



WILSONART® DECORATIVE METALS
FABRICATION AND INSTALLATION GUIDELINES

Any fabrication procedure or technique not contained within the Wilsonart® Decorative Metals Manual will not be recognized by Wilsonart, LLC as an approved method of fabrication. Deviations from these techniques must be approved in writing by a Wilsonart Representative.

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(414-Galvalume Steel, 418-w/Backer & 419 Anodized Aluminum)**

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Warnings

Read and follow these instructions.

Failure to do this could result in severe personal injury.

Decorative Metals conduct electricity. When using electrical tools, please use caution to prevent electrical shock and shorting from frayed wiring on your electrical equipment and/or tools.

Safety glasses and gloves **MUST** be worn for protection from metal shavings and sharp edges when you machine or handle Decorative Metals.

CAUTION:

Always follow product, equipment, and/or tool manufacturers' recommendations and instructions carefully.



Decorative Metals Types :

414 - Galvalume Steel,

418 - With Backer

419 - Anodized Aluminum



Recommended Uses:

Wilsonart® Decorative Metals are designed for vertical interior or ceiling applications where a special accent is required or a special style is desired. The surface of Decorative Metals is similar to that of fine finished metal. The genuine metal material is appropriate for vertical areas in hotel, office lobbies, theaters and restaurants, where it's special eye-catching properties add a definite prestigious appeal.

Decorative Metals add a visual sense of lightness when used as inserted accent banding in massive casework. These materials also can add a bright touch when used as accent trim in custom furniture, especially in combination with Wilsonart® Laminates, Wilsonart® Decorative Edges or Wilsonart® Solid Surfacing.

All Decorative Metals are designed for interior applications. Reflective value and metal color may vary depending on type of lighting used. Fluorescent light, incandescent light and daylight produce slight color variations. All Wilsonart® Decorative Metals are supplied with a protective peel coat to prevent surface damage during fabrication process.

Product Types & Composition:

Steel fabrication tools, saw blades and router bits are required.

1. Type 414- (Galvalume® Steel) is a 26 gauge steel featuring a Galvalume® finish. The steel is coated with an aluminum-zinc alloy, and then protected with a clear acrylic coating on both sides. The metal features a decorative faceted finish on both sides – usable 2 sides (protective film applied one side only). Not available as type 418. Pattern variation can occur within sheet and from sheet to sheet.

Note: Galvalume is magnet receptive.

–Sheet Width: 48" (-0+1/4") 1219.2mm (-0+6.350mm)

–Sheet Lengths: 96" (-0+1/2") 2438.4mm (-0+12.700mm) 120"
(-0+1/2") 3048mm (-0+12.700mm)

–Sheet Thickness: 0.019" ± .002" (0.483mm ± 0.050mm)

–Weight PSF: 0.90625#

2. Type 418- (Phenolic Backed) is an anodized or decorative aluminum sheet bonded to a phenolic backer. For fabrication, follow HPDL techniques. Type 418 is recommended for flat surfaces only. Do not use in forming applications, as an edge trim or for strips. When radius bending is required, Type 419 or Type 415 is recommended without a phenolic backer.

Sheet Widths: 48" (-0+1/4") 1219.2mm (-0+6.350mm)

Sheet Lengths: 96"(-0+1/2") 2438.4mm (-0+12.700mm), 120" (-0+1/2") 3048mm (-
0+12.700mm)

Sheet Thickness: 0.040"+_ .004" (1.168mm +_ 0.101mm)

Weight PSF: 0.484#

3. Type 419- (Anodized Aluminum) Anodizing is defined as an electro-chemical process that thickens aluminum's natural oxide coating. The coating is clear and colorless and makes the surface resistant to corrosive conditions, wear and scratching. The aluminum can also be dyed a variety of colors during anodizing that cannot wash or rub off, such as gold, black, bronze, copper and grey. The back-side of sheets are prepared to facilitate bonding to a suitable substrate. The substrate surface must be free of grease, oil or other contaminants.

Sheet Widths: 48" (-0+1/4") 1219.2mm (-0+6.350mm)

Sheet Lengths: 96"(-0+1/2") 2438.4mm (-0+12.700mm), 120" (-0+1/2") 3048mm (-0+12.700mm)

Sheet Thickness: 0.025"+_ .002" (.635mm +_ 0.50mm)

Weight PSF: 0.353#

Questions & Answers

Q What are Wilsonart Decorative Metals?

A Wilsonart Decorative Metals are sheets of solid aluminum or steel with a decorative finish on one side and a treatment to facilitate proper bonding on the reverse side.

Q What sizes are available?

A Most designs in Anodized Aluminum, Galvalume and the Metro Series come in standard sheet sizes of 48"x96" and 48"x120". For availability, contact your nearest distributor of Wilsonart products.

Q Why aluminum?

A The characteristics of aluminum allow various types of decorative surfaces, textures and colors to be available.

Q What about other types of metallic surfacing?

A Galvalume, Type 414, offers a unique, faceted design for a variety of vertical applications. Steel requires special fabrication tools – be sure to consult your tool manufacturer for their recommendations. Please note the facet size may vary.

Q How are Decorative Metal sheets bonded?

A In the same manner as high pressure laminates. Wilsonart solvent-based contact adhesives will suitably bond Decorative Metals to most substrate types. Rigid set adhesives used in cold press operations are also available for use with Type 418. Please read further for complete details.

Q What tools are required to fabricate Decorative Metals?

A Tools that are used to fabricate high pressure laminates can be used to fabricate aluminum Decorative Metals. This includes all cutting devices with carbide-tipped blades or bits. It is recommended that when fabricating Decorative Metals, the cutting tool speed should be as high as possible and the feed speed of the blade or bit through the metal should be as slow as possible. Please remember to use an eye protection device. Note: Steel fabrication tools are required for Type 414, Galvalume Steel. Please refer to the Decorative Metals Fabrication Manual for complete details.

Q Is custom sizing available?

A Yes, custom sizing is available depending upon order quantity and sizes required.

Q Are Wilsonart Decorative Metals structural materials?

A No, we do not recommend the decorative sheets as structural material due to the thinness of the aluminum.

Q Can Decorative Metals be used as tabletops?

A It is not a recommended application because all metals are subject to scratching and impact. Decorative Metals should receive the same care as fine wood. Wilsonart Decorative Metals are recommended for vertical applications only.

Q Are special colors and lengths available?

A Yes. Minimum order quantities and longer lead times are required.

Q Are the colors consistent?

A The decorative metals industry allows a two to three shade difference as an acceptable commercial standard.

Q Will heat affect the metal?

A Yes. Extreme heat may mar the luster of the finish. Please inquire with the Wilsonart Technical Services Department for specific details.

Q Can Wilsonart Decorative Metals be postformed or radiused?

A Postforming is not necessary, as heat will neither detract from nor add to the ability of the product to form. Metals may be cold radiused to a 3" inside or outside minimum. Smaller radii can fracture the surface of the anodic coating of the metal – this will not reduce the anodic protective characteristics.

Cold-formed radii can be achieved with a pyramid roller or a brake press.

Q Are Decorative Metals available with a phenolic back?

A Anodized aluminum (Type 419), Type 415 are available with a phenolic back. Galvalume® Steel (Type 414) is not available with a phenolic back. Type 418 phenolic-backed metals are non-forming and are not recommended for cutting into decorative edging or strip applications.

Q What are recommended uses for Decorative Metals?

A The surface of Decorative Metals is that of a fine-finished metal. As a genuine metal material, it is appropriate for vertical areas in hotels, office lobbies, theaters, gaming facilities, restaurants, ceiling applications, retail store fixtures or anywhere its special eye-catching properties add a definite prestigious appeal. Decorative Metals can be silk-screened, acid etched, sandblasted or cutout for signage applications.

Handling:

- Care must be taken when handling Decorative Metals to avoid contact with rigid or sharp objects as they may cause dents or scratches to the surface.
- A protective film is applied onto the Decorative Metal sheet and should be left on until the finished piece is installed. The film will help prevent minor scratching that can occur during fabrication.
- Decorative Metals must be stored indoors, protected from sunlight and moisture, and away from traffic areas, where they may be susceptible to damage.
- When packing or unpacking, sheets must be stacked flat with an appropriate padding between each sheet. Furniture padding, sheet cardboard, Kraft paper, or foam plastic are excellent padding products to use. Be sure to keep the sheets supported and off the floor (a pallet works well to support them). Cover the top sheet as well to prevent damage or scratching.
- It is ideal to store the Decorative Metal sheets and the substrate together in the environment where fabrication will take place. Keeping the temperature and humidity controlled are also key.
- Decorative Metals and substrates must be preconditioned a minimum of 48 hours prior to fabricating. This will help minimize any dimensional change that may occur after the bonding process.
- When hand carrying Decorative Metals, use two people to handle them on the edges, to prevent distortion, flexing or damage to the sheets.

Transportation:

- Packed Decorative Metals should be fixed securely on bed of vehicle for safe, undamaged transportation.
- Heavy objects cannot be placed on top of Decorative Metal skids or pallets.
- Packed Decorative Metals are clearly labeled with the following warnings: "Handle with Care," "Use No Hooks," "This End Up" and "Fragile."

Storage:

- Decorative Metals must be stored indoors in one of the following methods.
 - (a) Flat Racking System preferred method.
 - (b) Standing Rack System
Lean Decorative Metals upright against a wall at an angle of 10° or less. The racks should have a rigid back and a soft covering, such as rubber on the bottom.
 - In either storage method, sheets should be rotated on a first-in, first-out basis.
 - When taking sheets from racks, avoid contact with other panels as much as possible, as contact may result in surface scratches.
 - (c) Flat pack skid storage.

Substrate Selection

Choosing the right substrate is very important in producing a quality product. There are numerous substrates that can be used with Wilsonart® Decorative Metals. Listed below is information that will assist you in choosing the proper substrate for your application.

Expansion and Contraction Issues:

- Remember that Wilsonart® Decorative Metals are manufactured with sheets of solid aluminum and steel alloys. Decorative Metals are NOT affected by changes in humidity; however, APPROVED wood substrates will move due to changes in relative humidity. Be sure to acclimate all components (decorative metal, substrate and backer sheet), and use the recommended substrates and backer sheet.
- High humidity will cause wood composite substrates to expand. These substrates will contract in cold environments and low humidity due to moisture being drawn from the substrate. Acclimation of these structural type wood substrates is recommended. Use a backer sheet to minimize expansion and/or contraction.
- The fabrication area must be preconditioned to 75° F (24° C) or above for all materials. A temperature of 75° F (24° C) and relative humidity of 50% provide ideal conditions.
- Substrate manufacturers generally advise five to seven days optimum preconditioning time for core materials; 48 hours is minimum.
- When fabricating on the jobsite with Decorative Metals, store the substrates in the environment where fabrication will take place for a minimum of 48 hours to allow for acclimation.
- The approved adhesives will maintain their bond strength when expansion and contraction occur. Proper load, coverage and pressure are important factors in bonding that can help minimize issues from this natural occurrence.
- Some substrates cannot be used with certain adhesives. You must determine the compatibility of the product, substrate and the adhesive used before bonding. Please consult the manufacturer's instructions or technical data.
- Allow spacing between each panel or strip to accommodate linear expansion from changes in temperature and/or humidity. Minimum is space allowance is 1/32".

Recommended substrates for Decorative Metals are:

- Plywood with one A-Face (also referred to as hardwood-faced plywood)
- 45# (20.43kg) Industrial Grade Particleboard
- 45# Medium or High Density Fiberboard (MDF or HDF)
- Kercore for forming applications. Visit www.kerfkore.com or call 800-637-3539.

DO NOT USE THE FOLLOWING SUBSTRATES:

- Bending plywood or underlayment sheets
- Yellow Pine or Marine-Grade Plywood
- Melamine boards of any type
- Fire-rated substrates
- Solid lumber, Gypsum board or concrete

Adhesive Selection

CAUTION: Always follow adhesive manufacturers' recommendations and instructions carefully.

Adhesives used for Decorative Metals must be appropriate for wood-to-metal bonding and strong enough to hold the metal against any dimensional changes of the substrate. For most conditions, contact adhesives are the best choice. NOTE: Do not use water-based contact adhesives or PVA adhesives with Decorative Metals.

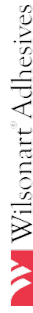
In order of preference, we recommend:

- WA950 / 951 – a flammable, fast-drying spray grade contact adhesive for nonforming operations.
- WA800 / 801 – a flammable, high performance spray grade contact adhesive for forming operations.

Performance Tips For Successful Bonding of Decorative Metals:

- The fabrication area must be preconditioned to 75°F (24°C) or above for both materials and substrates. A temperature of 75°F (24°C) and relative humidity of 50% provide ideal conditions.
- "Open Time" is the interval between the time the adhesive is sprayed and ready for bonding and the time it is too dry to bond. Refer to adhesive manufacturer's recommended open times. To determine accurate time, place fingers on the sprayed surfaces and check for "legging." Bond the materials when no legging or no adhesive transfer is evident.
- DO NOT thin WA contact adhesive with WA110 or lacquer thinner. The resulting mixture will lower performance and jeopardize the bond strength of the adhesive.
- DO NOT store WA adhesives directly on the floor or against an exterior wall.
- Apply uniform pressure over 100% of the area to be bonded. A pinch roller works best. A 3" rubber "J" roller used properly will provide acceptable pressure (30-40 psi).
- DO NOT use WA 800 or 950 with Silicone sealant. They ARE NOT compatible and CANNOT be used together.
- For easy cleanup of adhesive residue on fabricated pieces, we recommend WA121 (refer to page E-1, p. 12). DO NOT USE WA121 on S6501, Crystal Steel-Type-414; it will remove the surface finish.

WILSONART ADHESIVES CERTIFIED PRODUCT DATA SHEET



This chart lists the volatile organic compound (VOC) and volatile hazardous air pollutant (VHAP) content of Wilsonart Adhesives.

As provided for in 40CFR805.a for coatings which do not release VOC or VHAP by-products during the cure, the VHAP information given below is based on formulation data.

The information contained in this document is provided to assist the user of these products in complying with the appropriate federal, state and local laws and regulations. Although Wilsonart International, Inc. believes the data contained herein to be accurate and to have been derived from reliable sources, the provision of this information is not intended to constitute a warranty or a representation of performance by Wilsonart International, Inc.

Certified by Wilsonart International, Inc., September 21, 2009.

Product	VOC (g/liter)	VHAP (g/liter)	VOC (lb/gal)	VHAP (lb/gal)
WA 500	0.83	1.09	601 / 5.01	448 / 3.74
WA 600	1.25	1.75	674 / 5.60	669 / 5.58
WA 800/801	0.66	0.79	596 / 4.98	418 / 3.41
WA 810/811	0.08	0.11	534 / 4.46	283 / 2.36
WA 830/831	0.07	0.14	395 / 3.30	177 / 1.41
WA 840/841	0.38	0.46	577 / 4.81	374 / 3.12
WA 844/845	0.39	0.46	575 / 4.80	372 / 3.10
WA 850/851	0.68	0.77	602 / 5.02	417 / 3.41
WA 860/861	0.70	0.79	603 / 5.03	419 / 3.51
WA 880/881	0.47	0.79	538 / 4.49	341 / 2.84
WA 950/951	0.75	0.84	606 / 5.06	435 / 3.63
WA 970/971	0.00	0.00	598 / 4.99	296 / 2.47
WA 981	0.70	0.79	602 / 5.02	417 / 3.41
WA 1700/701	0.00	0.00	8 / 0.07*	3 / 0.02*

1: VHAP content indicates VHAP which are present in amounts greater than or equal to 1.0 percent by weight (or, for OSHA defined carcinogens, greater than 0.1 percent by weight). VHAP content based on lowest acceptable solids to solvent ratio, thus actual VHAP content may be slightly less.

2: VOC content calculated per EPA Method 24 and SCAQMD Rule 443.1(f) which excludes water and exempt solvents. VOC content based on lowest acceptable solids to solvent ratio, thus actual VOC content may be slightly less.

3: Calculated per SCAQMD Rule 443.1 (g). VOC per liter of material based on lowest acceptable solids to solvent ratio, thus actual VOC may be slightly less.

4: Density and Solids content based on formulation data and on lowest acceptable solids to solvent ratio, thus actual solids content may be as much as 2% greater than that shown, and is formulated to be 0.5% to 1.0% greater than the solids content shown.

*TBAC IS RECOGNIZED IN 40 C.F.R. 51.100(s) AND BY THE EPA AS A VOC EXEMPT COMPOUND. ALASKA, CALIFORNIA, KANSAS, SOUTH DAKOTA, WASHINGTON, WYOMING AND WASHINGTON D.C. HAVE NOT FORMALLY RECOGNIZED THIS EXEMPTION. CONTACT YOUR LOCAL REGULATORY AGENCY TO PROVIDE CLARIFICATION ON THE EXEMPTION STATUS.

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Revised 09/2009

Bonding to the substrate:

Typically backer sheets are applied to panels to insure balance. Wilsonart Type 203 is recommended. Apply the backer to the substrate, and then apply the face material. Edges can be applied before or after the backer and decorative sheet.

Note: Product Type 418 with phenolic backing cannot be used for edge trims or strip material. If you are using Product Type 418 with adhesives other than contact adhesives, follow standard practices for bonding decorative laminates. The finish of Decorative Metals is not as durable as that of decorative laminates. Be careful to keep the protective covering (peel coat) on the face, and not to scratch the face when applying pressure during bonding, rolling or clamping.

The following instructions cover bonding methods with contact adhesives, which are the most commonly used on Decorative Metals. PVA/water-based adhesives can only be used with product Type 418 (with phenolic backer). Always follow the manufacturer's instructions and recommendations carefully.

- Apply the contact adhesive to the non-decorative surface side and then to the substrate. Typical coverage for WA800/950 series adhesives is 2 grams per sq. /ft. The adhesive spread should be smooth and uniform, with a minimum of 80% coverage on each surface. Edges may require extra adhesive.
- Allow the surfaces to dry or cure. Always consult the Technical Data Sheet from the manufacturer for drying times and troubleshooting tips. Non-porous surfaces will require extra time for solvent flash off.
- Before bonding, check to see if adhesive is properly dried by pressing your fingers firmly against the surface. If the adhesive is tacky, but the adhesive does not transfer to your fingers (legging), the surface is ready for the bonding process.
- If any moisture appears on the surfaces (an effect called "blushing"), be sure to let surface moisture dry before bonding. This moisture is condensation caused by rapid evaporation of the solvent and the subsequent cooling of the air around it.
- Lift the Decorative Metal sheet carefully, and apply it to the substrate. Position the sheet exactly as contacts bond instantly and the parts cannot be repositioned. For bonding larger pieces, the use of dowel rods may be needed for positioning the Decorative Metal.
- Use a roller to apply maximum pressure. A nip or pinch roller works best. A Gundlach V-300 roller with a rubber wheel is recommended.

Wilsonart® Decorative Metals Cleaning Guide for Adhesive Removal

Wilsonart Decorative Metals Types			Wilsonart 121 Adhesive Cleaner	Denatured Alcohol	409 Surface Cleaner	Windex
Anodized Aluminum						
6255	419	Polished Gold Alum.	EN	FN	PN	PN
6257	419	Satin Br. Natural Alum.	EN	FN	PN	PN
6277	419	Alumasteel™	EN	FN	PN	PN
All other 419 and 415 designs			EN	FN	PN	PN
Metal Laminates						
All Designs	408		EN	FN	PN	PN
Galvalume						
S6501	414	Crystal Steel	ED	FN	PN	PN

The Wilsonart® Cleaning Guide is intended only for your information and convenience

*Follow-up with additional cleaning step using Windex or 409 Surface Cleaner

Cleanability Rating:

EN -(Excellent removal without damaging effect)

ED -(Excellent removal w/damaging effect)

FN -(Fair removal without damaging effect)

FD -(Fair removal w/damaging effect)

PN -(Poor removal without damaging effect) PD -

(Poor removal with damaging effect)



Recommended Tools

Product Type 414 Galvalume Plus®:

Fabrication and installation of S6501 Crystal Steel requires steel fabrication tools, saw blades and router bits.

- It is recommended to use saw blade for all cutting of Type 414.
- Galvalume Steel, Pattern S6501 Crystal Steel, is a 26-gauge hot-dipped aluminum-zinc alloy (AZ-55) sheet.
- A thin, clear acrylic coating is applied to both sides of the decorative sheet.
- A protective film sheet is applied to protect the face side.
- The sheet can be roll formed (with a pyramid roller) or formed in a break press (to 90° angle) – no vanishing oil required.
- The surface is free from oils.
- Acrylic coating resists fingerprints and smudging during handling and installation.
- Acrylic coating provides excellent resistance to storage stain and transit corrosion.
- Uniform visual appearance of Crystal Steel is NOT

guaranteed. Some variation in surface appearance is typical of Galvalume.

- The spangle or faceted design is usually consistent within a single coil. There is no guarantee from coil to coil.
- Metal working equipment, such as a shear, roll bender, embosser or brake press, can be used to cut and form steel.
- Use saw blades and router bits designed to cut steel. A Triple Chip Grind (TCG), fine micro-grain carbide blade with 60 to 80 teeth, 0° hook, maximum 1500 rpm is recommended. These blades are not recommended for use on wood cutting machines with faster rpm's.
- Conventional saw blades of the Triple Chip Grind (TCG) or Alternating Tooth Bevel (ATB) design will cut Galvalume Plus. A 10" diameter ATB or TCG with a 0.086-0.095" kerf, 80-tooth blade will cut acceptably. In addition, an ATB or TCG design 7.25" dia. with 0.072-0.087" kerf, 40-tooth carbide blade will cut acceptably. Note: The saw blade must be kept as low as possible relative to the surface of the Galvalume to ensure a smooth cut. A file or 220-grit sandpaper and sanding block may be needed to remove any burring.
- A variable speed router (12,000 rpm or less) with a 1/2" diameter shank 2-flute carbide tipped blade can be used to route the material. Note: Allow a maximum overhang approx. 1/8" or less of material when routing. Prolonged or excessive routing will lead to tool wear.

Fire Tests:

Standard Method of Test for Surface Burning Characteristics of Building Materials

ASTM E-84 Unbonded

Test Specimen	Flame Spread Index	Smoke Developed Index
Product Type 414-S6501	0	0

WARNING: Decorative Metals conduct electricity. When using electrical tools, please use caution to prevent electrical shock and shorting from frayed wiring on your electrical equipment and/or tools.

CAUTION: Always follow product, equipment, and/or tool manufacturers' recommendations and instructions carefully.

WARNING: Product Type 414, Galvalume Plus® – caution must be USED WHEN CUTTING Pattern S6501, Crystal Steel, to ensure all saw dust collection systems are turned off. The steel can and will spark during cutting and may create a potential fire/explosive hazard in the dust collection system.

TOOL RECOMMENDATION & FABRICATION

TYPES 415, 418 & 419

Recommended Tools:

Fabrication and installation of Decorative Metals is easy with tools and machinery normally associated with laminate, metal or woodworking shops.

Saws:

Saws offer a fast method for rough cutting of Decorative Metals before bonding. For the most accurate cutting, see the recommended saw blades listed below.

- Alternate top bevel (ATB) 10" (255mm) 100-tooth carbide blade with a 5° hook angle.
- Triple Chip Grind (TCG) 14" (355mm) 120-tooth carbide tipped blade.
- Triple Chip Grind (TCG) 10" (255mm) 80-tooth carbide tipped blade.
- Alternating Tooth Bevel (ATB) or TCG 7.25" (185mm) 80-tooth carbide tipped blade.
- Use blades, which are surface ground and tensioned, or hammered to relieve stress caused by heat. Keeping the blades sharp will allow for cleaner edges and safe cutting.
- Always cut into the decorative face (face up), so that the rough edge from the saw cut is on the back of the sheet.
- Use a piece of scrap wood under the metal sheet to help minimize rough edges.
- Keep the sheet from moving or vibrating during the cutting process.
- Establish a standard feed speed and saw r.p.m. using scrap material, then always use them. Low saw r.p.m. can melt the metal due to increased friction.
- The metal can be placed between two pieces of particleboard to provide a clean-cut edge and protect the metal from damage.
- Always check with your saw blade manufacturer for questions on the design or purpose of the blade.

Note: If making a rough cut on the Decorative Metal sheets, allow approximately 1/8" overhang on faces and a 1/8" overhang on edge trim materials. This will allow you to achieve a precise,

finished edge with the router, after bonding the metal to the substrate. Measure your cuts carefully. Make them straight and smooth. While there is no need to over-engineer this stage of the operation, a little extra care can save time and material.

Product type 418 (phenolic backed) can not be used for edge trim.

Shears:

WARNING: Decorative Metals conduct electricity. When using electrical tools, please use caution to prevent electrical shock and

shorting from frayed wiring on your electrical equipment and/or tools.

CAUTION: Always follow product, equipment, and/or tool manufacturers' recommendations and instructions carefully.

WARNING: Product Type 414, Galvalume Plus® – caution must be USED WHEN CUTTING Pattern S6501, Crystal Steel, to ensure all saw dust collection systems are

turned off. The steel can and will spark during cutting and may create a potential fire/explosive hazard in the dust collection system.

WARNING: Safety glasses and gloves **MUST** be worn for protection from metal shavings and sharp edges when you machine or handle Decorative Metals.

TOOL RECOMMENDATION & FABRICATION

Shears can also be used for rough cutting. Use hand shears, metal shears or guillotine-action shears. Make sure that the shears are well sharpened. Dull shears can kink the metal.

Routers:

Leave the protective peel coat on the material when routing. Routers, for trimming edges after bonding, must have a smooth base plate, so that the surface of the metal will not be scratched. Use carbide tipped bits with ball bearing guides. Keep the bits sharp. A 1/2" shank flush trim with a 1/2" diameter 2-flute (1-1/2"-inch flutes) carbide cutter is recommended. Routers with high rpm's (> 20,000) are recommended.

Files:

Files for final edge finishing must be flat, with a smooth or fine rating, American style. To keep from hitting the metal with the file handle, use files at least 10" long. A 220-grit sandpaper and wood block can also be used for filing of edges.

Trimming Edges:

- Use a hand router with flush trim carbide tipped, bearing bit for Decorative Metal surfaces.
- If Decorative Metals surfacing is used for edges, apply the first piece of surfacing, and then trim with a straight bearing router bit as described above. Apply the second piece of surfacing, and then trim the edge where the surfaces meet with a bevel-bearing bit. This creates a smooth, safe edge.
- Using a high quality router with high r.p.m.'s keeps bits sharp.
- For the final finishing of the edge, use a flat file, smooth or fine rated, at least ten inches long. Always file downward, toward the substrate.
- Never use Product 418 for edge trim. Use for (non-edge) applications only.

Drills:

Drills used for Decorative Metals MUST be high-speed steel (HSS) with point geometry of 118°. A bright tool finish is recommended.

Filter Bags:

Filter bags normally used for wood and decorative laminate shavings may be damaged by metal shavings.

Tool Suppliers:

Amana Tool	800-445-0077 631-752-1300	Velepec	800-365-6636	FS Tool	800-387-9723 905-475-1999
		DML/Bosch	800-242-7003		
Specialty Tools	800-669-5519	Leitz	800-253-6070	Forrest	800-733-7111
Wesley Tools-Ltd.	516-338-5555 800-397-6867	Onsrud Cutter	847-362-1560 800-234-1560	MSC Industrial Supply Co.	800-645-7270
Guhdo	800-544-8436				

Recommended Router Bits

Amana Tool	800-445-0077 631-752-1300
Specialty Tools	800-669-5519
Wesley Tools. Ltdd	516-338-5555 800-397-6867
Guhdo	800-544-8436
Velepec	800-365-6636
DML/Bosch	800-242-7003
Leitz	800-253-6070
Onsrud Cutter	847-362-1560 800-234-1560
FS Tool	800-387-9723 905-475-1999
Forrest	800-733-7111
MSC Industrial Supply Co.	800-645-7270

Recommended Routers

Porter Cable	888-848-5175
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Recommended Table Saws

WMH Tool Group	800-248-0144
Delta	800-438-2486

Recommended Saw Blades

Specialty Tools	800-669-5519
Amana	800-445-0077
Popular Machinery & Tools, Inc.	800-610-7297 or 210-348-0783
Skarpaz	800-875-8030 or 415-467-7900

Edge Preparation:

If edges are to have decorative surfacing applied, make sure they are smooth and form right angles to the surface. Edges can be squared and cleaned with a straight edge router and top bearing carbide bit.

Edges:

Before trimming the Decorative Metal edges, use one of the two methods described below to avoid scratching the decorative surface.

Method 1:

- Mask the surface with tape, covering the entire area, which the router base will pass.

Method 2:

- Clamp a piece of wood to the surface of the metal; slide the router over the surface of the wood while trimming. Allow for the increased distance from the metal surface by using the router's depth adjustment.

Hardware Use with Decorative Metals:

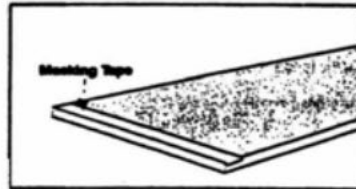
Panels made with Decorative Metal will sometimes require hardware, such as hinges, drawer pulls and doorknobs. The following are suggested recommendations prior to installing such hardware pieces.

- Whenever possible, a clearance hole should be drilled through the metal to eliminate damage to the decorative surface. To drill holes for mounting using screws or bolts, use a high-speed steel drill bit.
- A mallet and punch should be used to start the drill, which will help prevent damaging the decorative finish of the metal. Tap lightly to avoid denting the metal.
- Always drill a clearance hole, which is slightly larger than the bolt, screw or pin being used. When

Edge Preparation:

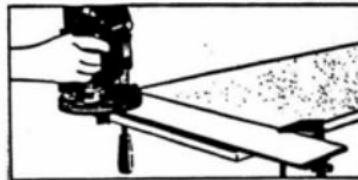
Method 1:

- Mask the surface with tape, covering the entire area, which the router base will pass. (FIG. 1)



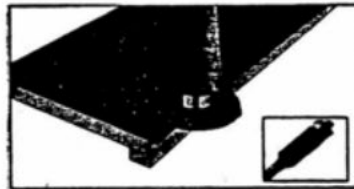
Method 2:

- Clamp a piece of wood to the surface of the metal; slide the router over the surface of the wood while trimming (a top bearing guide or collet is needed). Compensate for the increased distance from the metal surface by using the router's depth adjustment. (FIG. 2)

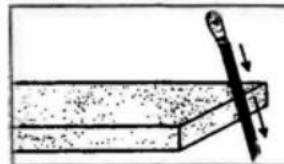


Trimming Edges:

- Use a hand router with flush trims carbide tipped bit and bottom bearing for surfaces. (FIG. 3)



- For the final finishing of the edge, use a flat file (smooth or fine rated and at least ten inches long) to remove any burring or curl. Always file downward, toward the substrate. (FIG. 4)



you install the hardware, tighten screws and bolts slowly and carefully. Tightening too much may dent the metal surface.

Note: The substrate must provide all needed screw holding power and structural strength. Decorative Metals are less than 1/25" thick and are non-structural.

Decorative Metals can be shaped into many forms. The following terminology is typically associated when with working metals:

Note: Product Type 418 is not recommended for the following assembly operations.

WARNING: *Decorative Metals conduct electricity. When using electrical tools, please use caution to prevent electrical shock and shorting from frayed wiring on your electrical equipment and/or tools.*

Hemming- To fold back the edge. Usually a 180° bend. Used to put a radius on the edge of a part, hide the unfinished edge or the first operation to lock two seam edges to make a tube.

Bending- To bend the metal into some type or form such as three 90° bends to make a box.

Drawing- Literally stretching the metal. To illustrate this definition, a stainless fry pan has been "drawn" so it will have sides. It starts as a round disk, and with a male and female mold die, it is "drawn" to shape.

Punching- In many instances a part is "punched" out of the metal using a "punch press." Usually the material is in coil form. However presses can be hand fed with strips. An example would be metal buttons used on clothing. They are punched out of a strip of brass. Also the term punching could refer to holes or any other type of opening made into the metal.

Stamping- Basically the same as punching but refers more to the actual part. An example would be the cookies "stamped" out of dough.

Roll forming- Refers to a process where the metal (usually in strips) is run through a series of "rolls" that put the shape into the metal. An example would be the bevel on glass mirrors. It can be round, square or other configurations. Brass beds are made from "rolled formed" brass strips.

Embossing- The forming of a pattern or design into the metal. A good example is our coins. Lincoln's head is embossed into the penny.

Blanking- Usually refers to the first operation of a series of metal forming operations. A sheet or coil of metal is cut into the "blank" size before the next operation. The cover or "hood" on a PC computer is first "blanked" and then the sides are formed.

Decorative Metals Formability (Minimum Cold-Forming)

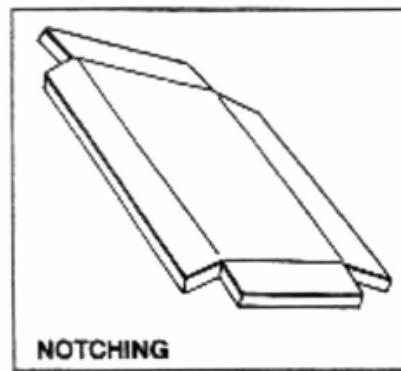
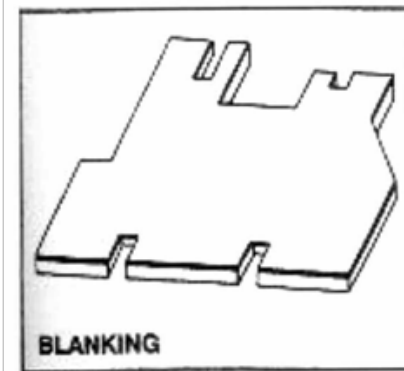
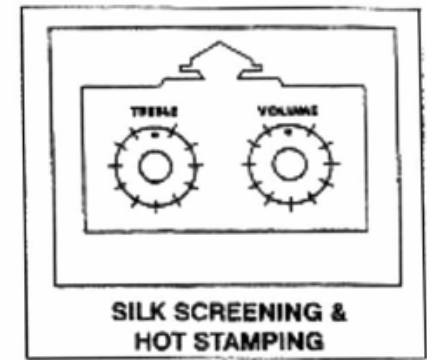
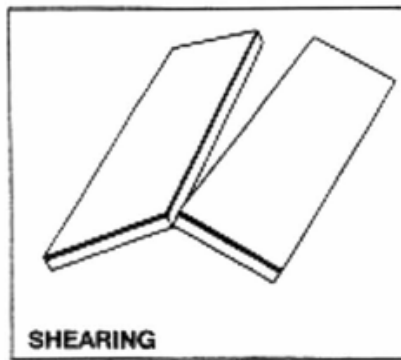
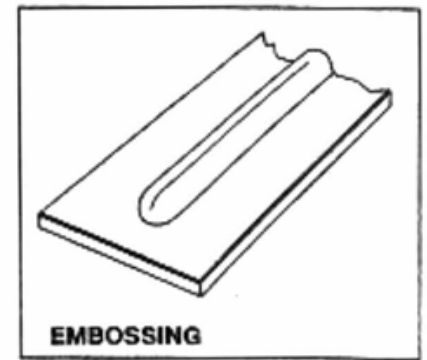
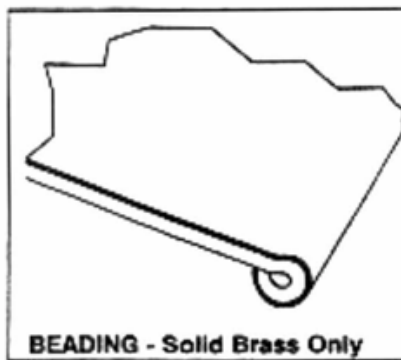
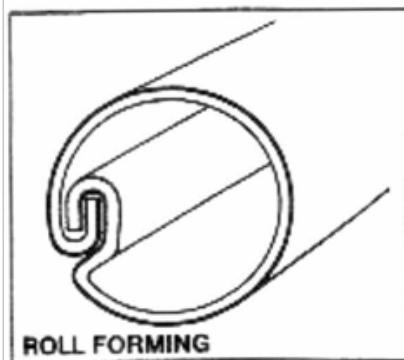
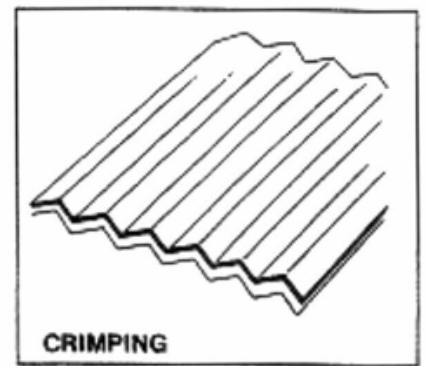
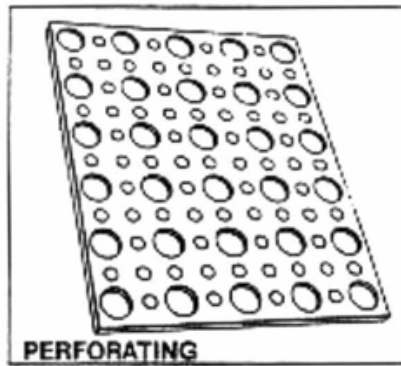
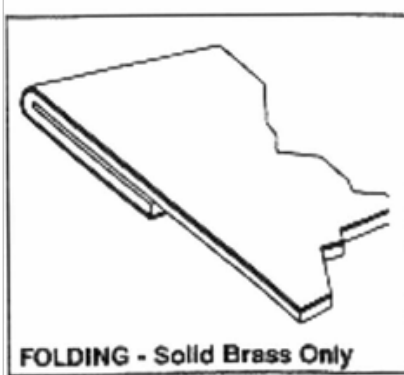
Product 414, (Galvalume Plus®)

Thickness	Radius
0.019"	3" face bend

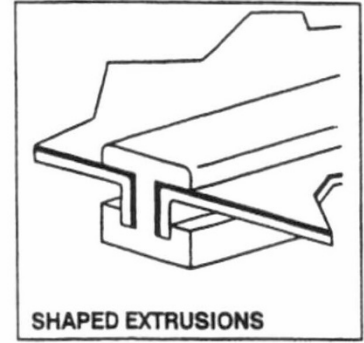
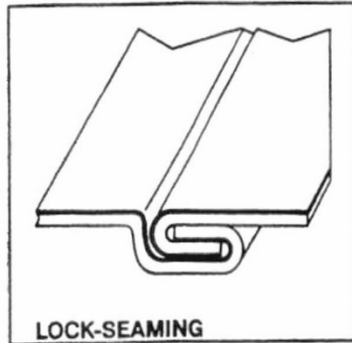
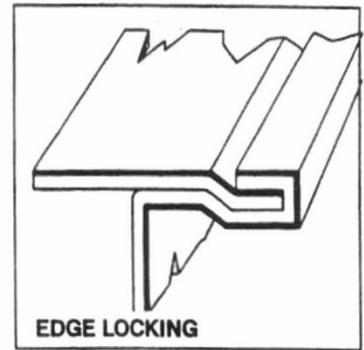
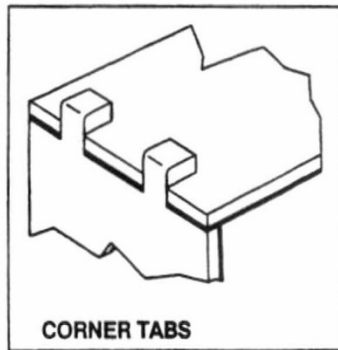
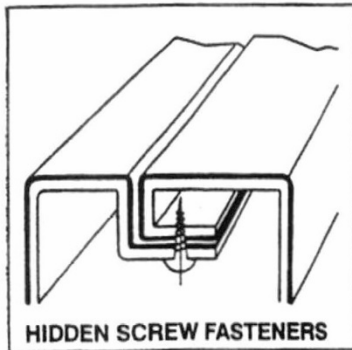
Product 414, (Metro Series)



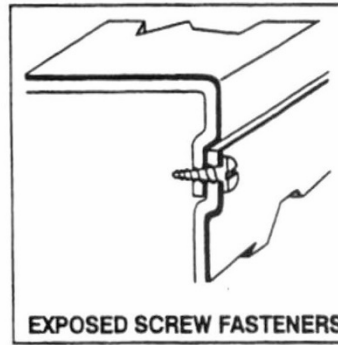
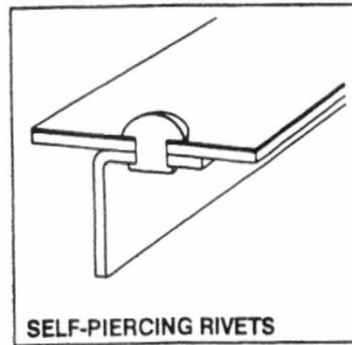
TOOL RECOMMENDATION & FABRICATION



TOOL RECOMMENDATION & FABRICATION



Decorative Metals can be installed into extruded parts.



TOOL RECOMMENDATION & FABRICATION

Thickness	Radius
0.025"	3" face bend

*Edge Banding: 3" wide maximum width, 2" minimum radius Cabinet Sides: 3" minimum radius Product 419,
(Anodized Aluminum)*

Thickness	Radius
0.025"	3" face bend

*Cabinet Sides: 3" minimum radius
Edge Banding: 3" wide maximum width, 2" minimum radius*

Note: Heat forming and postforming are not recommended for Types 414, 415, 418 and 419.

Product 418 (with phenolic backer) is NON-Forming and recommended for flat applications only! NEVER use Product 418 for edge trim!



Cleaning and Caring for Decorative Metals:

Types 414 & 416:

For Galvalume® Steel and the Artisan Group, use only glass cleaners that are free of ammonia and petroleum products. 409® Glass & Surface Cleaner and warm water with a mild dish soap solution is also recommended for cleaning. After cleaning, always wipe the surface completely dry with a soft, clean cloth. Do NOT clean metal face with solvents, paint thinner or adhesive remover except as outlined on page E-1 (p. 12).

Types 418 & 419:

It is recommended that anodized aluminum surfaces be cleaned with 409® Glass & Surface Cleaner and warm water with a mild soap such as those used for hands or dishes. Household cleaners, non-ammoniated detergents, or glass cleaners may be used. Stubborn stains may be removed with a thin, clean oil and a dry cloth. After cleaning, always wipe the surface completely dry with a soft, clean cloth. Paint thinner, solvents, ammoniated detergents or petroleum-based cleaners should NOT be used to clean anodized aluminum surfaces except as outlined on page E-1 (p. 12). For adhesive removal, use Wilsonart 121 Adhesive Cleaners, Acetone, or Cupran. When using Cupran, follow-up with an additional cleaning step using Windex or 409 Surface Cleaners.

DO NOT use cleaners that contain abrasives, acids or alkali as they will mar the Decorative Metal surface.

Decorative Metals Type 408



PRODUCT DESCRIPTION
Decorative Metals (Type 408)
(408-Metal Laminates)

Recommended Uses:

Wilsonart® Metal Laminates are manufactured with an aluminum foil thermally fused to a phenolic backer. Use Metal Laminates in vertical applications only. Metal Laminates boast the workability of HPL for most fabricators. Metal Laminates is a combination of pure metal or copper and laminate. Horizontal applications are not covered by the warranty.

Some of the typical applications include: vertical surfaces in commercial interior decoration, hotel and restaurant furniture, bars, displays, interior wall cladding, exhibition, signage and stand decorations, etc. Metal Laminates are perfect for bending in unusual applications such as column wraps, store fixtures and even furniture.

Metal Laminates add a visual sense of lightness when used as inserted accent banding in massive casework. These materials also can add a bright touch when used as accent trim in custom furniture, especially in combination with all Wilsonart® decorative surfaces. Reflective value and metal color may vary depending on type of lighting used. Fluorescent light, incandescent light and daylight produce slight color variations.

Product Description:

Wilsonart® Metal Laminates are composed of a natural and colored metallic decorative layer pressed over kraft paper core sheets, impregnated with phenolic resin. Anodizing is defined as an electro-chemical process that thickens aluminum’s natural oxide coating. The coating is clear and colorless and makes the surface resistant to corrosive conditions, wear and scratching. The aluminum can also be dyed a variety of colors during anodizing that cannot wash or rub off, such as gold, black, bronze, copper and grey. Finished sheets are trimmed, and the backs sanded, to facilitate bonding. *Note: All Wilsonart® Metal Laminates are supplied with a protective peel coat to prevent surface damage during shipping and fabrication.*

Sheet Sizes	
4' X 8' +/- 0.39" (2440 mm X 1220 mm +/- 10.0 mm)	4' X 10' +/- 0.39" (3050 mm X 1220 mm +/- 10.0 mm)
L6441 - Brite Brushed Sterling	L6441 - Brite Brushed Sterling
L6442 - Satin Brushed Palladium	L6442 - Satin Brushed Palladium
L6443 - Satin Brushed Penny	L6443 - Satin Brushed Penny
L6444 - Ribbed Brite Brushed Sterling	L6444 - Ribbed Brite Brushed Sterling
L6445 - Ribbed Satin Brushed Palladium	L6445 - Ribbed Satin Brushed Palladium
L6446 - Ribbed Satin Brushed Penny	L6446 - Ribbed Satin Brushed Penny
L6447 - Ribbed Satin Brushed Aged Gold	L6447 - Ribbed Satin Brushed Aged Gold
L6448 - Ribbed Matte Silver	
L6449 - Sequin Brite Brushed Sterling	
L6451 - Sequin Satin Brushed Palladium	
L6452 - Vinyl Records	
L6453 - Rough Cut	
L6454 - Bronze Age	
L6455 - Hot Tin Roof	



PRODUCT DESCRIPTION

Sheet Thickness				
0.032" +/- 0.004" (0.80 mm +/- 0.10 mm)	0.035" +/- 0.004" (0.90 mm +/- 0.10 mm)	0.039" +/- 0.006" (1.00 mm +/- 0.15 mm)	0.047" +/- 0.006" (1.20 mm +/- 0.15 mm)	0.059" +/- 0.006" (1.50 mm +/- 0.15 mm)
L6441 - Brite Brushed Sterling	L6449 - Sequin Brite Brushed Sterling	L6454 - Bronze Age	L6453 - Rough Cut	L6455 - Hot Tin Roof
L6442 - Satin Brushed Palladium	L6451 - Sequin Satin Brushed Palladium			
L6443 - Satin Brushed Penny				
L6444 - Ribboned Brite Brushed Sterling				
L6445 - Ribboned Satin Brushed Palladium				
L6446 - Ribboned Satin Brushed Penny				
L6448 - Ribboned Matte Silver				
L6447 - Ribboned Satin Brushed Aged Gold				
L6452 - Vinyl Records				

Basic Limitations

Wilsonart® Metal Laminates are intended for interior use only. **Do NOT apply to plaster**, concrete walls or gypsum wallboard. They are not structural material and must be bonded to a suitable substrate, such as particle-board or medium density fiberboard. Do not subject Wilsonart® Metal Laminates to extremes in humidity and temperature for sustained periods of time, or intense, continuous direct sunlight.



FREQUENTLY ASKED QUESTIONS – Metal Laminates

Q. What are Metal Laminates?

A. Metal laminates consist of foil-faced phenolic laminates in fourteen options. The thin metal is thermally fused to the phenolic lending the workability of HPL.

Q. What is the surface finish of the various foil skins?

A. Most decorative foils are anodized aluminum except for a few patterns including L6452 – Vinyl Records, L6454 – Bronze Age, L6455 – Hot Tin Roof, and L6453 – Rough Cut. Anodized aluminum is more brilliant and anodizing adds scratch and scuff resistance. Patterns L6452 – Vinyl Records and L6453 – Rough Cut consist of pure aluminum while L6454 – Bronze Age and L6455 – Hot Tin Roof are a hand “aged” copper foil which is coated with an UV-lacquer based on acrylic.

Q. How many options are offered?

A. There are fourteen options in the metal laminate offering which include a variety of polished, textured, and sequin options, including three large scale designs. Of these large scale designs, there are two that feature our new patina-aged finish. Reminiscent of traditional bronze and copper aging, L6454 – Bronze Age and L6455 – Hot Tin Roof will be completely unique from sheet to sheet creating a custom solution for large scale applications such as walls and vertical surfaces.

Q. Why Metal Laminates?

A. Metal laminates are fabricator friendly. They can be fabricated similar to HPDL using water-based or solvent-based Wilsonart adhesives. There are few limitations – they can be used for edge trim or decorative strips; used for vertical surfaces; they can also be cold formed to a 7” radius depending on the application. Please follow the recommended fabrication techniques in BR0406, Decorative Metals Fabrication Manual.

Q. How does metal laminates cost compare to other metal options from Wilsonart?

A. You will find that metal laminates are more cost effective than Product Type 418, Anodized Aluminum with phenolic backer, in applications where budget is a consideration.

Q. Can metal laminates be used for horizontal applications?

A. Metal laminates are not recommended to be used in horizontal applications since the metal is a foil and the metallic surface is subject to scratching and impact.

Q. Can metal laminates be used for decorative accent strips?

A. Yes, all patterns can be cut into decorative accent strips for edge applications or decorative accents.

Q. Can metal laminates be postformed?

A. Metal laminates must not be postformed.

Q. Can metal laminates be cold formed?

A. A 3-inch minimum cold-forming radius is recommended.

HANDLING & STORAGE

Handling

- When handling Metal Laminates, never contact with rigid or sharp objects as they may cause dents or scratches to the surface.
- A protective film is applied onto the Decorative Metal sheet and should be left on until the finished piece is installed. The film will help prevent minor scratching that can occur during fabrication.
- Decorative Metals should be stored indoors, protected from sunlight and moisture, and away from traffic areas, where they may be susceptible to damage.
- When packing or unpacking, sheets should be stacked flat with an appropriate padding between each sheet. Furniture padding, sheet cardboard, Kraft paper, or foam plastic are excellent padding products to use. Be sure to keep the sheets supported and off the floor (a pallet works well to support them). Cover the top sheet as well to prevent damage or scratching.
- It is ideal to store the Metal Laminate sheets and the substrate together in the environment where fabrication will take place. Keeping the temperature and humidity controlled are also key.
- Metal Laminates and substrates should be preconditioned a minimum of 48 hours prior to fabricating. This will help minimize any dimensional change that may occur after the bonding process.
- When hand carrying Metal Laminates, use two people to handle them on the edges, to prevent distortion, flexing or damage to the sheets.

Transportation

- Packed Metal Laminates should be fixed securely on bed of vehicle for safe, undamaged transportation.
- Heavy objects cannot be placed on top of Metal Laminate skids or pallets.
- Packed Metal Laminates are clearly labeled with the following warnings: "Handle with Care," "Use No Hooks," "This End Up" and "Fragile."
- When transporting Metal Laminates, caution should be used to avoid prolonged exposures to extremes in temperature and humidity.

Storage

- Metal Laminates should be stored indoors, horizontally, and with the face side down.
- Exposure of Metal Laminates to direct sunlight over prolonged periods of time may produce color change in the surface coating. A slight change in color over time does not necessarily indicate a product defect.
- Metal Laminates must never be stored in high moisture/humidity areas, or in contact with the floor or outside walls.
- The optimum conditions for storage are approximately 75°F (24°C) and 50% RH.
- The sheet and substrate should be allowed to acclimate for a minimum of 48 hours at the same ambient conditions prior to fabrication.
- Metal Laminate sheets should be rotated on a first-in, first-out basis.
- Flat pack skid storage is also recommended.
- Vertical rack systems are not recommended due to possible warpage.
-

SUBSTRATE SELECTION

Choosing the right substrate is very important in producing a quality product. There are numerous substrates that can be used with Wilsonart® Metal Laminates. Listed below is information that will assist you in choosing the proper substrate for your application.

Expansion and Contraction Issues

- Remember that metal laminates can be affected by changes in humidity; also all wood substrates will move due to changes in relative humidity. Be sure to acclimate all components (decorative metal, substrate and backer sheet), and use the recommended substrates and backer sheet.
- High humidity will cause wood composite substrates to expand. These substrates will contract in cold environments and low humidity due to moisture being drawn from the substrate. Acclimation of these structural type wood substrates is recommended. Use a backer sheet to minimize expansion and/or contraction.
- The fabrication area must be preconditioned to 75° F (24° C) or above for all materials (Decorative Metal, substrate and backer sheet). A temperature of 75° F (24° C) and relative humidity of 45% to 50% provide ideal conditions.
- Substrate manufacturers generally advise five to seven days optimum preconditioning time for core materials; 48 hours is minimum.
- When fabricating on the jobsite with Decorative Metals, store the substrates in the environment where fabrication will take place for a minimum of 48 hours to allow for acclimation.
- The approved adhesives will maintain their bond strength when expansion and contraction occur. Proper load, coverage and pressure are important factors in bonding that can help minimize issues from this natural occurrence.
- Some substrates cannot be used with certain adhesives. You must determine the compatibility of the product, substrate and the adhesive used before bonding. Please consult the manufacturer's instructions or technical data.
- Allow spacing between each panel or strip to accommodate linear expansion from changes in temperature and/or humidity. Minimum is space allowance is 1/32".

Recommended substrates for Decorative Metals

- Plywood with one A-Face (also referred to as hardwood-faced plywood)
- 45# (20.43kg) Industrial Grade Particleboard
- 45# Medium or High Density Fiberboard (MDF or HDF)
- Kerfcore for forming applications. Visit www.interiorproducts.com or call 800-637-3539.

DO NOT USE THE FOLLOWING SUBSTRATES

- Bending plywood or underlayment sheets
- Yellow Pine or Marine-Grade Plywood
- Melamine boards of any type
- Fire-rated substrates
- Solid lumber, Gypsum board or concrete

ADHESIVES SELECTION

- Adhesives used for Wilsonart® Metal Laminates must be appropriate for wood-to-wood or wood-to-metal bonding, and they must be strong enough to hold the metal against any dimensional changes of the substrate. For most conditions, contact adhesives are the best choice. We recommend Wilsonart® Adhesives for HPDL applications.
- Performance Tips For Successful Bonding of Metal Laminates
- Typically backer sheets are applied to panels to insure balance, Wilsonart Type 203 is recommended, apply it first to the substrate, and then apply the face material. Edges can be applied before or after the backer and decorative sheet.
- “Open Time” is the interval between the time the adhesive is sprayed and ready for bonding and the time it is too dry to bond. The Open Time for WA contact adhesives is approximately 15-20 minutes. However, the best method for determining this is when transfer legging is not visible.
- If any moisture appears on the surfaces (an effect called

CAUTION: Always follow product, equipment, and/or tool manufacturers' recommendations and instructions carefully.

“blushing”), be sure to let them dry before bonding. This moisture is condensation caused by rapid evaporation of the solvent and the subsequent cooling of the air around it.

- DO NOT thin WA contact adhesive with WA110 or lacquer thinner. The resulting mixture will lower performance and jeopardize the bond strength of the adhesive.
- DO NOT store WA adhesives directly on the floor or against an exterior wall.
- WA adhesives and parts to be assembled should be kept at temperatures of 70°F (21°C) or above.
- Apply uniform pressure over 100% of the area to be bonded. A pinch roller works best. A 3” rubber “J” roller will provide acceptable pressure (30-40 psi).
- For easy cleanup of adhesive residue, see page E-1 Adhesive Removal Guide (p. 52).
- DO NOT use “hot press” application methods. The protective film IS NOT heat resistant.
- For easy cleanup of adhesive residue see page E-1 Adhesive Removal Guide (p. 52).
- Please refer to the Certified Product Data Sheet for VOC and HAPS data (p. 51).

Recommended Tools

Fabrication of Metal Laminates can be accomplished with tools and machinery normally associated with laminate, metal or woodworking shops. Wilsonart® Metal Laminates can be cut with most any conventional type saw; (table saw, skill saw, sliding saw) etc. The information following will assist you on the particular types that will make cutting these products easier and cleaner.

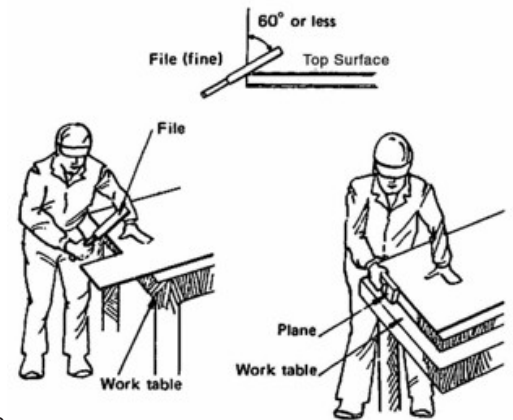
The following saw blades are recommended for cutting Wilsonart® Metal Laminates

- Triple Chip Grind (TCG) 14" (355mm) 120-tooth carbide tipped blade.
- Triple Chip Grind (TCG) 10" (255mm) 80-tooth carbide tipped blade.
- Alternating Tooth Bevel (ATB) 7.25" (185mm) 80-tooth carbide tipped blade.
- Alternate Top Bevel (ATB) 10" (255mm) 100-tooth carbide blade with a 5° hook angle.

Note: A file or 220-grit sandpaper and wood block may be needed to remove burring or curl back of the material.

Recommended Procedures

- When saw cutting Metal Laminates, it is best to cut WITH THE METAL FACE UP (Fig. 1); the height of the cutting blade should be as low as possible. When cutting, routing, sawing etc., leave the protective peel coat on the Metal Laminates to prevent scratching. In addition a carrier board will help in reducing vibration when sawing.
- Keeping the blades sharp creates cleaner edges and allows faster, easier, and safe cutting.
- Establish a standard feed speed and saw r.p.m. using scrap material, then always use them. Note: a very slow feed rate may cause delamination due to increased heat buildup local to the cut.
- Always check with your saw blade manufacturer for questions on the design or purpose of the particular blade in use.
- Make rough-cuts on the Metal Laminates, allowing for an overhang on each edge. Leaving a 1/8" overhang on faces and a 1/8" overhang on edge then finish with a router after bonding to the substrate. In a vertical or wall application the use of a divider or molding strip can be used to hide exposed edges.



Shears

Metal shears or guillotine-action can also be used for rough cutting, however a 1/8" overhang should be allowed for final finishing with a router. Make sure that the blades are sharp.

Routers

Routers must have a smooth base plate, so that the surface of the metal will not be scratched. Leave the protective peel coat on Metal Laminates. When routing use, a standard high-speed router with either a 1/4" or 1/2" diameter, 1-inch double flute carbide tipped laminate flush trim bit.

CAUTION: Always follow product, equipment, and/or tool manufacturers' recommendations and instructions carefully.

WARNING: Safety glasses and gloves MUST be worn for protection from metal shavings and sharp edges when you machine or handle Decorative Metals.

Files

Files for final edge finishing must be flat, with a smooth or fine rating. To keep from hitting the metal with the file handle, use files at least 10" long. Note: A 220-grit sandpaper and wood block can be used to remove any burring or curl back of the material.

Laminate Slitter

Laminate slitters can be used to cut the Metal Laminates, however a 1/8" overhang should be allowed for final finishing with a router.

Drills

Drills used for Metal Laminates should be high-speed steel (HSS) with point geometry of 118°. A bright tool finish is recommended.

Filter Bags

Filter bags normally used for wood and decorative laminate shavings may be damaged by metal shavings. There are a variety of tool manufacturers who offer fabricating tools and equipment. Some suggested contacts include:

Filter Bags:

Filter bags normally used for wood and decorative laminate shavings may be damaged by metal shavings.

Tool Suppliers:**Recommended Router Bits**

Amana Tool	800-445-0077 631-752-1300
Specialty Tools	800-669-5519
Wesley Tools. Ltdd	516-338-5555 800-397-6867
Guhdo	800-544-8436
Velepec	800-365-6636
DML/Bosch	800-242-7003
Leitz	800-253-6070
Onsrud Cutter	847-362-1560 800-234-1560
FS Tool	800-387-9723 905-475-1999
Forrest	800-733-7111
MSC Industrial Supply Co.	800-645-7270

Recommended Routers

Porter Cable	888-848-5175
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Recommended Table Saws

WMH Tool Group	800-248-0144
Delta	800-438-2486

Recommended Saw Blades

Specialty Tools	800-669-5519
Amana	800-445-0077
Popular Machinery & Tools, Inc.	800-610-7297 or 210-348-0783
Skarpaz	800-875-8030 or 415-467-7900

Bonding to the substrate

Typically backer sheets are applied to panels to insure balance; Wilsonart Type 203 is recommended. Apply it first to the substrate, and then apply the face material. Edges can be applied before or after the backer and decorative sheet. Note: The backs of Wilsonart® Metal Laminates are prepared for bonding. No further sanding is necessary.

The following instructions cover bonding with contact adhesives, which are typically used on laminate fabrication. If you use a PVA adhesive (WA3000 series), follow the manufacturer's instructions or Adhesive Technical Data Sheet. Keep the protective peel coat covering on the decorative sheet to prevent scratching or scuffing of the decorative face during bonding, rolling or clamping.

- Apply adhesive to both the substrate and the back of the material. Recommended coverage with Wilsonart spray contact adhesives is 2 grams per sq. ft.
- The coverage must be uniform and even, especially around the edges. DO NOT exceed the open time of the adhesive. This is the time when the substrate and material are ready to come together. Follow the Manufacturer's Adhesive Technical Data Sheet. All fabrication related to laminate bonding applies to Metal Laminates.

Apply the sheet carefully to the substrate. Remember, contact adhesives bond instantly, and parts cannot be repositioned. The use of dowel rods is recommended for repositioning.

Use a roller to apply maximum pressure. A nip or pinch roller works very well. Use as much pressure as you can without damaging the decorative surface. A Gundlach V-300 roller with a rubber wheel is recommended.

Before trimming the metal laminate edges, use one of the two methods described below to avoid scratching the decorative surface.

Method 1:

- Mask the surface with tape, covering the entire area, which the router base will pass.

Method 2:

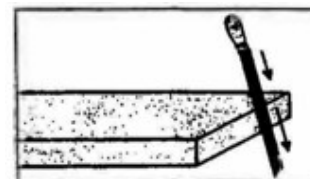
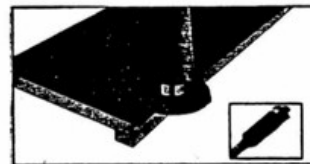
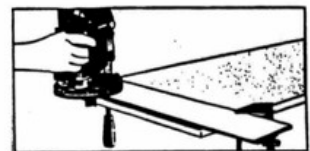
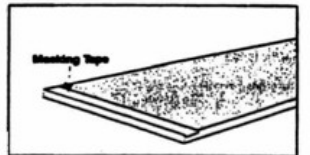
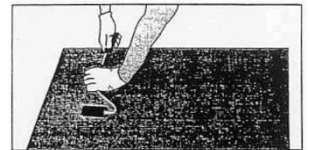
- Clamp a piece of wood to the surface of the metal; slide the router over the surface of the wood while trimming. Allow for the increased distance from the metal surface by using the router's depth adjustment.

Trimming Edges

- Use a hand router with flush trim carbide tipped bit and bottom bearing for surfaces.
- For the final finishing of the edge, use a flat file (smooth or fine-rated and at least ten inches long) to remove any burring or curl. Always file downward, toward the substrate.

Cold Forming Metal Laminates

- The recommended minimum cold-forming radius for all Metal Laminates in both the CD (crossdirection) and MD (machine direction) is 3".
- **Note: Cold radius tested with a contact adhesive.**



CARE & MAINTENANCE

- Cleaning and Caring for Wilsonart® Metal Laminates
- Clean Metal Laminates with warm water and mild household soaps, such as those used for hands or dishes. Ammoniated/ glass cleaners may be used. After cleaning, always wipe the surface completely dry with a soft, clean cloth. Never use cleaners that contain abrasives, acids, or alkalis, these harsh cleaners are not necessary and may cause marring or distortion.

Approved adhesive removal products

- Wilsonart 121 Adhesive Cleaner

The surfaces of Wilsonart® Metal Laminates should be cared for as if they were fine furniture. Although durable, it can be scratched /scuffed if used in applications where it will be exposed to repeated use.

Note: All Wilsonart® Metal Laminates are supplied with a protective peel coat to prevent surface damage or scratching.

Additional information on cleaning surface can be found on page E-1 (p. 52).

TECHNICAL DATA

General Standards

Currently, there are no National Electrical Manufacturers Association (NEMA) standards for decorative metal surfacing.

WARNING: Product (408) Metal Laminates conduct electricity. When using electrical tools, please use caution to prevent electrical shock and shorting from frayed wiring on your electrical equipment and/or tools.

Fire Tests: Product 408

Wilsonart® Metal Laminates have been tested in accordance with ASTM-E84, Steiner Tunnel Test.

Class 1 or A Rating		
Pattern	Flame Spread Index	Smoke Development Index
L6441 - Brite Brushed Sterling	15	5
L6442 - Satin Brushed Palladium		
L6443 - Satin Brushed Penny		
L6444 - Ribboned Brite Brushed Sterling		
L6445 - Ribboned Satin Brushed Palladium		
L6446 - Ribboned Satin Brushed Penny		
L6448 - Ribboned Matte Silver		
L6447 - Ribboned Satin Brushed Aged Gold		
L6452 - Vinyl Records		
L6454 - Bronze Age	20	5
L6449 - Sequin Brite Brushed Sterling	0	5
L6451 - Sequin Satin Brushed Palladium		
Class 2 or B Rating		
Pattern	Flame Spread Index	Smoke Development Index
L6455 - Hot Tin Roof	55	40
L6453 - Rough Cut	65	25



**Type 480
RE-COVER™ Decorative Metals**



Recommended Uses:

Wilsonart® RE-COVER™ Decorative Metals is designed to be used in interior applications. The product must be bonded to a suitable substrate, such as particleboard, medium density fiberboard, plywood with one A face, previously bonded high pressure decorative laminate, low pressure laminate (melamine board), latex painted, stained, or varnished wood surfaces. Wilsonart RE-COVER Decorative Metals may be installed on flat surfaces in both vertical and horizontal applications.

Basic Limitations:

Wilsonart RE-COVER Decorative Metals is not recommended for direct application to plaster, concrete walls, gypsum wallboard, polypropylene, polyethylene, polystyrene, or powder coated surfaces. Do not subject Wilsonart RE-COVER Decorative Metals to extremes in humidity, temperatures higher than 150°F for substantial periods of time, or intense, continuous, direct sunlight. Do not apply Wilsonart RE-COVER Decorative Metals if the surface temperature of the laminate or the substrate is below 50°F.

Shipping and Storage:

Wilsonart RE-COVER Decorative Metals may be shipped flat or rolled in a box. When shipped in a box, Wilsonart RE-COVER Decorative Metals must have the adhesive rolled to the outside (decorative side in). When Wilsonart RE-COVER Decorative Metals is shipped flat, it must have the adhesive side facing down (decorative side up). For long term storage, Wilsonart RE-COVER Decorative Metals should be stored flat (horizontally) with the adhesive side facing down (decorative side up).

It is important to properly acclimate both the Wilsonart RE-COVER Decorative Metals and the substrate prior to bonding. Condition both the laminate and the substrate in the same environment for 48 hours before fabrication. If rolled, unroll the Wilsonart RE-COVER Decorative Metals for the 48 hour acclimation period. Recommended conditioning and acclimation is 75°F and 50% relative humidity.

WARNING:

WARNING! Removal of old paint by sanding, scraping or other means may generate dust or fumes that contain lead. Exposure to lead dust or fumes may cause brain damage or other adverse health effects, especially in children or pregnant women. Wear an NIOSH-approved respirator to control lead exposure. Clean up carefully with a HEPA vacuum and a wet mop. Before you start, find out how to protect yourself and your family by contacting the National Lead Information Hotline at 1-800-424-LEAD (in US) or contact your local health authority.

Installation:

Please refer to the Decorative Metals product types for additional information.

If you are bonding over an existing substrate that is damaged, the surface may require repair to prevent an uneven appearance of the finished assembly. The Wilsonart technical services team recommends these products for repairing damaged high pressure decorative laminate or wood substrate: J-B Weld® WoodWeld, Elmer's® Carpenter's® Wood Filler, and Bondo® All-Purpose Putty. Be sure to read and follow the manufacturer's precautions and directions for use. Sand and clean all repaired areas before applying the Wilsonart® RE-COVER laminate.

Approved substrates must be used. They should be clean and free of residue. If bonding to an existing decorative surface, make sure it is adequately cleaned and dried before bonding. Suitable cleaning products include: Wilsonart® 110, Wilsonart® 121, Wilsonart® 130, Wilsonart® 131, Wilsonart® 131A, acetone, isopropyl alcohol, denatured alcohol, or Windex® with ammonia. DO NOT use a cleaner that will leave an oily residue. Allow proper dry time for all approved cleaners. Be sure to read and follow the manufacturer's precautions and directions for use. If bonding to a painted, stained, or varnished wood or wood veneer, make sure the surface is sanded smooth and uniform with #80 or #100 grit sandpaper. Remove all dust with a damp cloth. Allow to dry.

To precut Wilsonart RE-COVER Decorative Metals prior to bonding, we recommend using carbide tipped saw blades, router bits and laminate slitters. Cutting blades and router bits should be kept sharp and clean. Blades must cut into non-decorative side of laminate (adhesive side). When cutting on a table saw, place laminate face down (adhesive side up) to ensure a clean cut.

If you are using multiple sheets of Wilsonart RE-COVER Decorative Metals to cover an area, leave a gap between sheets to allow for proper laminate movement. A minimum gap of 1/16" is required between sheets of Wilsonart RE-COVER Decorative Metals used in non-environmentally controlled areas. A minimum gap of 1/32" is required between sheets of Wilsonart RE-COVER Decorative Metals in environmentally controlled areas.

Wilsonart RE-COVER Decorative Metals is not repositionable. Any attempts to reposition the laminate will result in inadequate bonding.

Prior to installation and before removing the peel sheet that covers the adhesive, dry fit the Wilsonart RE-COVER Decorative Metals to the substrate. Once you have indexed the laminate, remove 1"-2" of the peel sheet on one end and lightly tack it in place. Begin removing the peel sheet, making sure the opposite end is still properly aligned. Work your way down the entire length of the laminate sheet until the peel sheet is completely removed and the Wilsonart RE-COVER Decorative Metals is flat on the surface. Apply uniform bonding pressure (30-40 psi minimum) over the entire bonded surface using a mechanical pinch roller (recommended) or a 3" wide J-roller.

We do not recommend using a wooden block or other hand roller. If the Wilsonart RE-COVER Decorative Metals has been positioned incorrectly, it may be removed using a heat gun to soften the adhesive, then pulling the laminate away from the substrate.

Once a sheet is removed, it cannot be reapplied. Replace it with a new sheet of Wilsonart RE-COVER Decorative Metals.

If you are bonding a flat, self-edge to an exposed substrate's edge, the surface will require a cured skim coat to ensure adequate bonding. The Wilsonart technical services team recommends these products for the exposed substrate's flat edge: J-B Weld® WoodWeld, Elmer's® Carpenter's® Wood Filler, Bondo® All-Purpose Putty, and Wilsonart® 30 PVA Yellow Woodworking Adhesive.

Extruded edge banding can be handled using any one of the following options:

- 1) Leave extruded edge banding in place, and apply RE-COVER to top surface. This will leave the brown line of the laminate exposed.
- 2) Remove extruded type edge banding and replace with laminate edge banding using manufacturer's recommendations. Apply RE-COVER to top surface area.
- 3) Remove extruded edge banding, apply RE-COVER to top surface, and replace edging with the same type of extruded edge banding using manufacturer's recommendations.

A radius may be accomplished by using 735 material only. Using 735 material will allow for a minimum radius of 7 inches.

Once bonded, you can begin machining the Wilsonart RE-COVER assembly immediately. High tool speed and low feed speed are recommended for best results. Prior to routing edges, a razor may be used to score the adhesive side of the laminate to prevent the adhesive layer from rolling up during the process. To avoid stress cracking, do not use square-cut inside corners. All inside corners should have a minimum of 1/8" radius. Drill oversized holes for screws or bolts. Screws or bolts should be slightly countersunk into the face side of a laminate clad substrate.

Technical Bulletins





TECHNICAL & FABRICATION SERVICES

Fabrication Instructions for Using Wilsonart® Decorative Metals for Backsplash Applications

Wilsonart Decorative Metal Types:

Product Type 418, Decorative Metals with phenolic backer (0.024" metal with phenolic backer) Product Types 414, 415 and 419 (pure metal)

Recommended Substrates:

MDF or Particleboard

Alternative Substrates (marginal performance):

Drywall or Hardiboard

Note: Drywall is not a recommended or approved substrate for Wilsonart® Decorative Metals especially where large sections of Decorative Metals are applied. Drywall does not have sufficient internal bond strength and could result in delamination. Although Wilsonart recommends Particleboard or MDF as being a suitable substrate, the following steps will give the application the best chance for success.

Application Techniques

1. Apply to Hardiboard using construction mastic and or Liquid Nails (LN-933). Apply and spread the adhesive using a 1/8" x 1/8" V or square notched trowel. Keep the trowel straight, moving from side to side, while at the same time, moving down the wall. Use a J-Roller, and roll the entire area to insure proper bonding of the panel to the wall.
2. For drywall/sheetrock, 100% Silicone could be used. Apply and spread the adhesive with a 1/8" x 1/8" V- or square notched trowel. Keep the trowel straight, moving from side to side, while at the same time, moving down the wall. Use a J-Roller, and roll the entire area to insure proper bonding of the panel to the wall.
3. The decorative metal sheets can be secured to the wall at the perimeter with moldings. The decorative metal screw holes should be predrilled using a carbide bit. The moldings should lap over onto the metal, and then fastened to the wall passing directly through the Decorative Metal and into the wall studs. This procedure will give the drywall/sheetrock added structural integrity.
4. For recommended substrates (MDF or Particleboard), please refer to this Wilsonart Decorative Metals Fabrication Manual for specific installation details by product type.

Caution: Please consider heat tolerance for all components used in the application.



TECHNICAL & FABRICATION SERVICES

Wilsonart® Decorative Metals Heat Tolerance

General Guidelines for Decorative Metals without protective film and in an unbonded condition.

Manufacturer's recommended procedure includes the following steps: Type

414, GalvAlume® & Type 415 Metro Series can tolerate up to 200°F

Type 418, Phenolic Backed Aluminum - can tolerate up to 150°F (the tolerance of the adhesive used to laminate metal to phenolic core).

Type 419, Anodized Aluminum - has the greatest heat tolerance at 250°F continuous heat; intermittent heat tolerance of 300°F to 350°F.

Other considerations for Decorative Metals heat tolerance are:

1. Evaluate the heat tolerance of the adhesive used to laminate the metal to the substrate. Wilsonart's #950 and #800 heat tolerance is 200°F.
2. If mechanical fasteners are used in conjunction with the adhesive, then the maximum heat tolerance would apply.
3. The Decorative Metals heat tolerance is also determined by how well the metal is bonded to the substrate. If the adhesive is not applied properly and if the Decorative Metal is not fused properly to the substrate, the heat tolerance may be lower.



TECHNICAL & FABRICATION SERVICES

Procedure for Refinishing Product Type 416, Artisan Group

Manufacturer's recommended procedure includes the following steps: STEP 1

- Clean the metal surface thoroughly before application of any product. Follow the adhesives manufacturer's surface preparation recommendations on the can.

Note: Other cleaning products are: Wilsonart WA121 Solvent, mineral spirits or isopropyl alcohol.

STEP 2

- Apply clear spray adhesion promoter for aluminum according to manufacturer's directions and allow to dry. O'Reilly Auto Parts offers Bulldog CLEAR Adhesion Promoter manufactured by Kleen-Strip. Please call 800-398-3892 if questions about application of product.

STEP 3

- Apply Dupli-Color CLEAR Acrylic Lacquer according to manufacturer's directions. Contact www.duplicolor.com if questions.

OR, apply

Minwax® Water-Based Polycrylic Protective Finish (Clear Satin).

OR, apply

Minwax® Fast-Drying Polyurethane (Clear Satin).

To ensure success with the coating process, please follow the manufacturer's recommended application method. Always try a test application prior to coating the entire sheet.

Please note that the Wilsonart's Decorative Metals warranty is voided when the surface finish is removed and replaced.

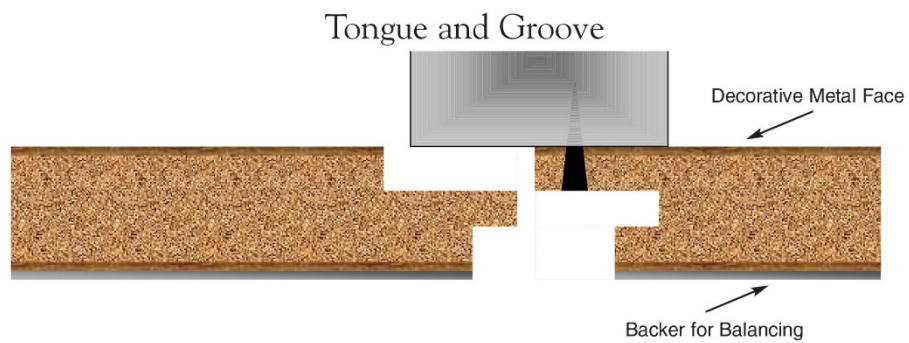
Prepared by:

Wilsonart Technical Services Department

Examples of wall panel systems from PSI, Temple, TX

Tongue and Groove

This method does not require any gluing technique, however, it can be assembled two different way



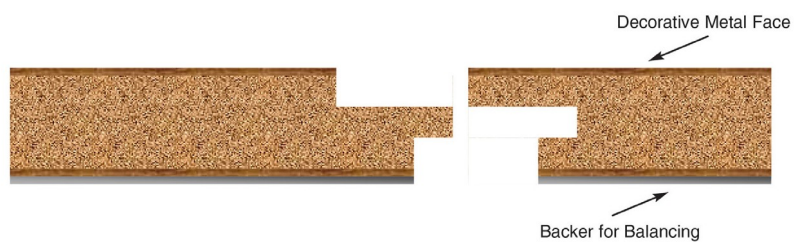
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Examples of wall panel systems from PSI, Temple, TX

Tongue and Groove

The first method is as easy as screwing the material to the studs. Screw a metal or wood screw into the stud making sure that the screw is countersunk. If the screw is not countersunk, then the adjoining panel will telegraph or will not fit.



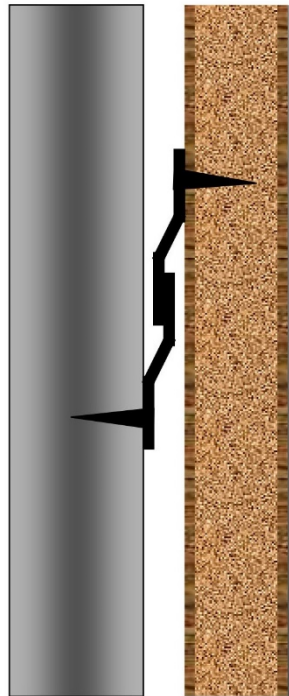
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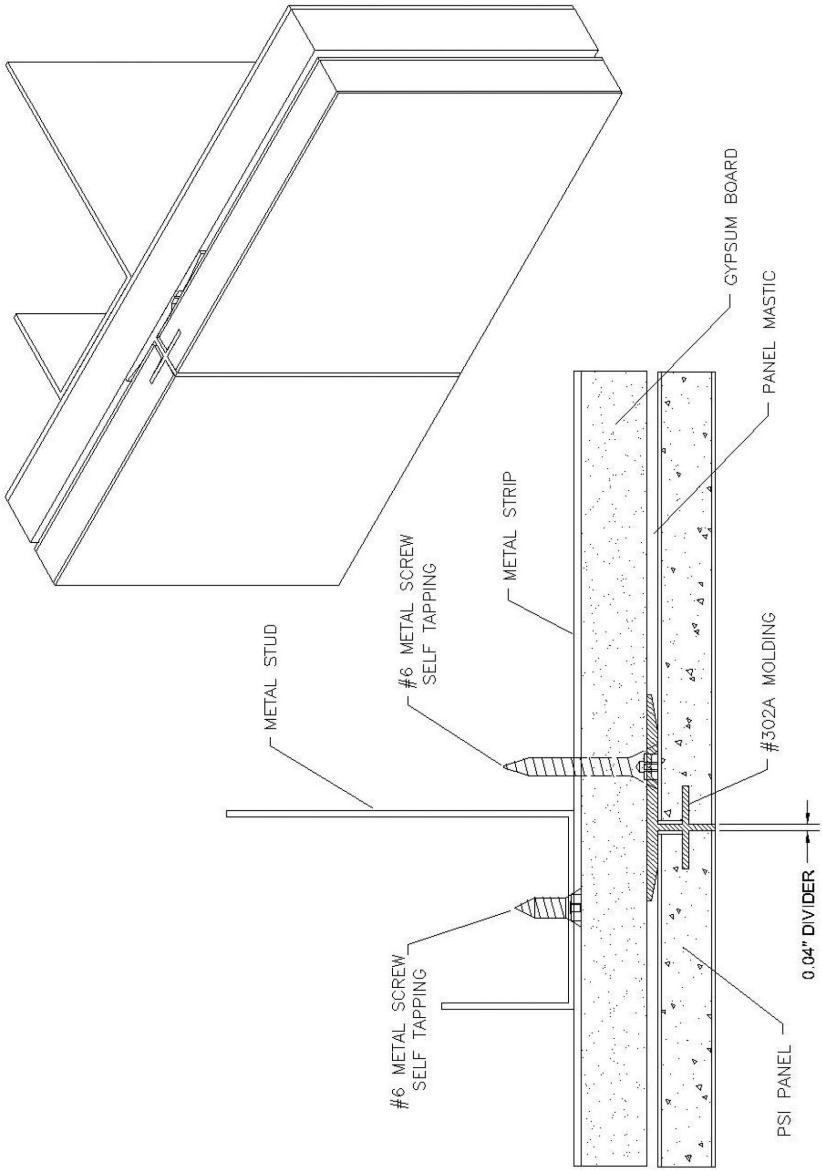


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Examples of wall panel systems from PSI, Temple, TX

310 System



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