CHEMETAL®

Technical Information

Index:

800 807-7341 | (413) 529-0718 | sales@chemetal.com | chemetal.com

Chemetal Product Reference

			Thickness			
100 Series	Sheet Size	Base Metal	HPL	Phenolic	Metal	Weight sq ft
101 Windows Aluminum	4' x 8'	Aluminum			0.025	.30 lb / sq ft
102 Micro-Steel Aluminum	4' x 8'	Aluminum			0.025	.30 lb / sq ft
103 Grille Aluminum	4' x 8'	Aluminum			0.025	.30 lb / sq ft
Magnetic and Dry Erase	Sheet Size	Base Metal	HPL	Phenolic	Metal	Weight sq ft
150 HPL Magnetic Board	4' x 8'	Iron/Melamine	0.033			.58 lb / sq ft
151 Black Magnetic Chalkboard	4' x 8'	Iron/Melamine	0.033			.58 lb / sq ft
152 White Gloss Magnetic Dry Erase	4' x 8' , 4' x 10'	Iron/Melamine	0.043			.58 lb / sq ft
153 White Satin Magnetic	4' x 8'	Iron/Melamine	0.043			.58 lb / sq ft
157 Lime Gloss Magnetic Dry Erase	4' x 8'	Iron/Melamine	0.043			.58 lb / sq ft
160 White Gloss Magnetic Dry Erase	4' x 8', 4' x 10'	Steel		0.05	0.023	.94 lb / sq ft
200 Series	Sheet Size	Base Metal	HPL	Phenolic	Metal	Weight sq ft
213 Lunaria	4' x 8'	Aluminum	0.055			.42 lb / sq ft
214 Diamondback	4' x 8'	Aluminum	0.055			.42 lb / sq ft
216 Footplate	4' x 8'	Aluminum	0.055			.42 lb / sq ft
217 Reptilian	4' x 8'	Copper	0.055			.42 lb / sq ft
218 Cobblestone	4' x 8'	Copper	0.055			.42 lb / sq ft
220 Venetian Wave	4' x 8'	Aluminum	0.055			.42 lb / sq ft
221 Argenta	4' x 8'	Aluminum	0.055			.42 lb / sq ft
223 Chromium	4' x 8'	Aluminum	0.055			.42 lb / sq ft
226 Venetian Vertical	4' x 8'	Aluminum	0.055			.42 lb / sq ft
227 Venetian Horizontal	4' x 8'	Aluminum	0.055			.42 lb / sq ft
230 Moonscape	4' x 8'	Copper	0.055			.42 lb / sq ft
231 Metawave	4' x 8'	Aluminum	0.055			.42 lb / sq ft
232 Metawave Dark	4' x 8'	Aluminum	0.055			.42 lb / sq ft
234 Starliner	4' x 8'	Aluminum	0.055			.42 lb / sq ft
235 Bling	4' x 8'	Aluminum	0.055			.42 lb / sq ft
238 Autumn Leaves	4' x 8'	Copper	0.055			.42 lb / sq ft
244 Pewter Wave	4' x 8'	Aluminum	0.055			.42 lb / sq ft
251 Sonoma	4' x 8'	Copper	0.055			.42 lb / sq ft
253 Metropolis	4' x 8'	Aluminum	0.055			.42 lb / sq ft
260 Champagne Leaf	4' x 8'	Aluminum	0.055			.42 lb / sq ft
262 Red Rock	4' x 8'	Copper	0.055			.42 lb / sq ft
264 Pewter Vines	4' x 8'	Aluminum	0.055			.42 lb / sq ft
273 Venetian Stainless Aluminum	4' x 8'	Aluminum	0.055			.42 lb / sq ft

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300 Series	Sheet Size	Base Metal	HPL	Phenolic	Metal	Weight sq ft
310 Antiqued Brushed	2' x 8', 2' x 10'	Brass		0.044	0.016	.706 lb / sq ft
313 Renaissance	4' x 8', 4' x 10'	Copper	0.043			.344 lb / sq ft
314 Mayan	4' x 8', 4' x 10'	Copper	0.043			.344 lb / sq ft
315 Canterbury	4' x 8', 4' x 10'	Copper	0.043			.344 lb / sq ft
317 Aurora	4' x 8', 4' x 10'	Copper	0.043			.344 lb / sq ft
318 Essex	4' x 8', 4' x 10'	Copper	0.043			.344 lb / sq ft
325 Statuary	2' x 8', 2' x 10'	Brass		0.044	0.016	.706 lb / sq ft
333 Franklin	4' x 8' , 4' x 10'	Aluminum		0.05	0.020	.284 lb / sq ft
337 Aged Brass	2' x 8', 2' x 10'	Brass		0.044	0.016	.706 lb / sq ft
338 Aged Brass Dark	2' x 8', 2' x 10'	Brass		0.044	0.016	.706 lb / sq ft
340 Monet	4' x 8', 4' x 10'	Copper	0.043			.344 lb / sq ft
343 Meteor	4' x 8'	Copper	0.043			.344 lb / sq ft
346 Graphite	4' x 8'	Aluminum		0.05	0.020	.284 lb / sq ft
349 Factory	4' x 8'	Aluminum		0.05	0.020	.284 lb / sq ft
350 Factory Dark	4' x 8'	Aluminum		0.05	0.020	.284 lb / sq ft
352 Alu Lite	4' x 8', 4' x 10'	Aluminum		0.05	0.020	.284 lb / sq ft
353 Alu Medium	4' x 8', 4' x 10'	Aluminum		0.05	0.020	.284 lb / sq ft
354 Alu Dark	4' x 8', 4' x 10'	Aluminum		0.05	0.020	.284 lb / sq ft
355 Lineup	4' x 8'	Copper	0.043			.344 lb / sq ft
370 3by6 Subway Shine	4' x 8'	Aluminum		0.05	0.020	.284 lb / sq ft
371 3by6 Subway Aged	4' x 8'	Aluminum		0.05	0.020	.284 lb / sq ft
372 3by6 Subway Dark	4' x 8'	Aluminum		0.05	0.020	.284 lb / sq ft
373 3by6 Grid Aged	4' x 8'	Aluminum		0.05	0.020	.284 lb / sq ft
374 3by6 Grid Dark	4' x 8'	Aluminum		0.05	0.020	.284 lb / sq ft
375 3by3 Aged	4' x 8'	Aluminum		0.05	0.020	.284 lb / sq ft
376 3by3 Dark	4' x 8'	Aluminum		0.05	0.020	.284 lb / sq ft
400 Series	Sheet Size	Base Metal	HPL	Phenolic	Metal	Weight sq ft
406 Circles	4' x 8'	Aluminum		0.05	0.020	.284 lb / sq ft
413 Linear (tints available)	4' x 8', 4' x 10'	Aluminum		0.05	0.020	.284 lb / sq ft
413-WW Linear Whitewash	4' x 8', 4' x 10'	Aluminum		0.05	0.020	.284 lb / sq ft
414 Nomadic (tints available)	4' x 8', 4' x 10'	Aluminum		0.05	0.020	.284 lb / sq ft
414-WW Nomadic Whitewash	4' x 8', 4' x 10'	Aluminum		0.05	0.020	.284 lb / sq ft
417 Nomadic Antiqued	4' x 8', 4' x 10'	Aluminum		0.055	0.025	.359 lb / sq ft
420 Cascade (tints available)	4' x 8', 4' x 10'	Aluminum		0.05	0.020	.284 lb / sq ft
423 Swirled Copper	2' x 8', 2' x 10'	Copper		0.042	0.016	.756 lb / sq ft
427 Placid (tints available)	4' x 8', 4' x 10'	Aluminum		0.05	0.020	.284 lb / sq ft
427-WW Placid Aluminum Whitewash	4' x 8', 4' x 10'	Aluminum		0.05	0.020	.284 lb / sq ft

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440 Crescendo (tints available)	4' x 8', 4' x 10'	Aluminum		0.05	0.020	.284 lb / sq ft
443 Plume	4' x 8', 4' x 10'	Aluminum		0.05	0.020	.284 lb / sq ft
444 Feathered	4' x 8', 4' x 10'	Aluminum		0.05	0.020	.284 lb / sq ft
449 Ripple	4' x 8'	Aluminum		0.05	0.020	.284 lb / sq ft
450 Cyclone	4' x 8'	Aluminum		0.05	0.020	.284 lb / sq ft
451 Serpentine	4' x 8'	Aluminum		0.05	0.020	.284 lb / sq ft
452 Ribbon	4' x 8'	Aluminum		0.05	0.020	.284 lb / sq ft
454 Fireworks	4' x 8'	Aluminum		0.05	0.020	.284 lb / sq ft
500 Series	Sheet Size	Base Metal	HPL	Phenolic	Metal	Weight sq ft
501 Noodle Bar (tints available)	4' x 8', 4' x 10'	Aluminum		0.05	0.020	.284 lb / sq ft
504 Grasshopper (tints available)	4' x 8', 4' x 10'	Aluminum		0.05	0.020	.284 lb / sq ft
505 Butterfly Effect (tints available)	4' x 8', 4' x 10'	Aluminum		0.05	0.020	.284 lb / sq ft
600 Series	Sheet Size	Base Metal	HPL	Phenolic	Metal	Weight sq ft
600 Weathered Aluminum	4' x 8'	Aluminum		0.055	0.025	.359 lb / sq ft
601 Deep Bronze Aluminum	4' x 8'	Aluminum		0.055	0.025	.359 lb / sq ft
605 Wander Aluminum	4' x 8'	Aluminum		0.055	0.025	.359 lb / sq ft
606 Blackened Aluminum	4' x 8'	Aluminum		0.055	0.025	.359 lb / sq ft
607 Core Aluminum	4' x 8'	Aluminum		0.055	0.025	.359 lb / sq ft
608 Gotham Aluminum	4' x 8'	Aluminum		0.055	0.025	.359 lb / sq ft
609 Gilt Aluminum	4' x 8'	Aluminum		0.055	0.025	.359 lb / sq ft
610 Khaleesi Aluminum	4' x 8'	Aluminum		0.055	0.025	.359 lb / sq ft
700 Series	Sheet Size	Base Metal	HPL	Phenolic	Metal	Weight sq ft
701 Polished Aluminum	4' x 8', 4' x 10'	Aluminum	0.038			.316 lb / sq ft
702 Brushed Aluminum	4' x 8', 4' x 10'	Aluminum	0.032			.316 lb / sq ft
703 Polished Brass Aluminum	4' x 8', 4' x 10'	Aluminum	0.038			.316 lb / sq ft
704 Brushed Light Brass Aluminum	4' x 8', 4' x 10'	Aluminum	0.032			.316 lb / sq ft
706 Satin Copper	4' x 8', 4' x 10'	Copper	0.032			.316 lb / sq ft
710 Stainless Steel	96" x 40"	Steel	0.032			.316 lb / sq ft
711 Ambient Stainless Steel	4' x 8'	Steel	0.032			.316 lb / sq ft
712 Brushed Stainless Steel	4' x 8'	Steel	0.032			.316 lb / sq ft
719 Satin Silver Aluminum	4' x 8', 4' x 10'	Aluminum	0.032			.316 lb / sq ft
720 Brushed Smoked Aluminum	4' x 8', 4' x 10'	Aluminum	0.032			.316 lb / sq ft
721 Oiled Bronze Aluminum	4' x 8', 4' x 10'	Aluminum	0.032			.316 lb / sq ft
727 Light Stainless Steel Aluminum	4' x 8', 4' x 10'	Aluminum	0.032			.316 lb / sq ft
791 Natural Brushed Aluminum	4' x 8', 4' x 10'	Aluminum	0.032			.316 lb / sq ft
796 Stainless Steel Aluminum	4' x 8', 4' x 10'	Aluminum	0.032			.316 lb / sq ft

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800 Series	Sheet Size	Base Metal	HPL	Phenolic	Metal	Weight sq ft
801 Polished Chrome	2' x 8', 2' x 10'	Brass		0.042	0.016	.706 lb / sq ft
802 Satin Chrome	2' x 8', 2' x 10'	Brass		0.042	0.016	.706 lb / sq ft
803 Polished Solid Brass	2' x 8', 2' x 10'	Brass		0.042	0.016	.706 lb / sq ft
804 Satin Solid Brass	2' x 8', 2' x 10'	Brass		0.042	0.016	.706 lb / sq ft
812 Satin Smoked Chrome	2' x 8', 2' x 10'	Brass		0.042	0.016	.706 lb / sq ft
814 Satin Golden Bronze	2' x 8', 2' x 10'	Bronze		0.042	0.016	.731 lb / sq ft
900 Series	Sheet Size	Base Metal	HPL	Phenolic	Metal	Weight sq ft
901 Polished Aluminum	4' x 8', 4' x 10'	Aluminum		0.055	0.025	.359 lb / sq ft
902 Brushed Aluminum	4' x 8', 4' x 10'	Aluminum		0.055	0.025	.359 lb / sq ft
903 Polished Brass Aluminum	4' x 8', 4' x 10'	Aluminum		0.055	0.025	.359 lb / sq ft
904 Brushed Light Brass Aluminum	4' x 8', 4' x 10'	Aluminum		0.055	0.025	.359 lb / sq ft
906 Brushed Copper Aluminum	4' x 8', 4' x 10'	Aluminum		0.055	0.025	.359 lb / sq ft
908 Satin Black Aluminum	4' x 8', 4' x 10'	Aluminum		0.055	0.025	.359 lb / sq ft
909 Satin Silver Aluminum	4' x 8', 4' x 10'	Aluminum		0.055	0.025	.359 lb / sq ft
910 Satin Gold Aluminum	4' x 8', 4' x 10'	Aluminum		0.055	0.025	.359 lb / sq ft
911 Polished Smoked Aluminum	4' x 8', 4' x 10'	Aluminum		0.055	0.025	.359 lb / sq ft
912 Satin Bronze Aluminum	4' x 8', 4' x 10'	Aluminum		0.055	0.025	.359 lb / sq ft
914 Cross Hatch Aluminum	4' x 8', 4' x 10'	Aluminum		0.055	0.025	.359 lb / sq ft
915 Brushed Brass Aluminum	4' x 8', 4' x 10'	Aluminum		0.055	0.025	.359 lb / sq ft
916 Brushed Pewter Aluminum	4' x 8', 4' x 10'	Aluminum		0.055	0.025	.359 lb / sq ft
917 Brushed Black Aluminum	4' x 8', 4' x 10'	Aluminum		0.055	0.025	.359 lb / sq ft
924 Bronze Stainless Aluminum	4' x 8', 4' x 10'	Aluminum		0.055	0.025	.359 lb / sq ft
925 Brushed Medium Bronze	4' x 8', 4' x 10'	Aluminum		0.055	0.025	.359 lb / sq ft
927 Light Stainless Aluminum	4' x 8', 4' x 10'	Aluminum		0.055	0.025	.359 lb / sq ft
928 Clear Ambient Aluminum	4' x 8', 4' x 10'	Aluminum		0.055	0.025	.359 lb / sq ft
929 Stainless Ambient Aluminum	4' x 8', 4' x 10'	Aluminum		0.055	0.025	.359 lb / sq ft
931 Brushed Golden Aluminum	4' x 8', 4' x 10'	Aluminum		0.055	0.025	.359 lb / sq ft

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GENERAL WARRANTY

In the production of metal designs and laminates some surface irregularities and color and pattern variations will appear. We recommend that you inspect the material before cutting or laminating. If any material proves to be defective, Chemetal will be liable for the cost of that material only. No other warranty is expressed or implied.

APPLICATIONS

Chemetal metal designs and laminates are recommended for interior use only on vertical and light-duty horizontal surfaces. Please contact Chemetal regarding any uncertainty about the use of our product in an application.

When used on other horizontal surfaces the laminates should be protected under glass or other equivalent materials. Caution should be taken on surfaces that may be exposed to harsh chemicals, acidic type acids or beverages (alcoholic, colas, etc.) when the surface will not be cleaned for lengthy periods of time.

STORAGE AND HANDLING

Store flat, not on edge. Chemetal should be stored face-up in a cool, dry area and in a completely supported flat position. Use a top sheet of chipboard or similar material to hold stored sheets flat. Protect material from twist, rack and edge damage.

To prevent surface distortion, large sheets should be handled by two people and transported face up. Do not roll solid metal designs in the #100, #300, #400, #500, #600, #800 and #900 Series. If materials are to be rolled, care must be taken to avoid bending. Do not compress coils. Material with a backer must have the face out. Rolling with the face in will crack the backing material. Roll loosely to a minimum diameter of 18 inches.

A short, helpful video on properly handling Chemetal can be viewed at: chemetal.com>Downloads>Videos> How to Handle or at this link: http://www.chemetal.com/videos#!prettyPhoto/3/

PROTECTIVE MASK

Although Chemetal sheets are supplied with a protective mask, care should be taken when handling them. Do not expose sheets to light or excessive heat for long periods of time. This may cause problems with the removal of the protective mask.

It is recommended to leave this mask on the surface of the laminates during processing work. Nevertheless, color uniformity and other quality checks should be carried out on the sheets beforehand by simply lifting up the edge of the mask and lying it back down.

CLEANING AND MAINTENANCE

Clean with a soft cloth using mild soap and water or nonabrasive glass and metal cleaning liquids. Do not use ammonia, abrasive cleaners or pads or harsh solvents.

SHIPPING

Chemetal recommends that all sheets of solid metal be shipped flat. The customer assumes all responsibility for sheets of solid metal that are rolled and shipped in a carton(s).

Chemetal cannot roll sheets of 48" wide metal with an added laminate backer, since these are essentially solid metal sheets with added backer. Therefore, 48" wide sheets with a laminate backer added by Chemetal must be shipped flat. This does not include HPL metals (which are essentially a metal foil on a high pressure laminate backer) which may be rolled and shipped in a carton. It is often cost effective to ship HPL metals flat for orders greater than four sheets.

Magnetic Laminates (#150 Series) and #160 Magnetic Dry Erase cannot be rolled. Doing so will create a permanent "kink" in their steel foil (#150 Series) and steel base material.

SUBSTRATE PREPARATION

A warm and dry storage environment must be provided for all Chemetal products, substrates and adhesives prior to fabrication and installation. A normal temperature of 75° F and a relative humidity of 45% to 50% provide ideal storage conditions.

We recommend that all Chemetal products, adhesives and the substrates they are to be bonded to remain in the same environment for a period of five to seven days for optimal pre-conditioning. A minimum of 48 hours is recommended for pre-conditioning. These times are recommended although decorative metal laminates have minimal dimensional change.

Following these recommendations will allow the adhesive to create a strong and firm bond between the substrate and the Chemetal laminate which will minimize potential dimensional change after lamination.

LAMINATION: BALANCING SHEET

We recommend the use of balancing sheets. They can help ensure balanced construction, prevent substrate warping and can act as a moisture barrier. If possible, balanced construction should be used with sheets of equivalent expansion and shrinkage ratios. Please note that metal laminates experience minimal if any change in dimension. Chemetal is sometimes able to provide seconds quality material at a discounted price for use as balancing sheets. Please inquire with us.

LAMINATION: SUBSTRATES

Proper substrates must be used and careful bonding procedures observed. Substrates should be good quality plywood, high density particleboard, high quality fiberboard or MDF. Acrylics can be a suitable substrate, especially in smaller sizes, like in retail fixturing. The more resistant the substrate is to dimensional change (shrinkage and/or expansion from changes in humidity and temperature) the better the long-term results.

Sheet rock is not a recommended substrate. It's surface is too irregular, it will project imperfections and it eagerly absorbs water and distorts.

The face of the substrate must be smooth and free of grease, wax, dust, chips and other foreign matter. When using reflective decorative metal surfaces it is imperative that the bonding surface is absolutely flat or distortions in the reflectiveness may occur.

LAMINATION: CONDITIONING

It is recommended that all substrates, adhesives and Chemetal laminates be stored at room temperature (75°F) with a relative humidity of 45 to 50% for at least 48 hours prior to lamination. All materials should be stored in the same environment where fabrication or installation will take place under the above conditions. A five to seven day period of time is recommended for optimal pre-conditioning in a warm and dry environment. Lamination performed in cold temperatures may affect long-term results.

LAMINATION: FABRICATED PARTS

The fabricated parts should be stored for at least 48 hours before exposure to extreme temperature or humidity changes. Most contact adhesives require this minimum time to reach initial bond strength. Following these procedures allows the metal to bond firmly to the substrate.

LAMINATION: ON AND OFF-SITE

These procedures should be followed when the lamination is to be completed on the job site. Any lamination that is completed in conditions that are different than the expected day to day living conditions may result in failure of the application as previously noted. All heating and air conditioning systems should be operating to achieve expected living conditions before any lamination or installation takes place on a job site. Failure to comply with these recommendations may cause failure of your application.

LAMINATION: DIMENSIONAL CHANGE

Most wood substrates experience a change in dimension that may be significantly different than that of metal designs and laminates. This difference may cause the metal to pull away from the substrate or buckle at the weakest point of adhesion.

To prevent this, sufficient spacing must be provided between and at each end of sheets or strips to accommodate possible linear expansion from the ambient temperature range at the installation site. Minimum spacing of 1/32" is recommended but a more accurate determination can be made by allowing 1/100" for each 96" of metal surface for each 10 degrees Fahrenheit of anticipated temperature change.

If you are not sure how any metallic laminate will work for your particular application, we suggest you test the application system you have selected under production and/or installation site conditions.

LAMINATION: ADHESIVES

We recommend the use of a mechanical fastening system when using Knockout (#100 Series) finishes.

Chemetal laminates may be laminated with many of the conventional adhesives normally used with plastic laminates, such as many contact cements. Check with your adhesive supplier to make sure the adhesive you select is suitable for your application. In all cases, the adhesive manufacturer's instructions should be followed as to the use of the adhesive and substrate preparation.

Please see information in this document regarding Chemetal low pressure laminate backer and adhesive requiring excessive heat.

To clean off adhesives, use a solvent like alcohol, benzene, naphtha or mineral spirits. Do not use ammonia, abrasive cleaners or pads or harsh solvents. Do not use solvents that attack lacquers. It is recommended that you test your adhesive system and/or cleaning agents with a sample piece of metal.

LAMINATION: BONDING

For best results, it is recommended that the back of any solid metal be scratched with Scotch Brite pads prior to lamination.

To ensure a good bond, consult and follow the adhesive manufacturer's instructions on preparation of substrates, surfaces and adhesive application. All types of adhesive must be applied evenly and uniformly. Globules may transfer through the surface during lamination and starvation areas may cause long-term delamination. There must be no bridging and positive bonding pressure must be applied uniformly and progressively over the entire surface.

To bond Chemetal to your substrate after gluing, pressure must be firmly and evenly applied over the entire surface using a rotary or platen press. The use of hand or "J" rollers is not recommended for laminating full size sheets of Chemetal. They can be used for laminating strips as long as firm, even pressure is applied to the entire length.

Once you have started to lay down a piece of Chemetal do not try to realign it. While you may be able to force it into position, you will put stress into the metal, which may cause buckling and bond failure during a short period of time. Chemetal sheets will readily conform to the surface of your substrate. For a smooth, flat surface appearance, extra care may be required in surface preparation and lamination. A laminate backer sheet is available upon request for finishes that are not already supplied with one if you determine that your application requires the additional support.

HIGH PRESSURE AND LOW PRESSURE LAMINATES FROM CHEMETAL: THE DIFFERENCES

Chemetal offers many HPL metal laminates in the #200, #300 (not all designs) and #700 Series. HPL is an abbreviation for high pressure laminate. These designs are a thin metal foil atop a laminate backer. They are bonded together all at one time - metal foil, layers of craft paper and glue. Many other Chemetal designs are offered with an optional non-standard laminate backer that we add in-house. This is a low pressure laminate, it is applied with a pinch roller using an adhesive tape to apply a thicker piece of metal to an already created laminate backer.

Low pressure laminates include any design with an optional non-standard laminate backer in the #100, #400, #500, #600, #800 and #900 Series plus #310, #325, #337 and #338 (these last 4 come standard with a low pressure laminate backer).

Do not apply Chemetal low pressure laminates with excessive heat.

Because of their different construction, low pressure laminates have different performance characteristics than high pressure laminates.

They cannot be exposed to heat in excess of 150 degrees Fahrenheit without potentially causing their adhesion to the backer to fail.

This prohibits the use of low pressure laminates using hot melt glue systems and edgebanding machines using glues that create adhesion at temperatures in excess of 150 degress Fahrenheit.

CUTTING, MACHINING, ROUTING AND SAWING

CAUTION

In all cutting, machining and finishing procedures safety goggles, gloves, long pants and long-sleeved shirts must be worn and precautions must be taken to protect eyes from metal particles. Caution should be exercised in handling pieces since burred edges can cause cuts. Metallic laminates will conduct electricity and can cause shocks or short circuits when in contact with ungrounded electrical circuits.

CUTTING AND MACHINING

Most hand and power woodworking equipment and techniques may be used to work with Chemetal's metallic laminates. For laminates that are solid metals, some adjustments may be required in handling and processing techniques. All blades must be sharp, and the use of carbide-tipped cutters and multi-fluted router bits are recommended. Dull cutters create excessive chipping and burring and reduce the quality of the work.

When routing, the less material removed the better. It is also important that the face of the material be protected from the base plate of the router. To remove any burrs that may occur, use a smooth mill bastard file to feather all corners and edges. Always file down on the decorative surface. Air operated files may be used.

When cutting finish #710, #711 and #712 on a table saw, panel saw etc., the stainless steel layer must be facing up. The travel speed should be approximately 16-20 feet per minute. The diameter of the blade can be from 7" to 16" with a 6 degree negative hook, 13mm pitch, triple grind carbide blade. It is recommended to shut your exhaust system off while cutting stainless steel because sparks may occur.

ROUTING

Routing may be done using electric or air powered routers. Sharp multi-fluted carbide cutters are necessary; the larger the diameter of the cutter the better the results. The speeds recommended are the same as those used in standard woodworking practices.

It is important to use a router having adequate horsepower to maintain cutting speeds. It is also important that the cutter travel direction is against the cutter rotation. For edge trimming, high speed trimmers should be used (approximately 22,000 RPM) and will produce smooth burr-free edges. The less material cut, the smaller the burr: 1/8" of material should be the maximum. Use special care at corners to avoid tearing or bending of the metal. Protect the surface from scratches by riding the router base on a strip of .020" backing sheet or equivalent. If a bearing guide is to roll on the surface, it must be completely free rolling. Use a smooth mill bastard file to feather all corners and remove burrs from machined edges. Always file down on the decorative surface. Air operated files may also be used.

When cutting on CNC type routers, testing showed that 3 fluted solid carbide bits gave the best results for routing finish #710, #711 and #712. The speed of the router should be approximately 7,000 to 8,000 RPM, and the travel speed of the router would be approximately 10-15 feet per minute. The shank diameter would be ½" to ¾". The length of the router bit can be from 3" to 4". The up cut or down cut determines which way the finished side of the material will face up. The right hand twist determines the face to be down and the left hand twist determines the face to be up.

Do not force the router through the material. A constant feed rate will produce smoother cuts. Note: dull or damaged bits will tear, scorch, melt or even delaminate laminated material.

SAWING

To minimize burring and edge distortion, it is important that the saw blade teeth cut into the decorative face, with the blade height about 1/4" above the material, and the saw access plate refitted to reduce free space surrounding the blade. This may be accomplished by using 1/4" hard board as an overlay carrier board. Holding down on either side of the blade helps reduce chatter. Please see special instructions for sawing finishes #710, #711 and #712

General rules for selecting saw blades for 3450 RPM table saw:

- Sharp carbide tip blade
- Blade diameter: 8" to 14"
- Number of teeth: the more teeth per inch the better the results
- Pitch: 0.417" or less
- Rake angle: 10 degrees or less (zero degrees works well)
- Kerf: the thicker the blade the less chatter
- Grind: uni-chip or triple-chip

Do not force material through saw. A constant feed rate will produce smoother cuts. Blade wax will promote better cuts and longer tool life. Note: dull or damaged blades will tear, scorch, melt or even delaminate laminated material. It is recommended that you sandwich the metal between two substrates in all sawing operations. The use of a carrier sheet during cutting may be a viable option.

BENDING AND FORMING

Any metal without a laminate backer can be bent to wrap around square or radiused corners.

RECOMMENDATIONS BY SERIES

#150, #200, #300, #700 SERIES

All radius bending should be handled in the same manner as all grades of non-post forming high pressure decorative laminates.

#800 SERIES

Outside radii are possible down to 10" when the product is used with a laminate backer. For smaller radii, the material must be used without laminate backer, order as "metal only." Inside radii can only be achieved with metal without a laminate backer.

#100, #400, #500, #600, #800, #900 SERIES

Any solid metal can be bent to wrap around square or radiused corners. We suggest that the metal be pre-formed to the desired radius prior to lamination. For a sharp, crisp bend, scribe or score the face of the metal on the line where it is to be bent using a sharp razor knife and a straight edge, approximately 1/3 into the thickness of the metal. (Note: when bending to a tight radii, it is normal for some slight crazing of the anodized surface layer to occur.) On radiused corners use hose clamps or hand-held pressure tools or rolling tools that will enable the metal to conform to the substrate contours.

Although these metals have very little "spring back," extra-firm laminating pressure must be applied just in front of and following the corner, and on curved areas. Also, some pre-forming of the metal sheet will help the material to bond properly. For a slightly radiused corner, barely scribe the metal with a "V" cutter. Use caution when folding. The scored section cannot be repeatedly opened and closed as it will eventually break off.

GENERAL

The user of Chemetal products must determine the suitability of products for any particular purpose and use, including the establishment of his or her own procedures for fabrication and installation of these products. The information supplied is a general guideline and a supplement to tool manufacturer's recommendations as to proper use and capabilities of their equipment. This information is believed to be reliable but no warranty is expressed or implied.

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APPLICATION

Product is recommended for vertical surfaces, but may be used in light duty horizontal areas.

BASE MATERIAL

Steel containing varied alloys.

MATERIAL SPECIFICATIONS

Size: 48" x 96" (4' x 8'), 48" x 120" (4' x 10')
Thickness: .023", .05 w/backer
Weight per sheet: 30 lbs. (.94 lbs./sqft)

SHIPPING

Material should be shipped flat, with adequate protection on all sides, faces and corners.

APPEARANCE

The surface of the sheet is a white dry erase coating.

CLEANING

Clean the surface using light-duty conventional cleaners such as mirror or glass cleaners. Do not use cleaners that contain abrasives and try to avoid cleaners with ammonia. Blown air or dusting is another recommended cleaning method.

SURFACE RESISTANCE

The surface is not resistant to scratching. It may be used in horizontal applications, but must be considered light duty. It should be used in vertical or horizontal applications where temperatures don't exceed 160˚F. Maximum heat resistance temperature is 160˚F.

HOW TO PROCESS

The sheets are shipped with a protective mask. Quality checks should be carried out on the sheets beforehand.

CUTTING

The steel can be processed utilizing various types of metal working equipment and hand tools. Additionally, Chemetal can provide cut-to-size- pieces to aid installation. Charges and minimums apply.

Because alloys in steel can create sparks, dust collection systems must be turned off or disengaged.

Examples of hand tools include circular, band or jig saws equipped with Bi-Metal blades such as the Lenox Bi-Metal Jig Saw Blades, Lenox Metal Cutting Circular Saw Blades, Lenox Bi-Metal Hole Saws and Lenox Air Saw Blades for use in pneumatic machine cutting.

Examples of metal working equipment include shears, brakes, rolls, waterjet cutting and plasma arc cutting.

NOTE: If a torch or plasma arc cutting system is used to cut the parts, the protective wrap should be removed and moved away from the work area prior to cutting to avoid potential fire from the heat and sparks generated.

SAFETY NOTE

When handling this material always utilize safe lifting and carrying practices. When working with or cutting the materials always utilize proper Personnel Protective Equipment specified by the manufacturer of the equipment or cutting tool manufacturers.

BACKER MATERIALS

The steel may be laminated to materials such as fiberboard, particleboard, veneer plywood, plywood and plasterboards, as well as rigid foams and metals.

BONDING

Conventional glues and adhesives and special purpose thermo-setting resins or solvent based contact adhesives may be used for lamination. Material may also be fastened mechanically. Pinch rolling the material is also recommended. If necessary, balancing should be done with sheets of equivalent shrinking and expanding ratios.

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LAMINATION

It is recommended that all substrates, adhesives and Chemetal laminates be stored at room temperature (75°F) with a relative humidity of 45 to 50% for at least 48 hours prior to lamination. All materials should be stored in the same environment where fabrication or installation will take place under the above conditions.

A five to seven day period of time is recommended for optimal pre-conditioning in a warm and dry environment. Lamination performed in cold temperatures may affect long-term results. We recommend the use of balancing sheets. They act as a moisture barrier to ensure a balanced construction. If possible, balanced construction should be used with sheets of equivalent expansion and shrinkage ratios. Please note that metal laminates experience minimal, if any, change in dimension. The fabricated parts should be stored for at least 48 hours before exposure to extreme temperature or humidity changes. (Most contact adhesives require this minimum time to reach initial bond strength). Following these procedures allows the metal to bond firmly to the substrate. The above procedures should be followed when the lamination is to be completed on the job site. Any lamination that is completed in conditions that are different than the expected day to day living conditions may result in failure of the application as noted above. All heating and air conditioning systems should be operating to achieve expected living conditions before any lamination or installation takes place on a job site.

Failure to comply with these recommendations may cause failure of your application. Most substrates experience a change in dimension that may be significantly different than that of metal. This difference may cause the metal to pull away from the substrate or buckle at the weakest point of adhesion.

Sufficient spacing must be provided between and at each end of sheets or strips to accommodate possible linear expansion from the ambient temperature range at the installation site. Minimum spacing of 1/32" is recommended but a more accurate determination can be made by allowing 1/100" for each 96" of metal surface for each 10 degrees Fahrenheit of anticipated temperature change.

If you are not sure how any Chemetal will work for your particular application, we suggest you test the application system you have selected under production and/or installation site conditions.

Proper substrates must be used and careful bonding procedures must be observed. Substrates should be of good quality plywood, high density particleboard or high quality fiberboard. The more resistant the substrate is to dimensional change (shrinkage and/or expansion from changes in humidity and temperature) the better the long-term results will be.

The face of the substrate must be smooth and free of grease, wax, dust, chips and other foreign matter.

For best results, it is recommended that the back of any solid metal be scratched with Scotch Brite pads prior to lamination.

To ensure a good bond, consult and follow the adhesive manufacturer's instructions on preparation of substrates, surfaces and adhesive application. All types of adhesive must be applied evenly and uniformly. There must be no bridging, and positive bonding pressure must be applied uniformly and progressively over the entire surface. To bond metal to your substrate after gluing, pressure must be firmly and evenly applied over the entire surface using a rotary or platen press. If possible, balanced construction should be used with sheets of equivalent expansion and shrinkage ratios. The use of hand or "J" rollers is not recommended for laminating metallic laminate sheets. They can be used for laminating strips as long as firm, even pressure is applied to the entire length.

Once you have started to lay down a piece of metallic laminate do not try to realign it. While you may be able to force it into position, you will put stress into the metal, which may cause buckling and bond failure during a short period of time. Chemetal's metallic laminates will readily conform to the surface of your substrate. For a smooth, flat surface appearance, extra care may be required in surface preparation and lamination. A phenolic backer sheet is available upon request for finishes that are not already supplied with one if you determine that your application requires the additional support.

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CHEMETAL®

Technical Information
#710 Stainless Steel
#711 Ambient Stainless Steel
#712 Brushed Stainless Steel

APPLICATION

Product is recommended for vertical surfaces, but may be used in light duty horizontal areas.

#710 MATERIAL SPECIFICATIONS

Size: 40" X 96" (3.33' x 8')
Thickness: .032"
Weight per sheet: 8.5 lbs.

#711 MATERIAL SPECIFICATIONS

Size: 48" X 96" (4' x 8')
Thickness: .032"
Weight per sheet:10.1 lbs.

#712 MATERIAL SPECIFICATIONS

Size: 48" X 96" (4' x 8')
Thickness: .03"
Weight per sheet: 10.1 lbs.

HYGIENE CRITERIA

Odorless, suitable for use with foodstuff.

CLEANING

Clean the surface using a conventional cleaning agent such as mirror or glass cleaners, or those containing ammonia, etc. Do not use cleaners that contain abrasives.

SURFACE RESISTANCE

The surface is resistant towards household liquids. However, it is not resistant to scratching. It may be used in horizontal applications, but must be considered light duty. It should not be used in vertical or horizontal applications where temperature exceeds 160˚F. Maximum heat resistance temperature is 160˚F.

HOW TO PROCESS

The sheets are covered with a protective mask. It is recommended to leave this mask on the surface of the laminates even during processing work. Nevertheless, color uniformity and other quality checks should be carried out on the sheets beforehand by simply lifting up the edge of the mask and then laying it back down.

ATTENTION

Do not expose sheets to light for long periods of time. This may cause problems with the removal of the protective mask.

BASE MATERIALS

The stainless steel laminate may be laminated to materials such as fiberboard, particleboard, veneer plywood, plywood and plasterboards, as well as rigid foams and metals.

BONDING

Conventional glues and adhesives–white glue (PVA) special purpose thermo-setting resins or solvent based and water based contact adhesives may be used for lamination. Pinch rolling the material is also recommended. If necessary, balancing should be done with sheets of equivalent shrinking and expanding ratios.

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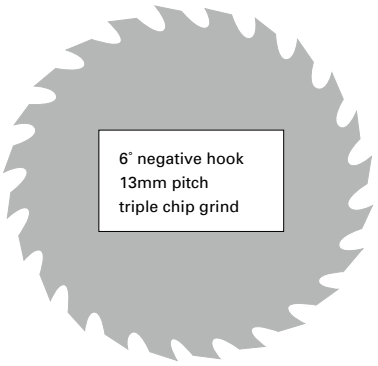
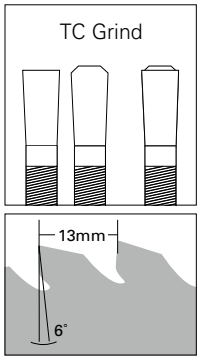
SAWING

TABLE AND PANEL SAWS

When cutting on table saws, panel saws, etc. the stainless steel layer must always be facing up. The speed of the travel should be approximately 16-20 feet per minute. The blade diameter can be from 7 inches to 16 inches with a 6 degree negative hook, 13mm pitch, triple chip grind carbide blade.





CNC ROUTERS

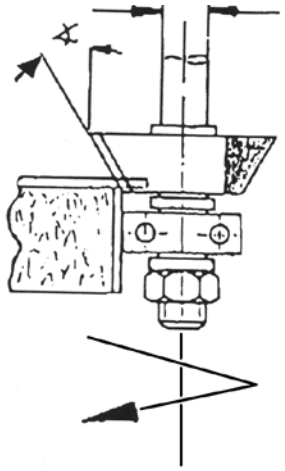
When cutting on CNC-type routers, in-house testing showed that the 3 fluted solid carbide bits gave the best results. The speed of the router would be approximately 7,000 to 8,000 RPM and the speed of travel would be approximately 10-15 feet per minute. The shank diameter would be 1/2 inch to 3/4 of an inch. The length can be from 3 to 4 inches. The upcut or downcut determines which way the finished side of the material will face. The right hand twist determines the face to be down and the left hand twist determines the face to be up.

spiral bits
solid carbide
3 flute

cutting diameter	cutting length	shank diameter	overall length
3/8″	11/4″	1/2″	3″
1/2″	11/2″	1/2″	31/2
1/2″	2″	1/2″	4″
5/8″	2″	5/8″	4″
3/4″	21/8″	3/4″	4″

HAND OPERATED ROUTERS

When cutting with hand operated routers, the work piece must be fed along the ball-bearing angle of the bezel of carbide tipped routing cutters with 15, 30 and 45-degree angles. The cutters should have three tips for best performance. The running speed should be approximately 16,000 to 20,000 RPM and forward speed should be about 20 feet per minute.



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CHEMETAL®

Technical Information
#150 - #157 Magnetic Laminates

Chemetal Magnetic Laminates are HPL (High Pressure Laminates) that contain a thin foil layer of iron sandwiched in the HPL Backer, enabling magnetic effect when used with magnets. We recommend obtaining a sample of material for testing prior to installation. Surface is melamine.

Once installed, sheets must be cleaned once mask is removed.

We recommend either rubbing alcohol (found in most drug stores), hand sanitizer or dry erase board cleaner and paper towel. Sheets should also be regularly cleaned with this solution to prevent "ghosting."

MATERIAL SPECIFICATIONS

Size: 48" x 96" (4' x 8')
Thickness: .04"
Weight per sheet: 18 lbs.

IDEAL USAGE PER PRODUCT

Dry Erase: Chemetal #152, #157
Chalk: Chemetal # 151
Image Projection: Chemetal #153
Paintable: Chemetal #150
Custom: Any Chemetal #400, #500, #800 (metal only), 900 or Tints Series designs may be applied.

See Product Chart in Magnetic Laminate Brochure for more Product Info.

CLEANING

Do not use washing detergents. Sponge and water are suitable for most cleaning requirements.

For more complete cleaning we recommend either rubbing alcohol (found in most drug stores), hand sanitizer or dry erase board cleaner and paper towel. Sheets should also be regularly cleaned with this solution to prevent "ghosting."

Chemetal #152, #157: Dry wipeable, sponge and water may be used, as well as cleaners containing rubbing alcohol.
Chemetal #151: Sponge and water.
Chemetal #153: Require frequent cleaning when used with dry erase markers. Other Chemetal finishes are recommended for regular dry erase use. Sponge and water may be used, and conventional spirits.
Chemetal #150: This laminate backer is meant for surface customization (paint, etc.) Follow cleaning recommendations of surface material.

All Chemetal Magnetic Laminates are supplied with a protective mask or film. It is recommended that surface be cleaned with conventional spirits (ethyl alcohol) after mask removal to remove any residue.

NOTE:

Never use detergents such as washing liquids to clean the surface because they usually contain fatty or oil substances to prevent skin from drying. A greasy film can remain on surface making cleaning difficult.

TRANSPORT

Chemetal Magnetic Laminates must be stored and transported FLAT to avoid surface cracks.

CUTTING AND MACHINING

Please note that sparks may occur during cutting and machining due to iron layer in HPL laminate. Best cutting results are achieved with Carbide-tipped circular saw blade. SPECS: 12" (305 mm) diameter, .07" to .086" (1.8-2.2 mm) thickness. Z60 RPM: 1500 FEED: 26 feet per minute. When cutting double-sided Magnetic Laminates the bottom side must first be slitted for a clean cut.

USE

Chemetal Magnetic Laminates should be used in well air-conditioned rooms. Overly dry room conditions or direct heat influence should be avoided (risk of cracking). A short-term temperature influence on the laminate up to 140 Farenheit 60°C is possible.

ADHESIVES

When applying dampness impermeable materials on top of Chemetal #150 never use water-containing adhesive as the dampness of the adhesive cannot escape and the adhesive bonding can consequently not dry.

ENVIRONMENTAL

Laminate Components: 54% iron, 26% paper, 20% synthetic resin (irreversible hardened). The raw materials and production processes guarantee that the boards are free of substances that are harmful to the environment. According to transportation regulations, Chemetal Magnetic Laminates are not classified as hazardous materials, a marking is not necessary. They are physiologically recognized as safe, emission free, insoluble in water and suitable for the contact with food stuffs. Waste material can be disposed in accordance with the local waste regulations on controlled waste disposal sites.

NOTE ON DRY ERASE MARKERS

Quality, age, operating time and storage of dry erase markers have an enormous impact on the dry erase ability. It is necessary to store board markers horizontally. Please observe the storage directions of the manufacturers.

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CAUTION

Metal laminates will conduct electricity and can cause shocks or short circuits when in contact with ungrounded electrical circuits.

WARRANTY DISCLAIMER AND LIABILITY

The information in this Technical Information Sheet and all related documents released by Chemetal is believed to be reliable; but Chemetal disclaims the creation of any expressed or implied warranty including the warranties of merchantability and fitness for a particular purpose with respect to Chemetal products. In all cases, users must determine the suitability of such products for any particular use and shall assume all risk and liability whatsoever in connection herewith.

Since we exercise no control in handling, storage, application and use of these products or the products of others with which they are used in combination, no warranty, express or implied, is made as to the results and effect of their use. User must also establish his or her own procedures and verify the finish of any product to be as ordered before use. We recommend testing all procedures before beginning production or installation. Buyer's exclusive remedy for a loss or claim resulting from the use of Chemetal products shall be replacement of product proven to be defective. In no event shall the Seller be liable for any special, incidental, consequential or exemplary damages.

CERTIFICATIONS

Chemetal is ASTM E84-05 tested.
Chemetal is also IMO and Coast Guard certified (164.112/EC1347) for most products.

IMPORTANT

This information is intended to be a general guideline.

For further information please contact

Chemetal
39 O'Neill Street
Easthampton, MA 01027
Phone: 800-807-7341 | 413-529-0718
sales@chemetal.com

Certificate No:
TAF0000043

This is to certify:

That the Surface Material of Low Flame Spread

with type designation(s)
HOMAPAL HIGH PRESSURE METALLIC LAMINATES SERIES 100, 101, 102, 103, 200, 300, 400, 500, 700, 800 and 900

Issued to
Chemetal
EASTHAMPTON, United States

is found to comply with
DNV GL offshore standards
DNV GL rules for classification – Ships

Application :

Low flame spread surface material, not generating excessive quantities of smoke nor toxic products in fire. Approved for use as decorative (surface) material throughout the accommodation.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

This Certificate is valid until **2020-06-30**.
Issued at **Høvik** on **2015-10-02**

for **DNV GL**

DNV GL local station: **New York**

Approval Engineer: **Martin Gjelstad**

Petter Langnes
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Product description

"Homapal High Pressure Metallic Laminates Series 100, 101, 102, 103, 200, 300, 400, 500, 700, 800 and 900".

100, 101, 102, 103 Series consists of 99,8% anodized aluminium in thickness up to 0, 025".

200 Series consists of copper, brass and aluminium foil on a HPL backer (impregnated craft paper).Total thickness 0,055".

300 Series consists of copper or brass metal foil on HPL backer. When dried the surface is sealed with UV cured lacquer named RD 1383 or RD 1384 in a thickness of ¼ mm to ½ mm.

400/500 Series consist of 99,8% aluminium in a thickness of 0,020". HPL backer may be fitted to the non- exposed side. The sheet is sealed with UV cured lacquer named RD 1383 or RD 1384 in a thickness of ¼ mm to ½ mm.

700 Series consists of bright aluminium and bright brass aluminium. Products #706 and #709 consists of Homapal copper are sealed with UV cured lacquer named RD 1383 or RD 1384 in a thickness of ¼ mm to ½ mm. Product #710, is stainless steel foil on HPL backer.

800 Series consists of metal foil (brass, copper/zinc and chrome plated brass) in a thickness of 0.016".

900 Series consist of 99,8% aluminium foil in a thickness of 0.025".

The metal foils are supplied and manufactured by Homapal Plattenwerke GmbH, Germany.

Application/Limitation

Each product or series are to be supplied with its manual for installation/application and use.

Maximum gross calorific value shall be documented separately where applicable, ref. SOLAS Chapter II-2 Reg. 5.3.2.

Any adhesive used, other than the one used during testing, has to be tested for low flame spread characteristics according to IMO 2010 FTP Code part 5.

Each product is to be supplied with its manual for installation and use.

Type Approval documentation

Certification in accordance with Standard for Certification No. 1.2, Type Approval, January 2013.

Test reports Nos. #100-1701-1, #100-1701-2, #100-1701-3 dated 23 January 2003, #100-1701-4 dated 27 January 2003, #100-1701-5 dated 4 February 2003, #100-1701-6 dated 5 February 2003 from VTEC Laboratories Inc. New York, USA.

Tests carried out

Tested according to IMO FTPC Parts 2 and 5 and in compliance with IMO 2010 FTP Code Ch. 8.

Marking of product

The product or packing is to be marked with name of manufacturer, type designation and fire-technical rating.

Periodical assessment

DNV GL's surveyor is to be given permission to perform Periodical Assessments at any time during the validity of this certificate and at least every second year. The arrangement is to be in accordance with procedure described in Standard for certification No. 1.2 Type Approval Item 4.