions on a “per case basis” when indicated. For example, when the upper canines are extremely pointed and some contouring is anticipated after orthodontic treatment, the doctor's special instructions may be to place the brackets 1/2 mm more gingival to allow for the anticipated contouring. We strongly encourage each practice to establish a computerized special instructions file that details their exact bracket positioning guidelines. These instructions are then followed on all cases unless otherwise indicated on the prescription form.

Transfer Tray Information and Options

Our standard transfer trays used with the “custom base” consist of a clear two-part design. The standard for the “clean base” transfer tray is a single silicone tray. Unless otherwise specified, we deliver the transfer trays to your practice with no sectioning or splitting. However, some offices prefer to have the trays sectioned at the dental midlines or even in three pieces per arch when the molars are bonded – they report that sectioning the trays helps in maintaining the isolation and dry field. When we have a request to cut the trays, the inner and outer trays are always sectioned in the same manner. In other words, if there is a mid-line split it will be on both the inner and outer trays.
Incoming Quality Control on Models

When we receive a case from your practice, we immediately perform a quality-control process on the models. Small bubbles and minor artifacts can usually be managed as we compensate for them in the model-preparation stages. If anything seems likely to jeopardize accuracy, we will telephone the practice to discuss the exact issue. In some cases, it may be necessary to obtain a new set of models.

Reference Lines on Models

After we have verified the accuracy of the models, we place reference lines on the models for bracket placement. First, we mark the incisal and occlusal edges of all the teeth to receive brackets. These lines serve as visual references in aligning the brackets on the teeth with respect to the long axis and rotation. We then add the long axis lines on each tooth. This is best accomplished by viewing the models from several angles. Typically, the long axis line starts from the center of the incisal edge and follows up through the crown along a line reflecting the greatest curvature of the dental surface. Some practices prefer to mark the long axis in their office, using a panoramic radiograph as a reference.

Vertical Height Standards Followed

We next add the vertical height reference lines to the models. Many practices have given us standard guidelines for their typical vertical heights used in placing brackets, and we mark the models in increments of _ mm for various heights. We also gauge and mark the vertical height of the teeth for bracket placement with regard to the overall size of the teeth. For patients with overall larger or smaller teeth, we will adjust the vertical heights on all teeth in proportion to the average measurements.
Detailed Look at Indirect Bonding – Laboratory

In the laboratory at Specialty Appliances the brackets are placed using several different methods depending on the clinicians’ preference. Our standard Indirect Bonding cases are processed using the "custom base" technique, however we also offer the "clean base" option. The clean base method can also be used with a light-cured clinical adhesive if you request the two-part clear transfer tray. The two-part clear transfer trays are not a standard with the clean base technique, so it is very important that you make a note on the prescription form when submitting the case.

The Custom Base Technique

In our standard custom-base Indirect Bonding system, the brackets are placed on the models using a direct bonding adhesive such as “Phase II” from Reliance Orthodontic Products. We also provide systems in which light-cure or thermal cure composites are used to place the brackets. Only a thin film of bonding adhesive (light cure or auto cure) is necessary because of the precise fit of the custom base pads to each tooth.

Custom Base Adhesive Fit

This is a close-up view of the custom base technique with its final base against the laboratory model. Note the exact fit of the adhesive to the dental surfaces. The two-tray bonding system ensures that the custom base pads will be in complete contact with the tooth surfaces during the clinical bonding process. This close adaptation once again emphasizes the need for absolute accuracy in impressions and models. Since the custom base pads fit the teeth on the laboratory model as shown, there is little room for error in the system.

The "Clean Base-Sugar Daddy" Technique

The clean base method with a single silicone delivery tray is the original technique used in Indirect Bonding. Success with this approach depends on the clinical application of the paste (the precise amount) used to bond the brackets to the teeth. In this option, we use a water-soluble bracket adhesive. After the final trays have been completed, the water-soluble material is removed from the back of each bracket base and the mesh pads are exposed for bonding in the clinic.
Model Preparation for Tray Fabrication

After the brackets are secured on the model, a small amount of silicone putty is used to block out any rotational wings, ball-hooks, or self-ligating clips to facilitate bracket removal from the tray after bonding; the pressure-forming machines such as the Biostar will force the material into any undercut areas left unattended in the model-preparation phase. If you are doing Indirect Bonding in your office, this critical step must be done. Also, when processing the second outer tray (described below) separating medium must be used over the inner tray to prevent them from fusing together in the Biostar.

The “Two-Tray” Transfer System

Over many years at Specialty, we have refined a well-proven system using a “two-tray” method. In the first step, a flexible “inner tray” made from pressure-formed vinyl material covers the brackets. Next, a hard acrylic material is processed directly over the inner tray to act as a “carrying and simultaneous seating tray” exerting positive pressure to help set the brackets. This system also lets the clinician easily position and seat the trays while maintaining a clear field of view. All transfer trays are sectioned according to the doctor’s preference.

The “Inner” Transfer Tray

This photograph shows the inner tray on the model. Note the block-out material in the inner tray. The inner tray is cut to extend slightly below the general line along the gingival border and extends over all dental surfaces on the lingual. An alternative inner tray design adds a vertical slit on both sides of each tooth in this tray. The resulting tabs can be peeled up individually to release the brackets from the tray. In some instances during clinical seating, the inner tray may be separated from the outer tray and seated first with a slight “flexing” as needed due to crowding or rotation of the teeth. The outer tray is then seated immediately over the inner tray.
Detailed Look at Indirect Bonding – Laboratory

The "Outer" Transfer Tray

The second tray (or "outer tray") is fabricated from 1.5-millimeter hard, clear acrylic. Once again, both our inner and outer trays are routinely made in clear acrylic for practices that utilize light cure bonding. As the outer tray is formed directly over the inner tray, it will create a very tight fit. The outer tray is typically left a couple of millimeters longer than the inner tray along the labial and buccal areas. This ensures that the tray will fit completely over the bracket portion in the patient’s mouth and allow the clinician to exert passive pressure in holding the brackets against each tooth. By having a precision fit outer tray it is not necessary to “press” the brackets against the teeth during clinical bonding. With the old style silicone trays, pressing one area would frequently result in the tray popping up in another and compromising the integrity of the bond strength.

Sectioning the Transfer Trays

Unless otherwise specified, we deliver the transfer trays to your practice in a single piece. Sectioning the trays is one of our available options. Some offices prefer to have the trays sectioned at the dental midlines or even in three pieces per arch when the molars are bonded; and some report that sectioning the trays helps in establishing and maintaining the isolation and dry field. When we have a request to cut the trays, the inner and outer trays are always sectioned in the same manner. In other words, if there is a mid-line split it will be on both the inner and outer trays.

Final Tray Cleaning and Preparation

The next step is to micro-etch each custom base pad in the tray, followed by a cleaning process. Micro etching is not intended to alter the anatomical adaptation of the pads to the teeth. The micro etching or sandblasting is used on the back of each pad to remove any residual debris from the laboratory process. This also ensures that a receptive surface is present in terms of receiving the clinical bonding agent. Caution should be taken when micro etching the custom base. Aggressive or prolonged micro etching will remove too much material and will affect the interface fit of the bracket to the tooth. The final step is to clean the trays in an ultrasonic water bath followed by packaging in the Specialty Appliances Indirect Bonding cases. In your office, we do not recommend trial fitting the trays. If for any reason the trays are tried in the mouth, they must be re-cleaned thoroughly using the same steps performed by Specialty Appliances Lab.
Clinical Bonding Options

Since the introduction of Indirect Bonding in the early 1970’s, there have been many modifications and improvements to the original systems, both in the laboratory and clinic. At Specialty, we offer the ‘Custom Base’ as our standard technique, which means only a thin sealant is necessary to bond the brackets in the mouth. This is accomplished with either a light or auto cure adhesive system. Many practices use this ‘sealant only’ method with complete success. There are, however, clinicians who prefer to add a paste component to the custom bases for clinical bonding. Adding a very small amount of paste can fill any minute gaps in the interface between the custom bases and tooth surfaces. This optional technique can also be used with light or auto cure materials. Considering the multiple options, we will discuss the clinical bonding techniques listed below:

- Clean Base - Auto Cure "Paste" Technique
- Custom Base - Auto Cure "Sealant" Technique
- Custom Base - Auto Cure "Paste" Technique
- Custom Base - Light Cure "Sealant" Technique
- Custom Base Technique- Light Cure Bonding/Per Dr. Dischinger

Below is a brief overview of these five methods – each is described in detail in subsequent sections of this manual.

Clean Base - Auto Cure "Paste" Sugar Daddy Technique

As previously described, with this technique, the brackets are delivered clinically by adding a paste to the mesh pads in the silicon transfer trays. In this system, we recommend using “Excel” adhesive from Reliance Orthodontic Products. Excel is a two-part adhesive which has three minutes of working time once mixed. This allows the material to be loaded in a syringe and applied to the bracket bases in a controlled manner.

Custom Base - Auto Cured "Liquid" Technique

Since the custom base pads fit the teeth precisely, only a thin film of liquid is needed for clinical bonding. Reliance has developed a material specifically for this process called “Custom IQ,” a two-part A + B liquid sealant. One component, either A or B, is applied to the etched teeth and the other part to the custom base pads in the trays. Custom IQ will not begin setting until the two parts are brought into contact by seating the trays - eliminating the need to work within a certain timeline.
Step-by-Step Clinical Bonding - Overview

Custom Base - Auto Cured "Paste" Technique
We recommend using Excel adhesive, from Reliance Orthodontic Products. Excel is an A+B paste, with an ideal viscosity that allows uniform flow of the mixed material on to the custom base pads in the trays. Once mixed, Excel has a 3-minute working time, which allows the adhesive to be mixed, placed in a tip, inserted into a syringe and applied to the back of each custom base pad in the bonding tray. The critical key in this step is to get just the right amount of adhesive on the pads. If too little adhesive is used there may be gaps between the custom base pads and the tooth surface. If excess adhesive is used there tends to be additional flash from the periphery of the bracket, which causes both cleanup difficulties and potential hygiene problems throughout treatment.

Custom Base - Light Cured "Liquid" Technique
The increasingly popular fast-curing light systems work extremely well with Indirect Bonded brackets. The clear transfer trays allow light curing, and with the faster lights, the entire process is very efficient, but not necessarily faster than the auto cure process. Another advantage in using light cured adhesives is that there is no “rushing” in the sequence of clinical steps since the adhesives do not set until the light source is applied. We recommend using “Light Bond” liquid sealant as the bonding agent for Indirect Bonding light cured with liquid adhesive. The Light Bond liquid is a single component placed on both the custom base pads and the etched teeth. Light Bond is a Reliance Orthodontic product.

Custom Base - Light Cured Technique
"Dr. Dischinger's Method"
The light cured technique taught by Dr. Terry Dischinger is detailed in a subsequent section of this manual and is also available from Specialty Appliances in a comprehensive video program. Dr. Dischinger utilizes the custom base method with a small amount of light cure adhesive applied to facilitate clinical bonding. There is also a bracket base enhancement used to insure an optimum chemical bond of the clinical adhesive to the laboratory-formed custom bases. To obtain Dr. Dischinger’s video tape FREE OF CHARGE please contact Specialty at 1 (800) 522-4636.
Initial Steps with All Adhesive Systems

The Indirect Bonding techniques presented in this manual are designed to deliver the custom transfer trays one arch at a time. IMPORTANT: All of the steps described are based on delivering the lower arch first, then etching, sealing and bonding the upper arch. Preparation of both arches from the start can lead to moisture contamination of the second arch while working on the first arch. Regardless of the adhesive system used, the general steps below apply.

Decision on Tray Delivery Method

Before getting started, a decision should be made regarding delivery of the transfer trays. As previously discussed the transfer trays consist of two parts: a clear, flexible inner tray and a clear, hard outer tray. The transfer trays are delivered to your practice as one single unit. Based on reported experiences with the Indirect Bonding technique, delivering the transfer trays simultaneously is highly recommended. However, the inner and outer trays can be delivered separately, especially if you feel you need more flexibility and visibility during insertion due to severe crowding or rotations.

Adhesion Booster

“Enhance” adhesion booster from Reliance is recommended as the first step in preparing the transfer trays in all adhesive systems described in this manual. Enhance adhesion booster applied to the custom base ensures that the chemical bond between the adhesive and the pad is as strong as possible. Note: Enhance adhesion booster can also be applied to the etched tooth as a first step. Also, an excellent bonding material available from Ormco, “Ortho Solo,” can act as an enhancement agent to strengthen the clinical bonds.

Dry Field Systems

The most predictable adhesives results with Indirect Bonding are obtained within a completely dry field, especially with the posterior teeth. Although an acceptable dry-field environment can be established using the traditional dry angles and cotton rolls, we recommend the NOLA cheek retractor and moisture-control system. This system provides excellent access to the entire arch, is comfortable for the patient, and is easily placed by the clinical staff. It is also helpful in standardizing the technique from one staff member to the next.
**Initial Steps with All Adhesive Systems**

**Cleaning the Teeth and Applying the Etch**
Cleaning the teeth with plain pumice and a rubber prophy cup is recommended as a standard procedure prior to Indirect Bonding. Some practices also micro-etch the posterior teeth as well, which they report increases bonding strength. After pumicing (and optional micro etching), the teeth are etched. The recommended etch from Reliance is the 37% acid solution. Etching is typically left on the teeth for thirty to forty-five seconds. For easy application and control, we suggest that the etching material be applied with a small syringe; an alternative method is a small sponge tip or brush with plastic handles.

**Etching the Teeth – Rinsing and Drying**
It is extremely important that the etch solution is rinsed from each tooth for a minimum of ten seconds in a continuous stream of water, with the high-speed evacuation unit held next to each tooth to capture the rinsed etch. Failure to rinse properly can result in compromised bonding and reduced overall bond strength. Once the teeth are rinsed completely, dry the teeth using both air and a tooth dryer. Note in this illustration the completely chalky-white appearance of the teeth after the appropriate etching, rinsing and drying. Failure to rinse the teeth properly after etching is believed to be one of the main reasons for compromised bonding strength.

**Bonding to Non-Enamel Surfaces with Indirect Bonding**
Every practice eventually faces the reality of bonding to porcelain, amalgam, gold and other restorative materials, especially when bonding molars on adults. Bonding to these surfaces is accomplished with Indirect Bonding the same as is done in direct bonding. Preparing the surfaces is the key to success with either technique. When bonding a porcelain crown on a molar, for example, the tooth is prepared using porcelain etch (hydrofluoric acid) and sealant in the usual manner. Once prepared, the bonding agent is applied to the custom base in the tray the same as with the other teeth. For the latest information on bonding to porcelain and metal surfaces, we recommend contacting Reliance Orthodontic Products at (800) 323-4348 for the proper procedures.
Clean Base – Auto Cure "Paste" Technique

The following two pages illustrate Indirect Bonding using the clean base Sugar Daddy technique. This is the original Indirect Bonding method where the brackets are placed in the laboratory using a temporary bonding medium such as caramel candy and silicone trays are fabricated for bracket transfer. The silicone trays are a standard for the clean base Indirect Bonding Technique at Specialty Appliances.

Clean Base Clinical Bonding Adhesive and Sealant

With the clean base auto cure “paste” technique, a light-bodied bonding adhesive is required to fill the small gap between the mesh pad and each tooth surface. We recommend using Excel adhesive and "Maximum Cure" as the companion sealant. Both products are from Reliance Orthodontic Products. Excel is an A+B paste, with an ideal viscosity that allows uniform flow of the mixed material into the mesh pads in the trays. Once mixed, Excel has a 3-minute working time. Maximum Cure sealant is an A + B liquid which, when mixed, has a set time of approximately 60 seconds, which is ample time for an application to all the teeth on one arch.

Prepare the Mesh Pads in the Bonding Trays

One of the last steps of the laboratory process with the clean base technique is to completely remove the temporary medium from the back of the bracket bases, leaving the mesh pads exposed. As a final step at Specialty Appliances we also micro-etch the back of each mesh pad and then clean each tray in the ultrasonic unit with plain water for several minutes. In the clinic, there are no other steps necessary in terms of preparing the pads in the trays prior to applying the adhesive. Always make sure, however, there is no moisture on the bracket pads.

Sealant Used on the Teeth with the Clean Base Technique

When using Excel as the bonding adhesive on the mesh pads, we recommend using Maximum Cure from Reliance as the companion sealant to be applied to the teeth. Maximum Cure A+B sealant is mixed together (typically in a glass dish or a mixing pad) and then applied to the freshly etched teeth. Once mixed, Maximum Cure sealant has a set time of approximately 60 seconds, which is ample time for an application to all the teeth on one arch. Note: most Indirect Bonding techniques are designed to apply the brackets to one arch at a time by delivering the first arch, (usually the lower first) then etching, sealing and bonding the second arch. Etching both arches from the start can lead to moisture contamination of the second arch while working on the first arch.
Clean Base – Auto Cure "Paste" Technique

Application of the Bonding Paste to the Mesh Pads

The next and most critical step is to mix and apply the A + B components of Excel paste. Once mixed, place the adhesive in a tip, insert the tip into a syringe and apply the adhesive to the back of each mesh pad in the silicone transfer tray. Mixing and preparing the adhesive is typically performed by an assistant at the same time the sealant is being applied to the teeth by the doctor. Care must be taken when applying the adhesive to make sure it is firmly pressed into the mesh pad on the bracket base without running or slumping as it is applied to each subsequent bracket. The critical key in this step is to get just the right amount of adhesive on the mesh pads. If too little adhesive is used there may be gaps between the bracket base and the tooth surface. If excess adhesive is used there tends to be additional flash from the periphery of the bracket, which causes both cleanup difficulties and potential hygiene problems throughout treatment.

Seating the Silicone Transfer Trays

Once the adhesive has been loaded onto each bracket mesh pad the silicone transfer tray is seated. It is important to note the path of insertion in any Indirect Bonding case, but especially so with the clean base technique. Since the adhesive is somewhat viscous at this stage, care must be taken not to "wipe" the adhesive against the top of the tooth as the tray is seated. When using the clean base technique it is advisable to slightly flex the tray along the buccal and labial and let it seat and flex back against the labial and buccal surfaces of the teeth. Once the tray is fully seated in place, maintain passive pressure on the labial surfaces for approximately two minutes. Leave the transfer tray in place and proceed to the upper arch following the same sequence.

Removing the Transfer Trays

Once you have completed both the lower and upper arch and the adhesive has had time to set, the transfer trays are removed. The final set time when using Excel is five minutes. Take care to "peel" the tray material away from the bracket edges. Once removed, check for flash around the periphery of the brackets and interproximally. Use both a scaler and floss for this step. Excess adhesive can cause hygiene problems throughout treatment.
Custom Base - Auto Cure "Sealant" Technique

Custom IQ Adhesive for Indirect Bonding

Custom IQ has a unique setting mechanism. The two-sealant components are NOT mixed prior to applying to their respective surfaces. They are applied to etched teeth and the custom base pads. Polymerization begins once they are brought into contact. One of the primary advantages with Custom IQ, in addition to its tremendous bond strength, is that there is no "rushing" to seat the trays due to adhesive starting to set. This allows careful and deliberate steps to be taken in the clinical bonding sequence.

Using Adhesion Booster with Custom IQ

When using Custom IQ, we highly recommend at your first step to add adhesion booster (Enhance from Reliance) to the back of the custom base pads in the trays. The adhesion booster is a thin material (A and B liquids) that is mixed together and then brushed on the back of the custom base pads. The purpose of this material is to prepare the surfaces of the custom base pads so they bond chemically to the Custom IQ adhesive. Some practices consider this an optional step, but we recommend this step as another way to ensure the best possible bonding strength.

Applying the Custom IQ Adhesive

The clinical protocol when using Custom IQ is as follows. One part of the Custom IQ sealant, either A or B is applied to the back of the custom base pad in the trays (which have been prepped with adhesion booster as previously described) and the other part painted on the tooth surfaces. We recommend using a liberal coat of sealant on both surfaces, and these materials are best applied using small disposable brushes. No polymerization occurs until the trays are seated and the two parts of the adhesive brought into contact.
Seating the Transfer Trays

With Custom IQ now “painted” on both the teeth and custom base pads in the transfer trays, the transfer trays are seated in the patient’s mouth. As previously explained, the flexible inner tray and hard outer tray may be separated depending on the path of insertion for the tray. Once the hard outer tray is completely seated, the tray must be held with passive pressure for at least one minute. This is another critical stage in the technique where no movement whatsoever should occur while the adhesive is setting. When the lower arch is bonded first (which we recommend) it is typically left in place while the upper arch is bonded – both trays can be removed once the upper arch adhesive sets.

Removing the Transfer Trays

Removal of the transfer trays with the two-tray technique is quite simple. The hard outer tray is removed first followed by the soft inner tray. There is a key point, however, regarding the blocked out area around the wings or ball hooks of any of the brackets. In looking back at the laboratory fabrication of the trays, the hooks and wings, as well as the self-ligating clips, have been carefully blocked out with a silicone material prior to making the inner tray. There may be instances where the exact amount of block out material may not have fully covered any of the undercut parts of the bracket. For this reason, when the inner tray is removed care needs to be taken to gently peel each portion of the tray out and away from the bracket. The recommended method is to hold a scaler against the bracket on the tooth while gently removing the tray from that particular tooth. The inner tray is quite flexible and easily disengages from each bracket.

The Sondhi Adhesive Material – An Optional Bonding Material

Dr. Anoop Sondhi has developed an excellent Indirect Bonding material used with the custom base method. It is an auto cure product available from Unitek called “Rapid-Set Indirect Bonding Adhesive.” It features a lightly filled resin that cures in just two minutes while achieving two-thirds of its bond strength within the first five minutes. Since one part is applied to the bases in the trays and the other to the prepared teeth, there is no chemical reaction until the tray is delivered and, therefore, no rush in the procedure.
**Custom Base - Auto Cure with "Paste" Added**

As previously illustrated, many practices use the "sealant only" method with complete success. There are, however, clinicians who prefer to add a paste component to the custom bases for clinical bonding. Adding a small amount of paste can fill any minute gaps in the interface between the custom bases and tooth surfaces. The following two pages illustrate Indirect Bonding using an auto cure paste with the custom base bracket pads. The critical key in this step is to get just the right amount of adhesive on the pads. If excess adhesive is used there tends to be additional flash from the periphery of the bracket, which causes both cleanup difficulties and potential hygiene problems throughout treatment.

**Custom Base Clinical Bonding Adhesive and Sealant**

With this technique, a full-bodied bonding adhesive is suggested. We recommend using Excel adhesive and Maximum Cure as the companion sealant, both from Reliance Orthodontic Products. Excel is an A+B paste, with an ideal viscosity that allows uniform flow of the mixed material into the custom base pads in the trays. Once mixed, Excel has a 3-minute working time. Maximum Cure sealant is an A + B liquid that, when mixed, has a set time of approximately 60 seconds, which is ample time for an application to all the teeth in one arch.

**Application of the Adhesion Booster to the Custom Bases**

As the first step in this bonding process, the assistant mixes the A + B components of Enhance adhesion booster in a glass dish or on a mixing pad and applies the booster to the back of the custom base bracket pads in the trays. Enhance adhesion booster dries quickly, normally within 15 seconds of application. This product helps ensure that the chemical bond between the adhesive and the custom pads is as strong as possible.

**Sealant Applied to the Teeth and Custom Base Pads**

Using the "Maximum Cure sealant, mix the A + B liquids together and apply the sealant with a brush on both the custom base bracket pads and the etched teeth. Based on experience, it should take no more than 60 seconds to apply both the adhesion booster followed by the coat of sealant. Note: In most instances, the doctor applies the sealant to the teeth while the assistant prepares the trays.
**Custom Base - Auto Cure with "Paste" Added**

**Application of the Bonding Paste to the Custom Bases**

Once the adhesion booster and sealant have been applied, the next and most critical step is to mix and apply the A + B components of Excel adhesive. Once mixed, place the adhesive in a tip, place the tip in a syringe and apply the adhesive to the back of each custom base pad in the transfer tray. The assistant typically mixes and prepares the adhesive at the same time the doctor is applying the sealant to the teeth. Care must be taken when applying the adhesive to make sure it is firmly pressed onto the custom base pad, without running or slumping as it is applied to each subsequent bracket. The critical key in this step is to get just the right amount of adhesive on the back of the pads. If excess adhesive is used there tends to be additional flash from the periphery of the bracket, which causes both cleanup difficulties and potential hygiene problems throughout treatment.

**Seating the Transfer Trays**

With the adhesive applied to the custom base pads in the tray, the next step is to seat the tray. The tray has a distinctive “snap” fit, which helps determine the final seating. Also, with the transparent material, it is easy to confirm visually that the tray is seated completely. Once the tray is seated, exert passive pressure to the labial surfaces. Leave the lower transfer tray (the lower is typically done first) in place and proceed to the upper arch, following the same steps as described above.

**Removing the Transfer Trays**

Once you have completed both the lower and upper arch and the adhesive has had time to set, the transfer trays are removed. First, the hard outer tray is removed. This will easily slip off the inner tray. Next, remove the inner tray. We recommend using a scaler or explorer to press gently on each bracket as the tray is peeled out and away from that tooth. The inner tray material has enough elasticity that it will deform and pull away from the brackets. In all Indirect Bonding techniques, the contacts between the teeth must be checked for flash – dental floss combined with a scaler is typically used for this step.
Custom Base - Light Cure "Sealant" Technique

The next two pages illustrate the clinical delivery sequence using a light cure "sealant only" adhesive with custom bases. This technique is similar in theory to using Custom IQ in that no additional paste is used in the clinical delivery. We recommend using Light Bond from Reliance Orthodontic Products. The custom base-light cure technique utilizes two bonding components. First is a no-mix, light cured sealant applied to both the teeth and custom base pads in the trays.

Application of the Adhesion Booster to the Custom Bases

As the first step in this process, the assistant mixes the A+B components of Enhance adhesion booster and applies a coat to the back of the custom base pads in the trays. This product helps ensure that the chemical bond between the light cure adhesive and the composite used to form the pads is as strong as possible.

Light Cure Sealant Applied to the Teeth and Pads

After the adhesion booster is applied and it dries (this will occur within 15 seconds as the adhesion booster carrier evaporates quickly), a liberal coat of Light Bond liquid sealant is placed on the custom base pads and the etched teeth. Based on experience, it should take no more than 60 seconds to apply both the adhesion booster and then a coat of light cure sealant. Note: it is not necessary to first cure the sealant on the teeth as a separate step. In most instances, the doctor applies the sealant to the teeth while the assistant prepares the trays.

Seating the Trays

With the Light Bond liquid sealant applied to the custom base pads in the tray and teeth, the next step is to seat the tray. The transfer tray when delivered has a distinctive snap fit, which helps determine the final seating. Also with the transparent material, it is easy to confirm visually that the tray is seated completely. Once again, as with all the Indirect Bonding methods demonstrated in this manual, we recommend first delivering the lower arch in a complete process, followed by the upper arch. This helps avoid contamination of the upper arch (if it were etched at the same time) while bonding the lower.
Custom Base - Light Cure "Sealant" Technique

Light Curing the Adhesive

The final step in the bonding process is the curing with the light. Depending on the exact type of light and the manufacturer’s directions, this may be anywhere from 5-20 seconds per tooth. Wherever compatible with your specific light cure guns, we recommend the add-on Power Slot light curing tip from Reliance Orthodontics. This applicator tip focuses the light in a tight pattern, which speeds up and improves the overall bonding process. Note: we do not recommend having the patient bite on cotton rolls during the light curing process. This can cause a fulcrum effect on certain teeth that could accidentally dislodge the trays.

Removing the Transfer Trays

In a previous section describing our laboratory process, we stressed the importance of blocking out any wings, hooks and the gingival portion of the bracket base. Making sure this is done properly will allow easy removal of the trays. First, the hard outer tray is removed. This will easily slip off the inner tray. In removing the inner tray, we recommend using a scaler or explorer to press gently on each bracket as the tray is “peeled” out and away from each tooth. The inner tray material has enough elasticity that it will deform and pull away from the brackets. In all Indirect Bonding techniques, the contacts between the teeth must be checked for flash – dental floss combined with a scaler is typically used for this step.

Light Cured Indirect Bonding – Light Sources

To maximize the benefits of light curing with the Indirect Bonding, we highly recommend using a fast light. The newest generation of lights can act on the adhesive in as few as 3-5 seconds. At the very least, your practice should use a light that cures the adhesive within a maximum of 10-20 seconds. Lights that take longer than 20 seconds per tooth are simply not practical in terms of the total time required to bond each arch.

We recommend the light source be applied to each tooth from the occlusal position with the tip held gently against the clear outer tray. Once the trays are removed, some offices go back and cure each bracket for an additional 15-20 seconds, aiming from the gingival.
Clinical Bonding Summary

Adhesive Options with the Indirect Technique

In summary, the overall clinical bonding process using the Indirect Bonding technique allows a practice to utilize the adhesive materials of its choice. The Indirect Bonding technique works equally well with an auto cure system or the light cure approach. In either method, when using the custom base technique only a thin film or build-up of adhesive is necessary due to the precise fit of the custom base pads. With the clean base technique, the key issue is the application of the correct amount of paste to make sure there is no additional flashing of the material around the base of the brackets. Regardless of which adhesive system is used, most practices will become quite proficient in working with the adhesive, seating the trays, and achieving consistent and reliable bonding success.

Custom Base and Tooth Surface Interface

This photograph illustrates the typical Interface in the bonding process between the custom bracket base and the tooth surface. Note the extremely clean junction between the custom base portion that was fabricated in the laboratory and the bonding adhesive adhering the bracket to the tooth. There is virtually no parting line between these two surfaces. This is another advantage of the Indirect Bonding Technique. When applied correctly, the bonding is extremely clean, which translates to improved hygiene during treatment around the bracket perimeter.

Bonding Appointment Time Required

Most offices using Indirect Bonding typically appoint the patient for approximately 60 minutes. This time includes the entire appointment in the clinic from the beginning of the process to the tying in of the arch wires. With experience, practices may indeed complete the total clinical delivery of the brackets in less than 60 minutes. Once the trays are removed and all of the brackets checked for complete sealing around the margins and overall accuracy of bracket placement, the next step is to tie in the arch wire. Depending on the severity of the malocclusion and the wire preference of the clinician, all teeth are generally engaged at this initial appointment. In most practices, approximately five minutes of additional “adhesive set” time is allowed prior to tying in the arch wires.
Light Cure Technique per Dr. Terry Dischinger

Dr. Dischinger’s Indirect Bonding Technique - Overview

Dr. Dischinger has been Indirect Bonding throughout his entire practice career of over 25 years. He used numerous techniques before developing a method that offers predictable and accurate results. His system incorporates the following advantages: custom bases formed in the laboratory by an assistant, light cured clinical delivery using the clear two-tray pressure-formed design, superior bond strength by using a chemical agent to enhance the adhesion of the clinical adhesive to the laboratory-formed custom bases, and extreme predictability due to the addition of a small amount of paste as an interface with the tooth surfaces and custom bases.

Two Tray System with Custom Bases

The clear, two tray, pressure-formed trays are standard in this technique. The trays are delivered in full arches with no sectioning and all molars are typically bonded. Dr. Dischinger frequently uses bonded acrylic bite planes on the lingual of the upper centrals on deep bite cases to disarticulate the occlusion and prevent dislodging of brackets on the lower arch. With the clear trays, these small acrylic bite planes can be incorporated into the bracket bonding trays and delivered with the appliances in the same procedure.

Adhesion Booster Applied to the Custom Bases

Dr. Dischinger uses a light cure adhesive paste to put the brackets on the models in the laboratory. This allows the assistant to initially place the brackets on the models and the doctor to later fine tune placements as necessary. Once the bracket positions are finalized, the adhesive is cured in a light chamber. After removal of the trays from the models, a final cure is applied with the light source. In order to insure a chemical bond between the custom bases and dental surfaces, an adhesion enhancer (Ortho Solo from Ormco) is used as a treatment on the pads in the trays. Dr. Dischinger believes the addition of this material is one of the keys to success with Indirect Bonding.

Adhesive Paste Applied to the Custom Bases

After the Ortho Solo is applied to the custom bases, a small amount of light cure paste is next used. The adhesive (Ormco – Enlight LV®) is applied using a fine-tipped syringe to insure only a small “dot” is placed on each gingival of each pad. The addition of this paste will fill any small gaps in the custom base/tooth interface, yet is thin enough to spread evenly without the excess flash that can be found when heavier paste is used without the thin needle syringe.
Dr. Dischinger – Custom Base Light Cure "Paste" Technique
Dr. Dischinger – Custom Base Light Cure "Paste" Technique

Clean all teeth using pumice and prophy cup. Rinse.

Place dry Angles and Nola lip retractors.
Dr. Dischinger – Custom Base Light Cure "Paste" Technique

Micro-etch all 4’s, 5’s, 6’s and 7’s

Ten percent of all bicuspids have aprismatic enamel

Etch teeth for 30 seconds

Place etch on and rinse off as soon as you can

Rinse thoroughly

Dry teeth with tooth dryer
Dr. Dischinger – Custom Base Light Cure "Paste" Technique

1. Paint Ortho Solo sealant on teeth
2. While drying teeth with tooth dryer
3. Do not cure with light cure tip

4. Place IB tray in mouth
5. Cure each bracket for 10 seconds and Optilux 501 light
6. Pressing firmly on each bracket
7. Do mandibular arch first
8. Then maxillary arch
Dr. Dischinger – Custom Base Light Cure "Paste" Technique

Once maxillary arch is done, remove hard tray from mandibular arch

Peel soft tray from each bracket

Then do maxillary arch

Remove excess adhesive with slow speed

Check interproximal contacts with floss
**Dr. Dischinger – Custom Base Light Cure "Paste" Technique**

### PROCEDURES FOR BONDING TO PORCELAIN

- Micro etch porcelain on facial surface (50 micron aluminum oxide)
- Rinse-dry
- Apply Barrier Gel (Reliance)
Dr. Dischinger – Custom Base Light Cure "Paste" Technique

Apply orange etch to facial surface

Etch 3-4 minutes
(Porcelain Etch - Reliance)

Follow directions with etch,
be very careful

Apply normal etch to enamel of
rest of teeth

Wipe off porcelain etch with cotton
roll, suction with high-speed
vacuum. Rinse Dry.

Apply porcelain conditioner on to facial
surface - 5 coats (from Ormco). Wait 60
seconds.

Do not rinse, air dry, or
contaminate the
porcelain surface

Ortho Solo
Dr. Dischinger – Custom Base Light Cure "Paste" Technique

Bonding gold crowns

Loose or Repositioned Brackets

- Lightly roughen the bracket with a green stone
- Paint the back of the bracket with Ortho Solo
- Blow off after 30 seconds
- Place under the light shield
- Bond as normal with any light cure adhesive
Dr. Dischinger – Custom Base Light Cure "Paste" Technique

**SUPPLY LIST**

<table>
<thead>
<tr>
<th>Item</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pam</td>
<td>Grocery Store</td>
</tr>
<tr>
<td>Injectable Silicon - Memosil C.D.</td>
<td>Patterson Dental</td>
</tr>
<tr>
<td>Bioplast and Biocryl</td>
<td>Great Lakes</td>
</tr>
<tr>
<td>Biostar</td>
<td>Great Lakes</td>
</tr>
<tr>
<td>Light Curing Triad Box</td>
<td>Great Lakes</td>
</tr>
<tr>
<td>Optilux 501</td>
<td>Ormco</td>
</tr>
</tbody>
</table>

**INDIRECT BONDING**

Patient comfort and speed of placement  
Exact bracket placement  
7-7 bonding  
No movement of tray in curing  
Almost totally delegatable  
**Not** chairside assistant sensitive  
Chemical bond with adhesive  
Bite Turbos indirect bonded  
Easy clean-up
Indirect Bonding Technique per Dr. Anoop Sondhi

Bonding and Banding Procedure

Initial Preparation

1. Seat patient and place a napkin around his or her neck. The patient should have been given two tablets of Propantheline, to be taken one hour before the appointment. Ask them if they have taken the Propantheline tablets. If the patient has forgotten, ask if he or she is wearing contacts. If so, have the patient remove the contacts and take the Propantheline tablets. Explain the importance of leaving contacts out for a period of 4 hours.

2. Pumice ALL teeth with a non-fluoride prophy paste. Explain to the patient that this is one of several procedures for preparation of the enamel for bonding.

3. Rinse and suction well with water.

4. Show the bonding trays to the patient, and explain the procedure - from taking the impressions to placing the brackets in proper position and forming the tray. It is important to stress the time the doctor spends positioning the brackets and supervising the entire process. We believe there is a significant value in emphasizing the value of proper bracket placement, and the doctor’s input on appliance design, to the patient.

5. If there are bands to fit, this should be completed after the indirect bonding procedure has been completed. Since this indirect bonding resin has such a fast set time, the band fitting can be started immediately.

Indirect Bonding

1. Whether the indirect bonding can be completed with a single tray for the entire arch, or whether the tray needs to be sectioned into two segments, is a decision based primarily on the degree of isolation that is feasible. If there is a significant crowding and imbrication of the teeth, it may also be easier to section the tray. Since the working time with the indirect bonding resin is virtually unlimited, the degree of isolation, and ease of tray placement, are the determining factors. On rare occasions, it may be advisable to consider sectioning the tray into thirds, in which case the trays may be sectioned as follows:
   - 6-11 or 27-22 (anterior segment)
   - 2-5 or 12-15: 31-28 or 21-18 (posterior segment)

2. Examine the trays carefully for any remaining separator (Alcote) or tray material covering resin pad on bracket. Use the micro-etching unit to lightly sandblast the resin bases with 50 Micron Aluminum Oxide. Do not use a larger particle size and take care not to abrade the resin base.

3. If there is any contamination of the resin pads, and especially if you touch them with your fingertips, it may be necessary to clean the resin pads with detergent and then air dry them.

4. Isolate the teeth that are to be bonded with the NOLA dry-field system. Occasionally, if necessary, plastic cheek retractors, tongue away, cotton rolls and dri-angles may be used.
Indirect Bonding Technique per Dr. Anoop Sondhi

Bonding and Banding Procedure

5. Using air syringe, dry teeth thoroughly.

6. DAB - do not rub etching solution onto teeth and set stop-watch for 15 seconds. The etch should be applied in the general area that is to be covered by the bracket. Do not allow the etch to flow into the interproximal contacts. The clean up will go much more smoothly if this is kept in mind.

7. After 15 seconds, rinse with steady stream of water for 10 seconds. Rinse with a steady spray of water and air for another 15 seconds. Suction excess water and be careful that saliva does not come into contact with the electrical enamel.

8. Replace cotton rolls and dri-angles: again, making sure that saliva does not contact the etched enamel.

9. A. If the clinician chooses to use Transbond MIP to seal the enamel surface prior to the indirect bonding procedure, then the air syringe should be used to remove all surface moisture, but a slight amount of visible moisture may be left on the enamel. Complete desiccation of the teeth is possible, but not necessary.

B. If Transbond MIP is not used, and the bonding is accomplished with the indirect bonding resin, then all visible moisture should be removed. The etched teeth should have a frosty appearance, and be completely desiccated. If a frosty appearance is not noted, repeat the etching process for 15 seconds.

11. Small amounts of the 3M Unitek rapid set indirect bonding resin A and B liquids should be poured into the wells. Take care not to let one liquid touch the other, and the use of color coded wells and brushes is recommended. Resin A can be painted onto the tooth surface with a brush, and resin B can be painted on the resin pads in the indirect bonding tray.

12. If too much resin has been placed on the enamel, gently remove the excess sealant with a brush. The overall method of painting the resin on the enamel and the resin pads is not unlike painting one’s nails.

13. Position the tray over the teeth and seat the tray with a hinge motion. With the fingers, apply equal pressure to the occlusal, labial and buccal surfaces. Hold for a minimum of 30 seconds. Allow two more minutes of cure time before removing the tray. This procedure is now repeated for the opposing arch. Due to the rapid set time of this adhesive, by the time the opposing tray is placed, removal of the first tray can begin.

14. Remove the tray using a scaler to peel the tray from the lingual to buccal. Use extreme care when removing tray from around bracket wings. Scale the excess resin around the brackets, and from the interproximal contacts. Use a high speed handpiece with a finishing bur to remove any excess resin that could not be removed with the sealer. Use dental floss to check that all contacts are open.

15. Repeat steps 4-13 for remaining trays.

16. Once the indirect bonding has been completed, the appropriate archwire can be selected and tied in immediately.
Preparation of Bonding Trays

1. A working model in orthodontic stone, prepared from a well-taken alginate impression, is necessary. Care should be taken to ensure that there is no distortion of the impression. The working model should be prepared with careful trimming, removal of all bubbles, and filling in of any small voids. If there are large bubbles or voids, it will affect the fit of the bonding tray.

2. A thin layer of diluted separating medium (1 to 4 with water) should be applied to the model, and allowed to dry for approximately one hour.

3. If using APC brackets, the brackets may be removed directly from the container, and positioned on the individual teeth. The excess resin should be removed, and the position of the bracket checked carefully with a bracket gauge. If non-coated brackets are used, then Transbond XT should be placed on the mesh pad of individual brackets before they are positioned on the model.

4. Once all brackets have been placed, a final check of the bracket positions can be completed, and the excess resin removed. The models should be placed in the black plastic box, and left for final approval and positioning by the doctor.

5. Once all the bracket positions have been checked, the upper and lower models should be placed in the TRIAD curing unit, and cured for 10 minutes. Although the resin will actually cure much more quickly, extra time is allowed to ensure complete curing, since the access to light between the plaster model and the bracket base is limited. This is obviously not as much of a concern with Clarity brackets.

6. Spray brackets lightly with PAM cooking spray – the spray should be for less than one second.

7. The indirect bonding tray can now be placed over the brackets. We use a Biostar unit to vacuform a 1.5mm thick layer of Bioplast, overlayered with a .75mm thick layer of Biocryl. The Bioplast layer is vacuformed onto the model first, and the excess material is trimmed off. The Bioplast surface should be sprayed with PAM before the Biocryl has adapted, to permit easier separation of the two layers. We recommend that the Bioplast be sprayed with PAM before the Biocryl is adapted, to permit easier separation of the two layers. The outer hard shell should be trimmed away from all heights of contour, since it is only to permit firm seating of the soft tray. The outer layer provides rigidity to the bonding tray, and the inner layer permits easier removal of the tray.

8. If it is the clinician's preference to use a bonding tray made with a silicone transfer material, the Biostar unit is not necessary. A bonding tray can also be made with a suitable silicone transfer material. Once the putty has been mixed with the activating agent, a small button of silicone material can be placed around individual brackets, followed by the placement of the remaining material rolled into the shape of a cylinder. The occlusal and lingual surfaces of the teeth should also be covered with the tray material.

9. We recommend soaking the model for approximately one hour to permit the separating medium to dissolve. This allows easier separation of the bonding trays. The bonding tray is now removed from the model, and excess material is trimmed. Once the trays have been trimmed, the trays should be placed in the TRIAD unit for an additional one minute to ensure that any uncured resin is cured.

10. The trays are now cleaned in an ultrasonic cleaner with a detergent for 10 minutes, rinsed with distilled water for 5 minutes in an ultrasonic cleaner, and dried.
## Supplies and Materials for Indirect Bonding

Below are the specific materials and products used for Indirect Bonding. Some of these are specialized items, such as the adhesives, while others can be sourced from a local dental dealer.

<table>
<thead>
<tr>
<th>PRODUCT</th>
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</tr>
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<tbody>
<tr>
<td>Alginate Kromopan</td>
<td>Great Lakes</td>
<td>Eliminates gagging, guesswork, and costly remakes. Dimensionally stable for 100 hours. Unique three-color change determines time for spatulating, loading tray and insertion of impression.</td>
</tr>
<tr>
<td>AccuDose Needle Tubes</td>
<td>Patterson Dental</td>
<td>Reference # 290031 Syringe tip used to apply paste to backs of custom pads</td>
</tr>
<tr>
<td>Bonding - Light Bond Thin Paste™ - Light Cure</td>
<td>Reliance</td>
<td>Light Bond Thin Paste™ is recommended as an option when bonding using the custom base light cure technique.</td>
</tr>
<tr>
<td>Bonding - Light Bond™ Sealant - Light Cure</td>
<td>Reliance</td>
<td>Light Bond™ is recommended for the &quot;custom base&quot; technique using a light cure. Light Bond™ Sealant totally polymerizes when exposed to a visible light source for 10 seconds. Light Bond™ is a single liquid component that is painted on the custom base pad and on the tooth.</td>
</tr>
<tr>
<td>Bonding Adhesive - Sealant - Light Cure</td>
<td>Reliance</td>
<td>Auto bond component used on teeth and indirect trays, after trays have been prepped with Enhance™. Custom I.Q™, is an A &amp; B sealant that is applied to the prepared tooth and custom bracket base without mixing. Simply apply Part A to the custom bracket base and Part B to the enamel and seat tray. Fast Set Time: The indirect tray is held in position for one minute. CHEMICAL CURE SYSTEM: No curing lights required! REFRIGERATION REQUIRED.</td>
</tr>
<tr>
<td>Bonding Adhesive - Excel™ - Auto Cure</td>
<td>Reliance</td>
<td>Excel's 3-minute set time is ideal for indirect bonding. Its thin viscosity will flow easily from the syringe onto the bracket base pads.</td>
</tr>
<tr>
<td>Bonding Adhesive – Enlight LV® Light cure</td>
<td>Ormco</td>
<td>Enlight LV® Light-cure adhesive resin for superb handling characteristics, easy cleaning moisture-displacing, fluoride-releasing Unidose and syringe delivery options. Dark-cure mechanism for continuous curing in the absence of light.</td>
</tr>
<tr>
<td>Bonding Adhesive - Sondhi®- Rapid Set-Auto cure</td>
<td>Unitek</td>
<td>Sondhi™ Rapid-Set Indirect Adhesive Kit with Technique Video.</td>
</tr>
<tr>
<td>Bonding Booster - Enhance™ - Auto Cure</td>
<td>Reliance</td>
<td>A + B adhesion booster. Ideal for any enamel surface where maximum adhesion is required.</td>
</tr>
<tr>
<td>Bonding Booster - Ortho Solo™ - Auto Cure</td>
<td>Ormco</td>
<td>No mix universal sealant and bond enhancer. Improves adhesion to the tooth at the adhesive interface, hence reducing bond.</td>
</tr>
</tbody>
</table>
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<tr>
<td>Bonding Sealant - Maximum Cure™ - Auto Cure</td>
<td>Reliance</td>
<td>A + B chemical-curing sealant. No curing light required. The whole labial tooth surface can be sealed. Increases adhesive strength to enamel.</td>
</tr>
<tr>
<td>Brushes bonding surface or bracket bases.</td>
<td>Reliance</td>
<td>2-inch disposable bonding brushes used to apply any gels or liquids to the tooth.</td>
</tr>
<tr>
<td>Centrix CR Tubes and Plugs</td>
<td>Centrix Inc.</td>
<td>Tube and plunger for expressing the paste through the needle syringe</td>
</tr>
<tr>
<td>Dry Field System (Nola)</td>
<td>Great Lakes</td>
<td>The Nola Dry Field System eliminates saliva and fully exposes both dental arches making it ideal for all bonding applications. Large and medium sizes available.</td>
</tr>
<tr>
<td>Dryer - Tooth</td>
<td>Great Lakes</td>
<td>Tooth warm-air dryer removes excess tooth surface moisture, eliminating the need for potentially contaminated compressed air.</td>
</tr>
<tr>
<td>Etch</td>
<td>Reliance</td>
<td>A mild 37% acid solution left on the tooth for 30-45 seconds.</td>
</tr>
<tr>
<td>Light Cure Intensifying Wand - Power Slot High Intensity Director</td>
<td>Reliance</td>
<td>You can significantly increase the power of your halogen curing light by simply replacing the light director. No need to buy a new and expensive light or laser - Light save time and money! The Power Slot allows you to cure your light cured adhesive in 10 SECONDS (five seconds from any two sides of the bracket)! The Power Slot fits most popular curing lights.</td>
</tr>
<tr>
<td>Light Cure Protective Viva Pad</td>
<td>Vivadent</td>
<td>Covers for materials can be ordered through your local Patterson Representative.</td>
</tr>
<tr>
<td>Light Curing Unit - ORTHO 2000</td>
<td>Reliance</td>
<td>Cures conventional light cure adhesives fast and strong in only 10 seconds.</td>
</tr>
<tr>
<td>Micro Etcher 11 Unit</td>
<td>Great Lakes</td>
<td>Improve bond strength of new brackets and bands.</td>
</tr>
<tr>
<td>Mixing Wells</td>
<td>Reliance</td>
<td>Disposable wells used for mixing A and B liquids.</td>
</tr>
<tr>
<td>Prophy Angles-disposable with cups</td>
<td>Reliance</td>
<td>Soft cup and disposable prophy angle.</td>
</tr>
<tr>
<td>Sponge Pellets</td>
<td>Reliance</td>
<td>Small individual sponge pellets used for applying liquid to tooth or bracket base pads. Can be held with a hemostat or tweezers.</td>
</tr>
</tbody>
</table>