



Beauty Beyond Limits

FABRICATION & INSTALLATION GUIDE





 ENIGMA
Beauty Beyond Limits



01	INTRODUCTION ENIGMA SURFACES ADVANTAGES APPLICATIONS SLAB INFORMATION
05	COMPLETE INSPECTION OF PRODUCT VISUAL INSPECTION OF SLABS ENIGMA BOOK MATCH STANDARD ENIGMA SURFACES SLAB LABELS
09	RECOMMENDATIONS FOR SLAB STORAGE IN FABRICATION SHOPS A-FRAMES VERTICAL STORAGE RACKS FOR SLABS PROPER MATERIAL HANDLING OF ENIGMA SURFACES BASIC DIAMOND TOOLING & ASSOCIATED POWER TOOLS ADDITIONAL RECOMMENDED FABRICATION EQUIPMENT BASIC SAFETY EQUIPMENT STANDARD SAFETY PRACTICES AND PROCEDURES FOR FABRICATORS
12	TEMPLATING JOB LAYOUT & MEASUREMENT DIGITAL TEMPLATING MANUAL TEMPLATING INFORMATION TO GATHER FROM HOMEOWNER ADDITIONAL SUPPORT REQUIREMENT OVERHANG/CANTILEVER REQUIREMENTS RECOMMENDED SUPPORT MATERIAL FOR CABINETS
15	FABRICATING ENIGMA SURFACES STONE LAYOUT DETERMINE SEAMS LOCATIONS PROPER VEINING/COLOR MATCHING PROPER CUTTING CUTOUTS LAMINATIONS POLISHING/EDGE DETAIL
21	INSTALLATION ENIGMA SURFACES STONE SEAMS ADHESIVE SEAMS INSTALLATION OF BACKSPLASH MATERIALS WALL APPLICATIONS
25	CARE & MAINTENANCE
26	CERTIFICATIONS
27	WARRANTY

CONCRETE CEMENT COLORS NATURAL STONE + OLD & NEW PATTERNS COLORS NEVER SEEN BEFORE

MORE TRANSLUCENT | BRIGHTER WHITE | MORE AUTHENTIC

Leading the industry in creativity, AHD SURFACES is proud to introduce ENIGMA, an innovative new material comprised of Gibbsite and Silicon Oxide.

ENIGMA's impressive attributes represent a new generation of countertops combining world class aesthetics with the performance new engineering processes provide; strength, durability and consistency.

The extraordinary variety of life and resources on Earth is fascinating. Human beings have the unique talent and inventiveness to transform matter around us to create something totally new, something never seen before.

Enigma Surfaces is a remarkable new material that certainly will revolutionize the stone industry due to its impressive features and numerous attributes. Enigma Surfaces will leave a mark in history by being the first to launch a new generation of countertops, resistant to stains and with the minimal maintenance requirements.

Molecule to molecule, the properties of the original material have been changed structurally at the nanoscopic scale in our laboratory.

The most experienced researchers have fluctuated the performance of the stone's individual particles to achieve the creation of Enigma, an innovative and fresh agglomerate material able to meet sophisticated customer's needs, providing creative options to home design as well as to inspire professionals in the design field.



ADVANTAGES

Enigma Surfaces is made of superb gibbsite, $\text{Al}(\text{OH})_3$, and silicon oxide, SiO_2 , carefully selected to develop a crystalline and consistent structure. Leading the creativity in the stone industry, we are highly committed to research, innovation and development boosted by our innate passion and enthusiasm to launch new colors and patterns to amaze the world of decoration.



TRANSLUCENCY

Translucency is a unique characteristic inherent to natural stone and almost impossible to replicate in engineered stone. Enigma Surfaces' technology allows light to pass through it as in natural stone patterns, therefore the resulting design shows a hyper-realistic natural-look composition.

BEAUTY OF NATURAL STONE

Enigma Surfaces brings a comprehensive range of colors with beauty and distinctiveness, standing out with unique elegance and the perfect amount of personality. The only challenge will be choosing just one from our gorgeous color palette.

DURABILITY

Enigma Surfaces is a robust agglomerate of materials, perfectly suited for any residential or commercial application, giving customers the utmost confidence in their investment.

THE BEAUTY OF SINGULARITY

Enigma Surfaces brings a comprehensive range of colors with beauty and distinctiveness, standing out with unique elegance and the perfect amount of personality. The only challenge will be choosing just one from our gorgeous color palette.

LIQUID REPELLENT

Enigma Surfaces is protected by NEOS, Nano Enhancement of Surfaces, an extraordinary innovative high-performance stain and substance repellent technology. Available for all colors, polished and silk.

NATURE IN YOUR HOME

Enigma Surfaces features unbelievable veining and shades, blending effortlessly with beautiful backgrounds, adding realistic movement and texture to each pattern. Their natural look brightens any room and make you feel connected to the Earth.

ENIGMA SURFACES: APPLICATIONS

APPLICATIONS

The tested high performance of Enigma Surfaces together with its competitive value makes it ideal for any application, whether for small or large projects, residential or commercial.

Available in an extensive series of colors and textures, hi-tech Enigma Surfaces is the perfect choice for a wide range of interior, whether commercial or residential applications. Its versatility allows professionals to customize any layout easily, not only for its high-end patterns and colors, but also for its performance and consistency: non-porous, aseptic, low-maintenance, impact resistant, stain resistant, scratch resistant, and translucent.

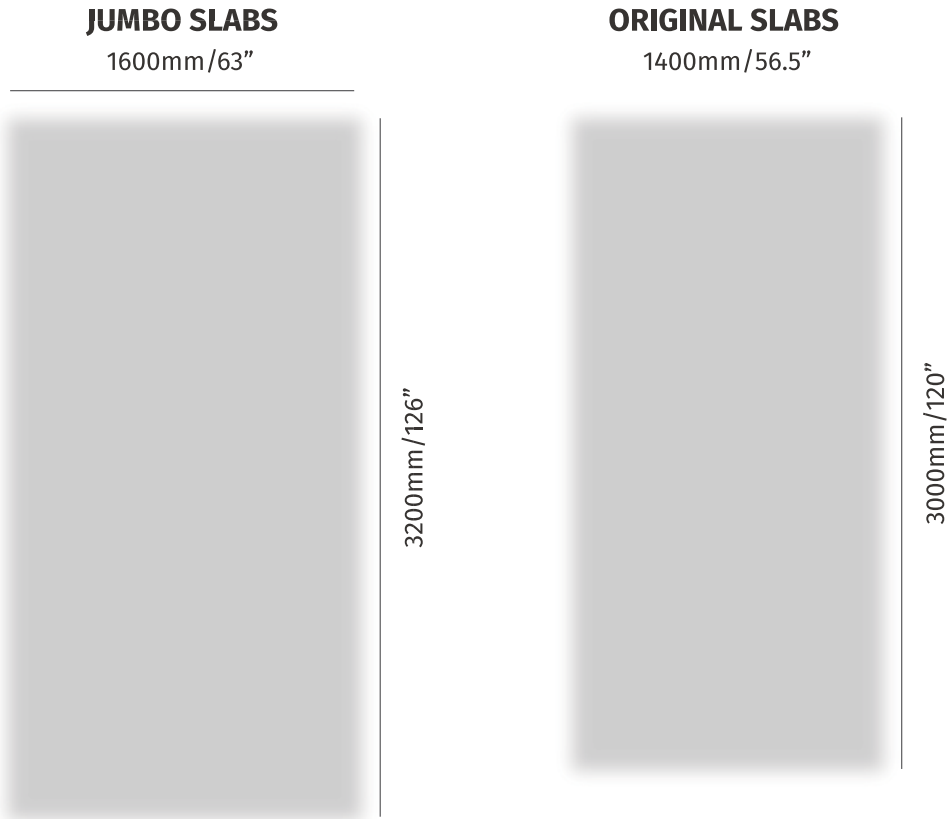
Enigma Surfaces is a solid asset to be used, horizontal or vertically, as kitchen countertops, integral backsplash, vanity countertops, wall cladding, bar tops, reception counters, furniture cladding, tables, flooring or any other interior design you could imagine.



ENIGMA SURFACES: SLAB INFORMATION

SIZE

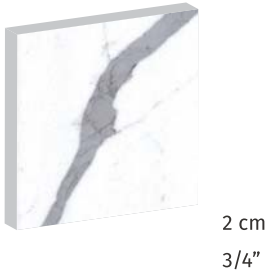
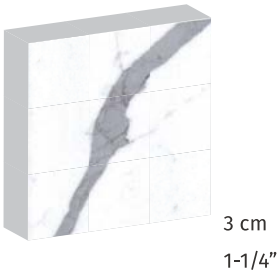
Enigma Surfaces' slab dimensions and characteristics meet the highest standard of quality to ensure any custom design will be carried out efficiently. The slab dimensions of Enigma Surfaces are: **JUMBO SLAB**: 126" x 63" or **ORIGINAL SLAB***: 120" x 56.5".



* This size is only available under special order.

THICKNESSES

The slabs are available in two thicknesses: 3/4" and 1-1/4", to make possible a multitude of applications.



All colors are available in all sizes and thicknesses.

FINISH AVAILABLE

Silk & Polished

FABRICATION GUIDE: COMPLETE INSPECTION OF PRODUCT

VISUAL INSPECTION OF SLABS:

A visual inspection for defects and color matching is essential when working with Enigma Surfaces. This should be made standard practice before cutting any material.

Complete the following steps to visually inspect slabs for defects:



- Do not inspect slabs with the protective film on.
- Inspect both the front and the back of slabs for any defects.
- Look for any hairline cracks in the slab.
- All slabs should be checked for accurate color matching before fabrication, whether the layout calls for them to be seamed or unseamed.
- When book matching Keops, Ramses, Pharaon and Cleopatra patterns, make sure that the main veins match/line up 70% or more. Similarly, make sure that the third pair of veins match/line up 50% or more. When book matching veins, make sure veins have a similar direction and a similar shape.
- Check slabs for correct dimensions, warpage, irregular spots, or other defects that make the slab unacceptable for fabrication.
- Check for accurate color matching of all Enigma Surfaces colors, and the orientation/layout of pattern flow.

Please note: Once the fabricator has deemed a slab to be acceptable for fabrication and the slab is cut or machined in anyway, the slab cannot be exchanged. The fabricator is responsible for determining if the slabs are fit for fabrication. If they are not, they should be exchanged with their supplier. Enigma Surfaces will not accept claims for any of the above once the slab is modified or fabricated in any way

FABRICATION GUIDE: COMPLETE INSPECTION OF PRODUCT

KEOPS, RAMSES, PHARAON & CLEOPATRA BOOK MATCH STANDARD

Examples of qualified book matches for Enigma Surfaces:

When book matching: make sure that the main veins match/line up 70% or more, and that the third pair of veins match/line up 50% or more. Keep in mind: The book match will not be 100% perfect as some variation in main vein pattern is normal

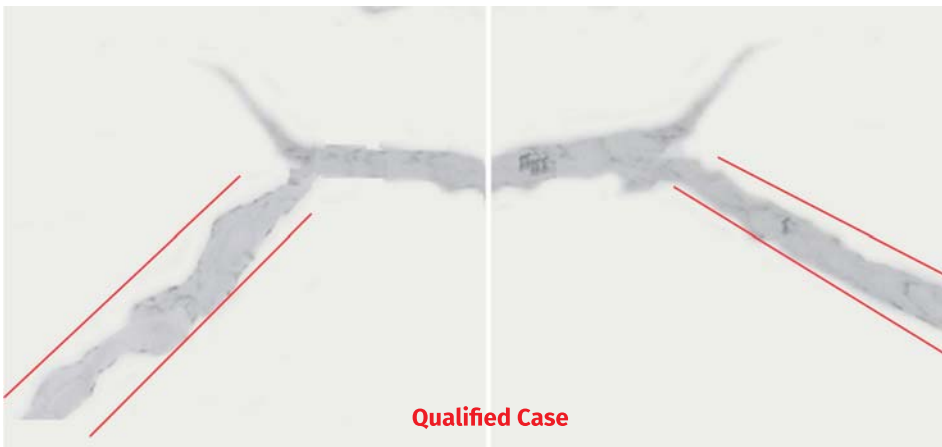


FABRICATION GUIDE: COMPLETE INSPECTION OF PRODUCT

When book matched, 2 pairs of main veins connect area >70%, one pair main veins have different shape (mainly different width)



When book matched, the veins have both a similar direction and a similar shape.



When book matched, the two slabs have the same shade of veins. We allow some of the veins to have the black lines inside the veins.

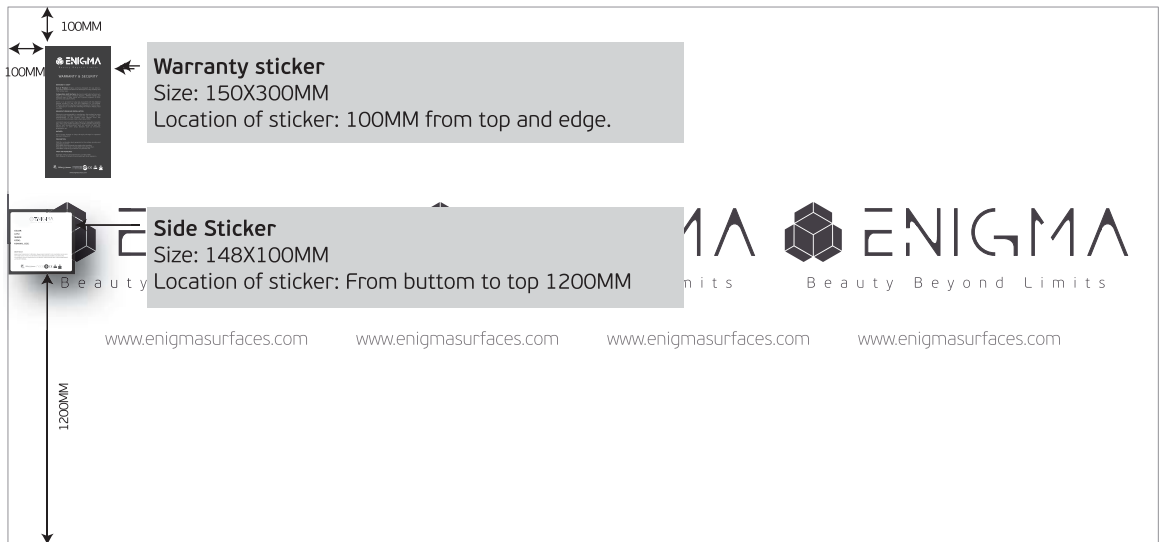


FABRICATION GUIDE: COMPLETE INSPECTION OF PRODUCT

ENIGMA SURFACES SLAB LABELS

Standard Enigma Surfaces Label on Front of Slabs.

Each slab will be put three stickers: Warranty sticker, Slabs Edge Sticker, Tear off Paper

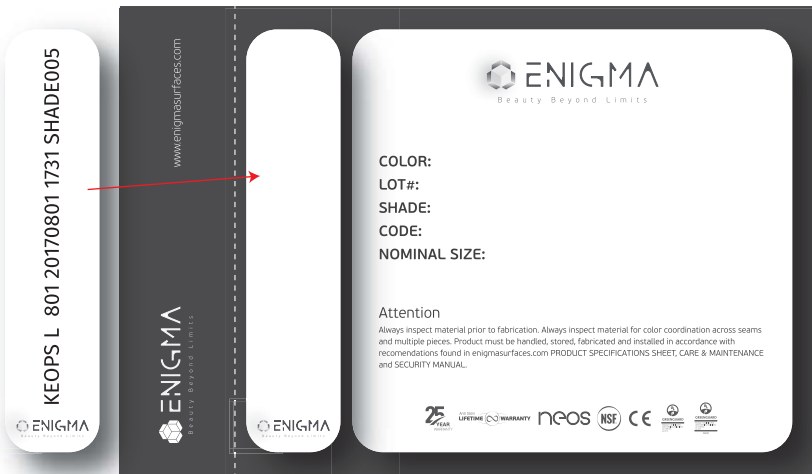


Tear off sticker and edge sticker information:

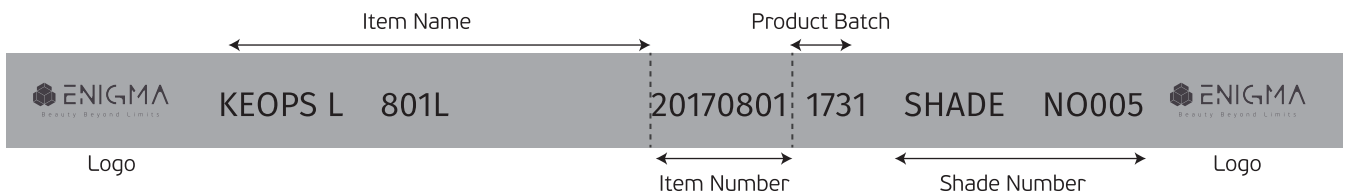
1. Item name
2. Item number
3. Production batch
4. Shade number

For example:

KEOPS L 801 20170801 1731 SHADE005 are on both stickers and they must be the same.



Standard Enigma Surfaces Label on the Back of Slabs



FABRICATION GUIDE: RECOMMENDATIONS FOR SLAB STORAGE IN FABRICATION SHOPS

A-FRAMES:

The best way to store Enigma Surfaces slabs that are ready for fabrication or to be shipped to a job site is on an A-frame that is constructed of wood or metal. It is best that A-frame carts come with forklift receivers for loading and transportation.



- Double A-frames should have the same number of slabs on each side for proper balance and safety.
- Large double A-frame carts are usually 8' long by 43" wide with a load height of 60". The manufacturer-recommended capacity for large double A-frames is 4,400lbs (2,200lbs per side).
- Small double A-frame carts are usually 6' long by 43" wide with a load height of 48". The manufacturer-recommended capacity for small double A-frames is 4,400lbs (2,200lbs per side).
- Single-sided A-frames can also be used (these are great for box vans). The manufacturer recommended capacity for single-sided A-frames is 2,200 lbs. Make sure that material is always strapped to A-frame.
- For double A-frames: When more than one slab is stored on each side, slabs should be kept flat without any gaps to prevent warping. Make sure to strap slabs to the A-frame to prevent warping or flexing.
- Slabs should always be placed face to face and/or back to back to help prevent damage to the polished side of the slab.

- Enigma Surfaces should always be safely secured to an A-frame with straps whenever transported. Never attempt to move Enigma Surfaces on an A-frame if material is not banded or strapped. This applies to transportation in the fabrication shops and to transportation on trucks/vans.
- A-frames are acceptable for temporary storage but never for long-term storage.

VERTICAL STORAGE RACKS FOR SLABS:

Vertical storage racks are recommended when slabs require long-term storage to ensure the safety and reliability of the material. Vertical storage racks should be capacity rated, constructed of steel, and designed for slab storage.



- Slab storage rack system generally come in 5' and 10' sections with 2" by 2" uprights (poles). Rubber-tipped uprights are also recommended. Some of these racking systems can be purchased as interlocking sets.
- Racks that are 5' usually come with eight (8) square uprights. The capacity varies based on the manufacturer, but a good rule of thumb for this racking system is for internally reinforced uprights (poles) to accommodate 6,800-9,000lbs between the uprights (sets of poles), and to accommodate a 3,200-4,500lbs load on each upright.
- Racks that are 10' usually come with 16 square uprights. The capacity varies based on the manufacturer, but a good rule of thumb for this racking system is for internally reinforced uprights (poles) to accommodate 23,700lbs between the uprights or (sets of poles), and to accommodate an 11,800lbs load on each upright.
- Keep in mind the weights or loads on the racking systems can vary by manufacturer. The numbers used in this fabrication guide are based on heavy-duty racking systems that provide high standards of safety.
- Slabs should always be placed face to face and/or back to back to prevent damage to the polished side of the slab.
- All slabs stored on these long-term storage racks should be covered with Enigma Surfaces protective plastic to avoid damage.
- The vertical slab storage racking system is for long-term storage of Enigma Surfaces.

FABRICATION GUIDE: RECOMMENDED FABRICATION EQUIPMENT & BASIC SAFETY EQUIPMENT

PROPER MATERIAL HANDLING OF ENIGMA SURFACES:

- Never transport Enigma Surfaces horizontally.
- Horizontal storage of Enigma Surfaces adds stress to the material and causes hairline cracks that could lead to breakage.
- Heavy-duty carts/ dollies should be used when moving material around your fabrication shop.
- Heavy-duty slab booms and slab-carry clamps should be used to move material around your shop when using an overhead crane or fork truck.
- All cutouts should be supported with 2" x 4"x 8' support rails when being transported for installation.
- Pneumatic vacuum suction cups can also be used to move slabs and finished material throughout the fabrication shop.
- We recommend that all suction cups be used with white rubber to prevent dark rings from appearing on the white translucent.

The following tools are a minimum requirement for a professional fabricator to have on hand to fabricate Enigma Surfaces. These tools can be purchased from a variety of suppliers in the United States.

BASIC DIAMOND TOOLING & ASSOCIATED POWER TOOLS:

- Diamond polishing pads (wet pads only). Preferred grits for fabrication are 50, 100, 200, 400, 800, 1500, 3000.
- Diamond Polishing Pads (Honed Finish). Preferred grits for fabrication are 100,200, 400.
- Diamond cup wheels
- Diamond core bits
- Diamond contour blades (manual sink cutouts)
- Diamond turbo quartz blades (5" and 6" sizes)
- Diamond router bits (edge detail)
- Diamond bridge saw blades (Size will vary based on the horsepower of your bridge saw)
- Silicon carbide grinding wheels (less expensive than diamond cup wheels)
- Back-up pads, rigid and flexible (holder for polishing pads with 5/8-11 threads for polisher and grinder)
- Pneumatic polisher (0-4000rpm)
- Electric grinder/ polisher (variable speed of 2,800-11,000 rpm preferred)
- Water supply units for grinder and polisher if not supplied with unit

ADDITIONAL RECOMMENDED FABRICATION EQUIPMENT:

- Bridge saw with horsepower of 20 or higher
- Automatic edge profiler
- Computer numerical control (CNC) machine
- Waterjet
- Handheld edge profiling machine
- Fork truck
- Overhead crane
- Fabrication tables
- Air compressor
- Water supply source
- Stone carts/dollies
- A-frames/storage racks
- Slab clamps

FABRICATION GUIDE: RECOMMENDED FABRICATION EQUIPMENT & BASIC SAFETY EQUIPMENT

BASIC SAFETY EQUIPMENT:

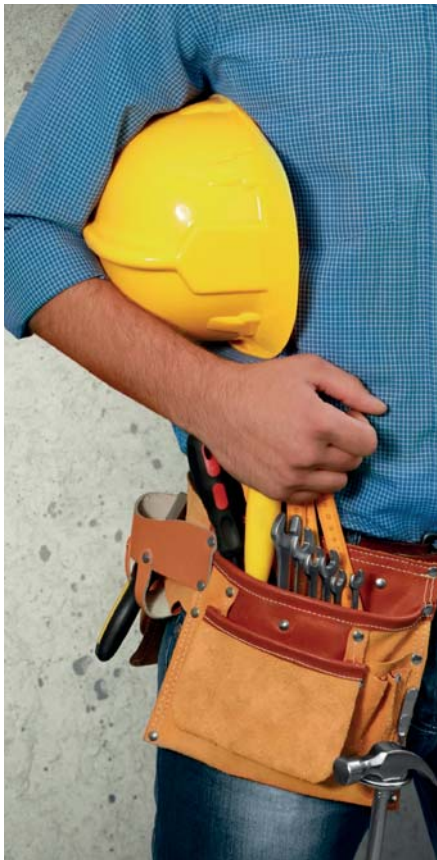
Gibbsite and Silicon Oxide dust can be a serious health hazard if inhaled. Enigma Surfaces should always be cut and polished with wet diamond tooling and proper ventilation throughout the shop and offices. Fabricator should always use approved dust masks, and eye, ear and foot protection when fabricating Enigma Surfaces.

The following list are basic safety equipment options.

- Safety first-aid kit
- Dust masks (indoor and silica rated)
- Safety glasses
- Solvent-resistant gloves
- Earplugs
- Waterproof, steel-toed boots
- Waterproof apron or rain suit
- Leather gloves (recommended for moving sharp slabs)
- Ground Fault Interrupter (GFI) for electric tools in a wet environment

STANDARD SAFETY PRACTICES AND PROCEDURES FOR FABRICATORS:

1. Always wear protective clothing. Serious injury can occur if safety precautions are not followed in the fabrication shop or on the job site.
2. Fabricators should follow all safety instructions and warnings on all material safety data sheets (MSDS) for all products used in the shop



3. Read and follow all manufacturers safety guidelines for all power tools and fabrication equipment used in the shop.

4. It is recommended that steel-toed safety boots be worn during the fabrication process, when handling or moving engineered stone products, and during installation at a job site.

5. Fabricators should always use eye protection. All fabricators should use Occupational Safety and Health Administration (OSHA)-approved eye protection. Failure to use eye protection can result in serious injury.

6. Fabricators should always use hearing protection when working with machinery and power tools. OSHA limits safe sound exposure to 85 decibels during an eight-hour period. Check with the manufacturers of all your equipment and power tools and adjust hearing protection accordingly. There are outside companies that can test the noise levels in your fabrication shop and suggest proper ear protection.

7. Because Enigma Surfaces recommends that our material be fabricated when wet, fabrication can create the potential for slip hazards. Floors should be sloped to trench drains, and all water should be drained away from the work area. Additionally:

A.) All trench drains should be cleaned regularly of stone slurry to ensure good drainage for water flow.

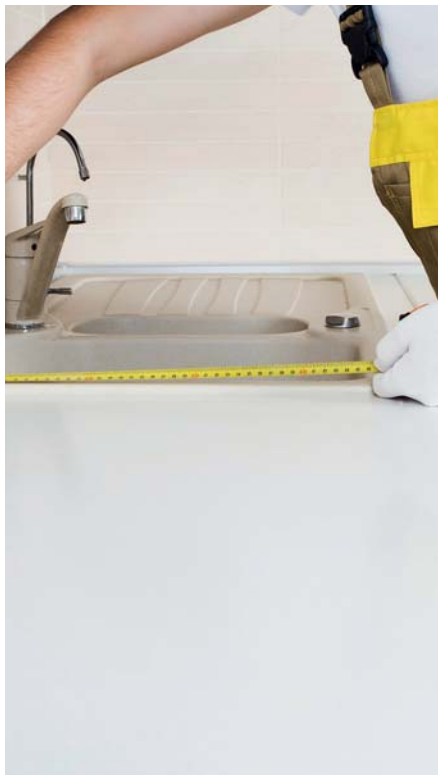
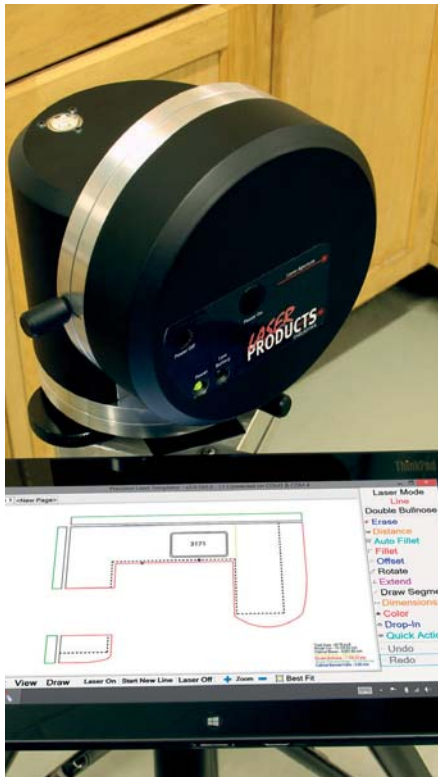
B.) Work area floor should be squeegeed several times a day to eliminate standing water.

C.) Fabricators using electrical tools should make sure they are using a ground fault interceptor (GFI) and keep away from standing water. Fabrication shops should invest in cord drops from the ceiling as an electrical solution.

D.) Pneumatic tools (those powered by compressed air) are always recommended.

8. Check your state's OSHA guidelines to better understand all proper safety protocol.

FABRICATION GUIDE: TEMPLATING: JOB LAYOUT & MEASUREMENT



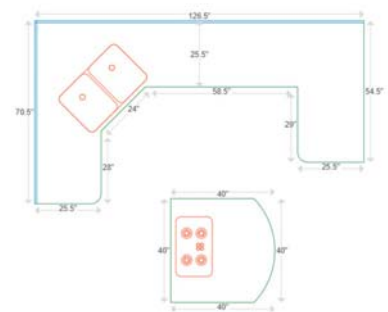
DIGITAL TEMPLATING:

Today there are many digital templating methods from which to choose. Digital templating is used to capture accurate countertop dimensions and configuration data. Digital templating has the advantage of being able to send/ relay the digital information directly to compatible fabrication equipment, such as computer numerical control (CNC) machines, bridge saws and waterjets. These digital systems use lasers, digital cameras and point-to-point digitizers. Digital templating technology is a faster, more accurate and efficient way to measure jobs because information can be transferred digitally to your fabrication equipment.

MANUAL TEMPLATING:

Handmade fabrication templates are created to accurately transfer the measurements and configurations from the job site to the fabrication shop. The most common items used are thin plywood, luan strips and cardboard. Job drawings containing the specific job information and are very important to support the actual template.

It is important to capture all necessary information to accurately fabricate all aspects of the job, including sink and appliance centerlines, faucet hole locations, finished edges and overhangs. It is recommended that all appliances, sinks, cooktops, or any item that requires a cutout on the countertop be on site when the job is templated.



INFORMATION TO GATHER FROM HOMEOWNER:

- Choice of 2cm or 3cm material
- Name of Enigma Surfaces selection
- Determine seam locations if needed
- Edge profile
- Backsplash
- Sink location
- Faucet location
- Appliance locations (i.e. cooktop/range, refrigerator, dishwasher)
- Location of additional items (i.e. soap dispenser, sprayer)
- Clarify inside corners (if using one piece of material for countertop, then use a 3/8-inch core bit for corners as internal corners must have a 3/8" radius at minimum; if using two pieces of material, use a square, two-piece seam)

Very important regarding cabinets:

Make sure that the cabinets are finished and installed properly. Fabricator must verify that all cabinets are level. The top of cabinets must be true and flat with no more than a 1/16" slope over the span of 18". The cabinets must be adjoined to each other and secured to the immediate wall. All cutouts and seams must be properly supported; similarly, there should be extra, structural support around the dishwasher.

ADDITIONAL SUPPORT REQUIREMENTS:

Structures with support on four (4) sides. Structures supported on four sides do not require any additional support for both 2cm and 3cm material if the countertop depth is less than 26" and the countertop length is less than 118".

However, if the above dimensions are exceeded, support will be required every 36".

Structures with support on three (3) sides (i.e. dishwashers, frameless cabinets, desks, and lazy Susan's). Structures supported on three sides require additional support for both 2cm and 3cm material as follows:

- 2cm & 3cm material with countertop depths greater than 26" need support every 24".
- 2cm material with countertop depth less than 26" need support every 24".
- 3cm material with countertop depth less than 26" need support every 36".



FABRICATION GUIDE: TEMPLATING: JOB LAYOUT & MEASUREMENT

OVERHANG/CANTILEVER REQUIREMENTS:

- Overhangs cannot exceed 1/3 of the countertop depth and must have a minimum length of 24".
- Material that is 2cm requires support every 24".
- Material that is 3cm requires support every 36".
- Overhang ratios require that two-thirds of the width/Length of the material to be used be supported; one-third of the width/length of the material to be used can be unsupported (an overhang).
- No cutouts or cored holes are permitted on any overhangs.
- Additional support (i.e. support bars or 3/ 4" plywood) may need to be added to meet additional span requirements.
- Overhangs that exceed cantilever rules will need to add columns, corbels or Legs to be properly supported as follows:

Overhang	No Support Needed	Corbels Required	Columns Required
2cm material	≤ 8"	> 8"	> 18"
3cm material	≤ 12"	>12"	> 24"

- Corbels should always be mounted to a stud for proper support of the material.

RECOMMENDED SUPPORT MATERIAL FOR CABINETS:

- Plywood, wood, medium density fiberboard and structural steel are the recommended support materials for cabinets that need additional support for Enigma Surfaces.
- Materials or products that are not moisture resistant, like oriented strand board and particle board, are not acceptable as support material.

The above information should be taken into consideration during the templating and layout/measuring process. This will help to prevent any problems during the fabrication and installation process. Not following the procedures in this fabrication guide voids any warranty provided by Enigma Surfaces.

FABRICATION GUIDE: FABRICATING ENIGMA SURFACES

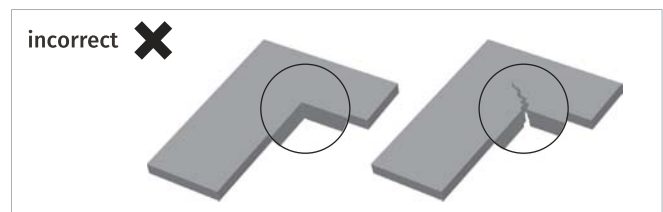
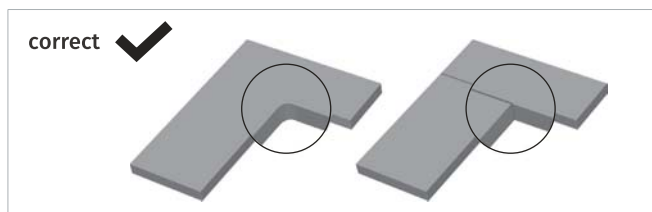
1. LAYOUT:

Before cutting Enigma Surfaces slabs, calculate the square footage, length, and width of material that will be needed to complete the project. This is very important when using Enigma Surfaces because each batch and slab are unique and have specific shades that need to be used for each job. Inaccurate measurements may create color match concerns and more material may need to be ordered. It is important to thoroughly inspect the slab for color, pattern and defects. Do not use material with visible manufacturing defects unless the layout/job allows you to work around them.

2. DETERMINE SEAM LOCATIONS:

During the layout process, determine all your seam locations. This is very important to ensure the optimum aesthetics of the material and the kitchen. Seams should never be placed in the following locations:

- Through the center of sink cutout.
- In places where there is direct sunlight.
- Above dishwashers located the under the counter.



3. PROPER VEINING/COLOR MATCHING:

- Always inspect all material before fabrication. Some Enigma Surfaces patterns replicate marble as it is a veined material that has a non-directional pattern. During the layout process, it is very important to use extra care with respect to your seam locations. Whether the material has a factory edge or a fabricated edge, the Enigma Surfaces vein distribution can be different throughout the slabs. Our veined patterns will require a more careful/specialized layout to provide the customer with a rich, aesthetic look.

- Color matching slabs before fabrication is very important as it is very normal for slabs to have slight color variations between batches production cycles due to the complex blending of natural minerals and raw materials.

- If your job requires more than one slab, be sure to check the Enigma Surfaces label for the batch number and the shade number of the slabs. After inspecting all slab numbers, it is important to remove the protective plastic film to visually inspect slabs for color variation, color matching, and any defects before cutting material.

- During the layout process, remember to color match backsplashes as they must color match and have a similar vein pattern to the countertop.

- The layout process is a critical one in the fabrication of Enigma Surfaces as it directly impacts the beauty of the final product that is produced. A little extra attention during the layout process really showcases the beauty of Enigma Surfaces and can create endless beauty for the homeowner.

FABRICATION GUIDE: FABRICATING ENIGMA SURFACES

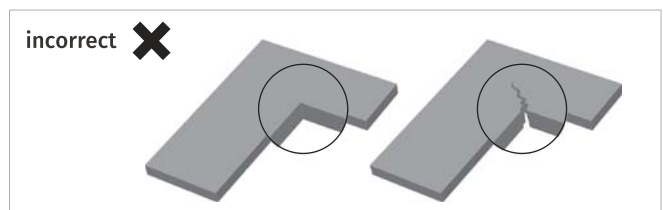
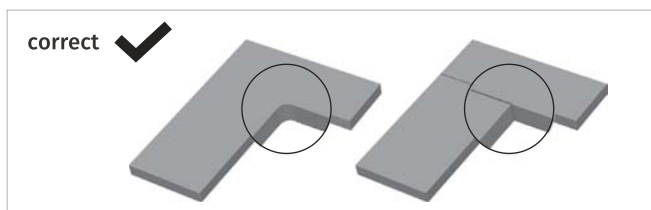
4. PROPER CUTTING:

- All equipment that is used to cut Enigma Surfaces should always be kept cool with enough water. **ALWAYS AVOID EXCESSIVE HEAT WITH ALL DIAMOND-CUTTING TOOLS.**
- The first cut of your Enigma Surfaces slab should be made along the largest part of the slab and then proceed to the shortest.
- When using a bridge saw, never plunge cut.
- Important: Never cut square corners when fabricating Enigma Surfaces. This can create stress points in the countertop and can result in cracking. **ALWAYS USE A DIAMOND CORE BIT FOR ALL CORNERS OR RADIUSSES.**
- Inside corners that are fabricated on a single slab must have a minimum of a 1/4" radius.
- Never use cross cutting when fabricating Enigma Surfaces countertops. Always use a diamond core bit to create your radius. **Please clarify:** This should always be used on inside corners, so any internal angled corner must have a radius. **NEVER CROSS CUT!**
- Remember that Enigma Surfaces 'slabs contain resin, which can cause warping or bowing depending on the weather and how it is stored. If warping or bowing does exist in the slab, the double-cutting technique should be used. First, cut the slab to half its thickness to relieve the tension and flatten out the slab. Then, proceed with the second cutting pass to finish the cut.

5. CUTOUTS:

This can be completed with several different types of equipment. A bridge saw can be used for straight cuts, but a radius needs to be cored with diamond core bits with no cross cutting. The same rules apply to CNC machines, which are also very popular. A waterjet can also be used with the proper abrasives and water pressure.

- L- or U-shaped countertops with inside corners should always be fabricated from a single slab and must have a minimum of a 3/8" radius. Always keep in mind that the Larger the radius, the stronger the corner.
- If the distance between the cutout and the seam is Less than 6", the seam needs to be supported. This can be achieved during the Layout process by making sure that all seams are at a cross member of the base cabinet; otherwise, additional cross members need to be added.
- Internal cutouts on all corners should have a 1/4" radius at minimum.
- Cutouts for all drop-in sinks, cooktops, outlets, slide-in stoves, etc. should include an extra 1/8" from the edge to allow for expansion.
- Cutouts range from simple, core holes for faucets and soap dispensers to complex cutouts for specialized equipment. It is best to have all equipment on the job site during the installation process as this is the safest way to determine the shape and size of the core or cutout.
- Always refer to the manufacturer's recommendations when available.
- The customer should make the final decision regarding the location and the size of the cutout in their countertop and sign off on this
- Additional support should be added to both ends of the cutout if the base cabinet cross bars are not within 3" of cutout.
- All hot cutouts (i.e. cooktops) require that 9-mil aluminum foil tape (heat tape) be used to prevent the transfer of heat to Enigma Surfaces. Always follow manufacturer's guidelines.



FABRICATION GUIDE: FABRICATING ENIGMA SURFACES

6. LAMINATIONS:

Laminate edge refers to the process of gluing pieces of stone together to create a variety of edge profiles, including mitered edges, stacked edges, and drop edges. The lamination process is also used to create more sophisticated edge profiles.

Stacked Edges: An additional 1.5"-wide strip of material is cut during fabrication from the same slab. The piece is glued to the underside of the countertop along the front edge to create a thicker edge. Example: If you are using 2cm of material, it will create a 4cm or 1.5" edge. If a plywood substrate is required underneath your 2cm countertop for support, the laminated stacked edge also serves to hide the plywood from sight. This process can also be done with 3cm material.

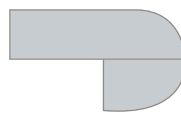
Examples of Lamination (stacked edges).



Laminated Flat Edge



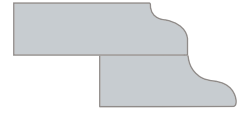
Laminated Half-Bullnose



Laminated Half-Bullnose



Laminated Dupont



Laminated Ogee + Dupont

Tip:

When laminating, it is important to make sure that the lamination piece is the full length of the top piece and that the corners are cut at 45 degrees. If for some reason the two laminated pieces must be joined, the joint must be cut at a 45-degree angle. The use of a mitered end cut reduces stress on the material that may cause stress fractures.

The lamination strip should be cut from the same slab as the countertop surface material to ensure a color match. When cutting the piece to be laminated, add the lamination piece size to your cutting measurements to ensure that a lamination strip of the correct length and color is available for the lamination process.

- A 45-degree corner joint is recommended to minimize the stress on the corners.
- Use full-length lamination pieces if possible.
- For long countertop runs where a joint may be required, make sure that the joint in the laminated piece is at 45 degrees to minimize stress points.
- Proper clamping is recommended every 3"-4" for a secure, tight bond.

Examples of Mitered and Butt Joints:



Square Mitered



Square Laminated

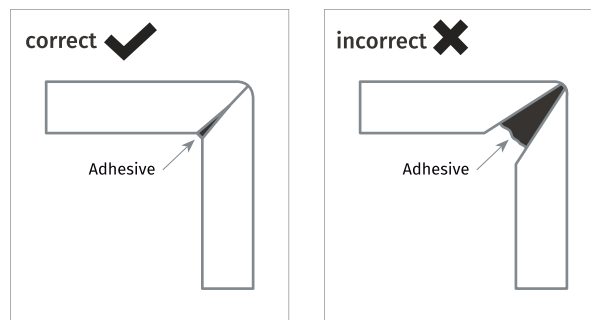
FABRICATION GUIDE: FABRICATING ENIGMA SURFACES

Mitered Edge:

A mitered edge is one with a perfect, 90-degree angle. This is created by joining two pieces of Enigma Surfaces, each with a 45-degree angle. This is typically done with 2cm material. The longer the apron, the harder it is to hide the seams because it is more difficult to clamp. It is never recommended to have a mitered edge over 4" unless a special support is added.

Adhesives:

We recommend that a cartridge-style acrylic or epoxy that is already color matched for Enigma Surfaces be used. Enigma Surfaces is translucent, so solid colors will not match the translucency of the stone. Acrylics and epoxies have a chemical attraction to the stone and will provide the tightest seams. This is very important for mitered edge details because, when properly done, the adhesive is not visible.



7. POLISHING/EDGE DETAIL:

Polishing: It is very important to select the right polishing pads for Enigma Surfaces. Please note: Do not use polishing pads that have colored resin. While such pads can work well with granite, they require an excessive amount of water and can transfer the resin's color to the edges of Enigma Surfaces. We recommend using only white resin pads for all applications, whether hand polishing, or using an automatic edge polisher or a CNC machine.



1. Rigid Backer Pads: Flexible backers work well for concave profile edges, such as ogee edges. The need to use a flexible backer on most other profiles is not needed. Keep in mind automatic edge machines all use extremely rigid polishing tools and backer pads; these machines will produce a far better edge than what many fabricators can do by hand.

2. Polishing Pads: Common problems include both using too much water and not enough water, and not using the proper polishing technique.

- When too much water is used while applying pressure to the center of the pad, the water gets trapped in between the pad and the stone, causing a hydroplaning effect. This causes the water to escape to the outer edges of the pad, making it difficult for the polishing pad to effectively polish the edge or edge's surface. This will result in a spotty polish.

FABRICATION GUIDE: FABRICATING ENIGMA SURFACES

- When too little water is used, the polishing pads tend to flex or cup outwards around the center of the pad (mainly with higher grits). This causes the outer edges of the polishing pad to touch the surface but will not allow the center of pad to polish. The tendency is to apply more pressure, which also leaves a spotty polish.
- When polishing the edge detail on Enigma Surfaces, be sure to use the entire polishing pad surface, which is stated in the tips below. When polishing any bullnose edge, it is important to use the center of the pad only as it will give the proper water distribution for the pad and the stone.
- Never use a final buffing pad for Enigma Surfaces. These come in black and buff and contain different chemicals and no diamonds and are meant to bring granite to a high polish. The final step for polishing Enigma Surfaces is to use a grit level of 3000.
- Dry polishing the edge profile may cause overheating of Enigma Surfaces. Excessive heat to the stone can alter the physical properties of the slab which can cause micro-fissures not visible to the naked eye. This can lead to chipping, discoloration and a poor, uneven polish. Never use dry polishing pads on Enigma Surfaces.
- Enigma Surfaces should never be polished on the top surface of the manufacturing finish.

Polishing Tips: When polishing any edge detail on Enigma Surfaces you should use the proper amount of water. Polishing pads with grit levels of 50-400 have a higher concentration of diamonds and require less water; a trickle from your center water feed will be enough. Higher 800-1,500 grit pads have less diamond content and require more water. Using the proper water flow allows the pads to work faster.

Polishing should be done in circular motion, utilizing the edges of the polishing pad as it rotates from the top half of the edge to the bottom half as it moves down the piece. While polishing, you will feel resistance with each grit level, which is the diamonds polishing. Allowing the diamonds to do the work requires less pressure from the polisher. When resistance is no longer felt, it is time to change the polishing pad to the next grit. Follow this procedure until you arrive at the final grit level.



3. Air/Electric Polisher RPM:

The rpm for all air/electric polishers should be between 2,800-4,000. It is best to start at 2,800rpm and increase as needed. Anything over 4,000rpm could result in burning or smearing the resin on your edge detail. This is where the color of the resin on the polishing pad makes a big difference. If the edge is burned with a white resin polishing pad, it can be easily removed with denatured alcohol. However, the dye in colored resin polishing pads can create a major problem when working with white, translucent engineered stone.

FABRICATION GUIDE: FABRICATING ENIGMA SURFACES

EDGE DETAIL:

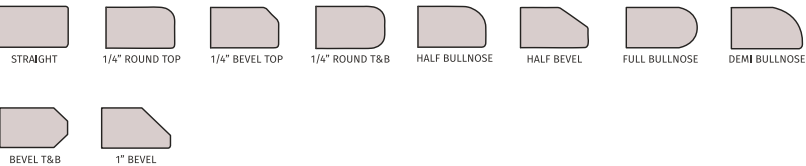
When profiling edges on Enigma Surfaces, it is best to use a machine with diamond tooling to produce the desired shape. A CNC machine, and other specific edge profiling machines, are recommended for producing consistent edge profiles. Some standard/basic edges can be achieved using only hand tools and diamond cup wheels. A combination of both machine and hand Labor produces the best results when creating edge detail.

- **Edges:** We recommend that all outer edges of the countertop be beveled, which will improve the material's resistance to chipping and remove sharp edges and thereby prevent possible cuts. Keep in mind that the Larger the bevel, the greater resistance to impact. A hidden edge, which is typically against a wall, should have a minimum level of 1mm; an exposed edge should have a minimum level of 3mm. All cutouts, whether exposed or hidden, follow the same rules regarding the size of the bevel.

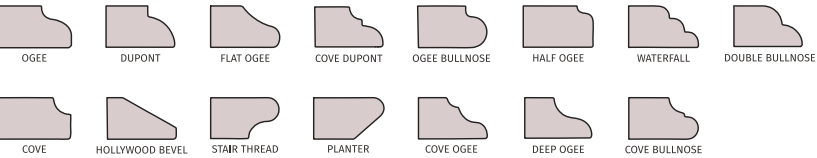
- **Enigma Surfaces edge details include a wide variety of profiling edges.** Many manufacturers produce profiling wheels for both CNC machines and handheld routing machines. All profiling wheels will work Enigma Surfaces, although some exotic edges require a thicker edge.



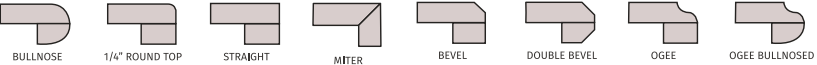
POPULAR EDGES



PREMIUM EDGES



LAMINATED EDGES



FABRICATION GUIDE: INSTALLATION ENIGMA SURFACES

INSTALLATION:

It is important that cabinets are leveled, and shimmed where necessary, to 1/16" tolerances prior to final countertop installation. Check all cabinets for level.

- After the support system is installed and leveled, installation of the Enigma Surfaces countertops can begin. Measure cabinets and verify that the pieces will fit before placing the Enigma Surfaces on the countertop.
- Bring the pieces in one at a time, and test fit them in their proper place on the cabinets. Adjust as necessary to ensure a good fit and proper alignment. Always make any necessary cuts outside, cutting wet to control dust.
- Space should always be allowed as Enigma Surfaces needs room to expand. Each countertop requires at least 1/8" at each wall for expansion and contraction. Fill the gap between the wall and countertop with silicone.
- After all the pieces have been adjusted for fit, you will need to attach the tops to the cabinets and support strips using caulk that is 100 percent silicone. Apply silicone caulk approximately every 8"-12" around the perimeter of the cabinet, and at the cross supports. Do not use epoxy adhesive, acrylic adhesive or the product Liquid Nails. The purpose of the silicone is to allow the top to expand/contract as needed.
- Use extra silicone on all corners and joints, and around all cutouts.



FABRICATION GUIDE: INSTALLATION ENIGMA SURFACES

SEAMS:

- Seam tolerance is generally the same for all hard-surface countertop material. The recommended seam width is 1/16"; recommended seam tolerance is +/- 1/32". Both pieces should be level across a seam, with a tolerance of +/- 1/32". One side of a seam can be slightly raised, or one side can be slightly lowered, but not both.
- The two edges to be seamed must be cut straight and true. If a waterjet is used for cutting, the edges should be ground flat to remove any grooves from the cutting process.
- Test fit to make sure that the two pieces to be seamed together form a tight, level and uniform seam before applying adhesive. Shim and level pieces if required. Also, check to make sure the color and vein pattern matches across the seam.
- Always clean the joined edges with denatured alcohol and wipe clean with a white cloth. Apply strips of tape to the top and underside of the two pieces to be joined/seamed. Put tape on each side of the two pieces, leaving about 1/4" between the pieces. This prevents adhesive from dripping into the cabinets and allows for easy clean-up on the top surface.

Tip:

If possible, use a pneumatic seam setter with a vacuum and posts/pins to level and to make seams as tight and inconspicuous as possible. Several manufacturers sell this equipment. Seams should never be more than 1/16" wide.

ADHESIVE:

- Seams should be made using a pre-mixed cartridge adhesive, which can be either acrylic or a two-part epoxy system. Several companies produce a color-matched adhesive for Enigma Surfaces. We recommend using a cartridge with a static mixing tube as this provides a consistent seam each time.
- Insert the adhesive cartridge in the seaming gun with a fresh, disposable mixing tip. Always purge the adhesive (generally the length of the tip you are using) with your cartridge adhesive system to ensure that the adhesive and hardener is properly mixed before seaming the material. After each use, remove and replace the tip, otherwise the remaining adhesive will cure in the tip.

Remove the used tip and replace the original cap for an airtight seal. The normal cure time for acrylics is about 15-20 minutes in 70° F. During the summer month's hot temperatures, work time is reduced. During winter's colder temperatures, work time is increased. The cure time for two-part epoxy systems can be anywhere from 2-6 hours

FABRICATION GUIDE: INSTALLATION ENIGMA SURFACES

SINKS:

We recommend that the sink manufacturer's guidelines be followed when installing all sinks, whether they are top mount or under-mount.

- We recommend that all sink installations be fully structurally supported without reliance on the Enigma Surfaces as a form of support.
- Under no conditions can mechanical fasteners (screws, nails, etc.) be affixed directly to Enigma Surfaces. These items will rust with moisture and the rust will bleed through the stone.
- For under mount sink installations, follow the minimum edge profile recommendations around the cutout to prevent chipping. Fasteners or clips should be used along with silicone.
- All sinks must be sealed to the countertop using 100 percent silicone.
- Always follow the sink manufacturer's recommendations. Some sinks may require support systems like cradles, rail systems and sink setters.

INSTALLATION OF BACKSPLASH MATERIALS:

- A backsplash is typically 3" in height unless a full backsplash is desired. The backsplash should always be cut from the same lot or batch as the countertop material.
- Cut all backsplash material to the sizes required for the project. The top edge and any exposed ends should be polished. Generally, the backsplash has a flat top with a slightly beveled edge.
- Dry fit the backsplash to make sure that all joints and edges are tight. Apply a continuous 1/8" bead of silicone to the bottom of the backsplash that will be adhered to the countertop surface. Then place dabs of 100-percent silicone every 4"-6" on the back, unpolished side of the stone and adhere it to the wall.
- Do not hard seam backsplash to countertop.



FABRICATION GUIDE: INSTALLATION ENIGMA SURFACES

WALL APPLICATIONS (VERTICAL): .

Enigma Surfaces can be used for all internal cladding of walls and vertical applications. The installation of vertical panels varies from location to location. Check with your local building codes. When designing and installing vertical panels and cladding, it is necessary to take the weight of the product into account and the services of an experienced structural engineer should be sought during the designing and installation phases.

Installation Guidelines:

1. Measure for any cutouts required on the water line wall of the shower. This is the wall with the tub diverter, bathtub faucet and the shower head. Use a tape measure to determine where you need to cut holes in the Enigma Surfaces slab for the pipe cut-outs. Mark the slab and use the diamond core bit to cut out the necessary holes. Allow a 1/2" clearance around all pipe cutouts.
2. Install the front and back slabs first before you install the side pieces. Apply a setting epoxy adhesive to the back of the slab that you are adhering to the wall. Use a 1/4" notched trowel to spread the setting epoxy onto the back of the slab. This may require more than one person for the heavier/larger slabs. Maneuver the slab into position. Place it firmly against the following substrates, cement board, waterproofed plywood or existing backer board on the walls, if using existing backer board make sure it is free of and defects.
3. Apply firm pressure and move the slab up and down and side to side as much as you can to force the epoxy glue to completely bond with the wall/substrate behind and the slab itself. Once finished, allow the slab to come to its final resting place on top of the shower pan. Provide a minimum of 1/8" expansion joint (to be caulked with 100% silicone) at the bottom/top of the slabs, which would be the shower pan and ceiling. Use 1/8" shims at the top and bottom of slabs to get the proper spacing for expansion joints. Repeat the process with all other wall panels that are needed to finish the wall surround.
4. Epoxy or "hard" seams are not recommended for vertical wall applications. All corners should be caulked with 100% silicone caulk. Allow 1/8" minimum expansion joint between adjacent Enigma Surfaces slabs. Use 1/ 8" shims between the adjacent slabs to get the proper spacing for expansion joints.
5. Apply the proper braces to support the wall panel until setting epoxy adhesive is completely cured. Keep the braces in place for at least 24 hours or according to the drying time on your setting epoxy adhesive.
6. Remove the braces. Apply silicone caulking to the inside corners and fill the gaps between the slabs. Also, silicone the area where the slabs meet the shower pan and ceiling. Allow the caulking to dry for 72 hours before using the shower.



FABRICATION GUIDE: CARE & MAINTENANCE

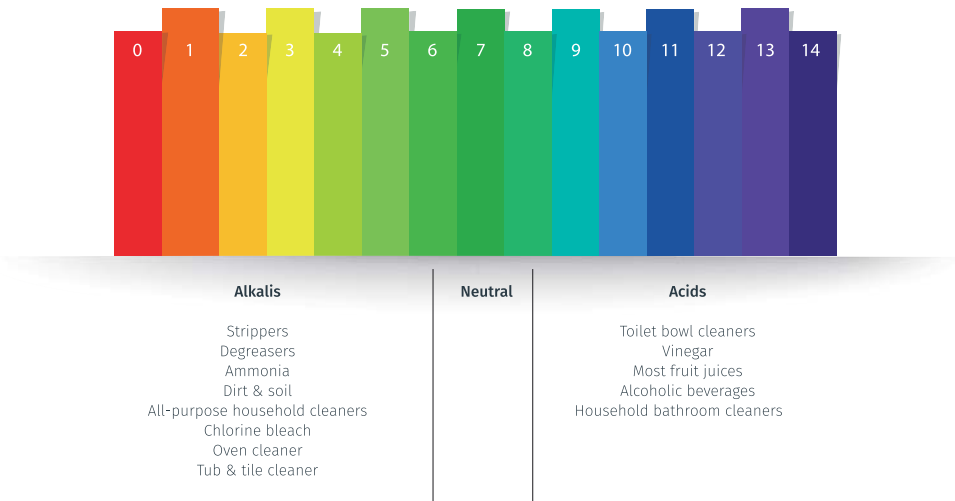
PROPER CLEANING & MAINTENANCE OF ENIGMA SURFACES:

Enigma Surfaces requires minimal maintenance to keep the surface looking its best. This non-porous material, improved with NEOS, Nano Enhancement of Surfaces, a new high-performance stain and substance repellent technology, offers world class aesthetics with the performance of new engineering stone: strength, durability and consistency.

For routine cleaning, simply wipe down your Enigma Surfaces 'countertop with a damp cloth or paper towel and a pH neutral cleaner for natural stone.

To keep your worktop beautiful, spot free and shiny you can use a wide selection of available cleaners and their respective pH levels, since NEOS resists ranges between pH1 and pH13, making it the only protectant resistant to a broad list of chemicals and safe from acid corrosion. Whatever product you choose to clean your Enigma Surfaces 'worktop, please follow manufacturer's instruction and always remove the product before it gets dry.

Granite and natural stone cleaners that are available at Lowe's, Home Depot or Local grocery stores are typically pH neutral and can safely be used to clean Enigma Surfaces. Some examples: Stone Care™ Granite, Quartz & Stone Daily Cleaner, Simple Green® Stone Cleaner & Polish, Granite & Stone Cleaner & Polish or Formula 409® Multi-Surface Cleaner . It is not recommended to use any cleaner above pH13. Make sure about cleaner's pH level before using it and always carefully follow manufacturer's instructions.



- Installers and fabricators should avoid using acetone on Enigma Surfaces as it will leave a film on the countertop surface. We recommend using denatured alcohol if needed. Acetone is harmful to resins and should never be used as a cleaner.
- Soap and water can also be used, but the surfactants in some soaps will leave a greasy film on the surface. The film can feel sticky and is very difficult to remove.
- Bar Keepers Friend® and Soft Scrub® All Purpose Cleanser can be used to remove any film or haze created by surfactants/acetone that may be on the material's surface.
- Enigma Surfaces is heat and scratch resistant, but not heat- and scratch-proof. Never put hot pots directly on the countertop surface; always use hot pads or trivets.
- Enigma Surfaces does not require any waxes or sealants because it is a non-porous surface. It retains its lustrous gloss and smooth surface without the need for polish or sealant.
- Do not use bleach or any cleaners that contain bleach.

We highly recommend reading our Care and Maintenance Guide.



CERTIFICATIONS:

Enigma Surfaces is internationally certified to ensure maximum safety and protection. Such certificates offer consumers the assurance that Enigma Surfaces is a safe, top-quality material. Our certificates offer a 100% guarantee.



NSF

With the NSF certificate, Enigma Surfaces is deemed to be a safe material for direct contact with all types of food. This certificate is endorsed by esteemed organizations such as the FDA (Federal Drug Administration) and WHO (World Health Organization)



GREENGUARD

This certificate proves that Enigma Surfaces does not generate any substance that is harmful to the environment. It also certifies the use of our surfaces in closed areas.



GREENGUARD GOLD

Enigma Surfaces has also been awarded the "Greenguard Children & Schools Certificate," which confirms maximum safety in its applications for schools and universities.

ENIGMA SURFACES: WARRANTY

Enigma Surfaces by AHD Surfaces offers an innovative new material comprised of Gibbsite and Silicon Oxide. This next generation material passes stringent quality standards and controls producing a beautiful and durable surface perfect for myriad uses.

GUARANTEED COVERAGE

Enigma Surfaces provides a **25-Year Residential & Commercial** Warranty to the original owners/purchasers of Enigma Surfaces installed in indoor residential and commercial projects.

We warrant that the material will be free of manufacturing defects for the term of this warranty. It is the obligation of the owner to inspect the finished installed material upon receipt. Should damage occur after installation it is the responsibility of the owner. Should Enigma Surfaces and/or its authorized agents verify that there is a manufacturing defect within the warranty period, Enigma Surfaces will, at its sole discretion, repair or replace the defective material. Replacement is limited to the replacement of the slab(s) necessary to substitute for the defective material.

Additionally, thanks to the cutting-edge technology of NEOS, Nano Enhancement of Surfaces, an innovative high-performance stain and substance repellent technology developed for Enigma Surfaces, we are the only brand to include a Lifetime Stain Warranty for indoor residential or commercial projects.

The Lifetime Stain Warranty of Enigma Surfaces guarantees that your countertop will resist staining and will be protected from a broad range of chemicals and acid corrosion (between pH1 and pH13).

In the event your countertop gets stained by short exposure to a substance of the established range, Enigma Surfaces undertakes to repair or change the countertop at its sole discretion*.

General Terms

Enigma Surfaces warrants only product that has been transported, handled, fabricated and installed according to industry standards by a professional fabricator/ installer. Improper transportation, handling, fabrication, or installation will void the warranty.

This warranty applies only to products that have been permanently installed and that have not been moved or displaced since original installation. This warranty applies only to product fabricated and installed in the US or Canada.

In order to benefit from the warranty, you need to register your product purchase with the Enigma Surfaces website, www.enigma-surfaces.com. Failure to do so within 30 days from the date of purchase will void the warranty.

EXCLUSIONS

- Product that has not been paid for in full is not subject to this warranty.
- This warranty does not cover any outdoor installations or applications.
- This warranty is non-transferrable.
- This warranty does not cover damage caused by improper shipping, handling, fabrication, or installation of the material. Any deviation from industry standard fabrication and installation guidelines will void this warranty.
- The professional fabricator/installer is responsible to inspect the Enigma Surfaces material before fabricating and/or installing the product. It is also the end user's responsibility to inspect the finished product before permanent installation.
- This warranty does not cover products installed with known or visible manufacturing defects at the time of installation, including but not limited to variance or flatness deviation beyond defined tolerances, and/or perceived visual imperfections.
- This warranty does not cover damage resulting from inappropriate substrate conditions (unstable substrate, improper support) at the location where the material is installed. Any damage caused by the substrate failing, shifting, moving, etc., will void the warranty.
- This warranty does not cover damage caused by insufficient or improperly designed support which causes such damage. Damage to cabinets or areas surrounding the install area caused by fabricator or installer is not covered by this warranty.
- This warranty does not cover fabrication or installation errors or oversights.
- This warranty does not cover damage resulting from displacing or moving the material from its original installation location.
- This warranty does not cover any costs, including but not limited to, tear-out, new fabrication, installation and related costs involved in a replacement.



neos

Anti Stain
LIFETIME WARRANTY

AHD SURFACES



General Limitation

Enigma Surfaces' obligation under this Residential Limited Lifetime Warranty or 10-Year Commercial Warranty and Lifetime Stain Warranty is limited solely to the repair or replacement of the failed product. Such repair or replacement, however, shall not include the performance of any other repairs or modifications that may be necessary to achieve the actual repair or replacement of the failed product (for example, any plumbing, electrical, tile or wall surfacing repairs or modifications). Such other repairs and modifications shall be the responsibility of the customer.

*Regarding the Lifetime Stain Warranty, it becomes effective when all standard industry protocol for stain removal has been exhausted. Enigma Surfaces has the right to conduct any test to your surface to verify and assess the damage caused, and therefore the final compensation to the customer. In the event Enigma Surfaces decides to replace warranted material, that replacement is limited to the same color and pattern as originally installed, no exceptions.

In order to obtain service under this warranty, you must permit your Enigma Surfaces fabricator or Enigma Surfaces authorized agents to inspect your product at the residence. You must also reasonably cooperate with your fabricator and Enigma Surfaces agents in the efforts to service this warranty.

Except to the extent expressly stated herein or otherwise required by applicable law, Enigma Surfaces disclaims all warranties and representations, expressed or implied, statutory or otherwise, including without limitation, any implied or expressed warranties of non-infringement of third party rights, satisfactory quality, merchantability or fitness for a particular purpose.

Enigma Surfaces shall not be responsible or liable in either contract or tort, and whether or not Enigma Surfaces has been advised of the possibility of such loss or damage, for any loss or damage, including, without limitation direct, indirect, special, consequential or incidental, arising out of the inability to use or delays in installation of/or repairs to the products manufactured by Enigma Surfaces.

Enigma Surfaces will not be held liable for any injury or damage caused by engineering or architectural design, structural issues, accidents, job site conditions, vandalism, or acts of God. Please check your state's laws to determine which local laws or additional rights apply to you, as this may vary from state to state.



 **ENIGMA**
Beauty Beyond Limits

FABRICATOR NAME:

FABRICATOR SIGNATURE:

DATE:

DISTRIBUTOR NAME:

DISTRIBUTOR SIGNATURE: