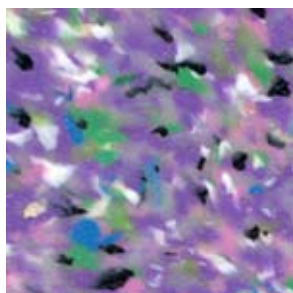


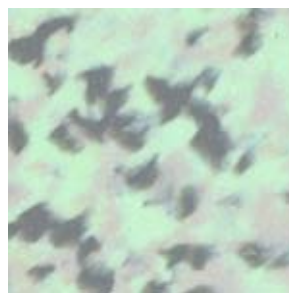
Selections from Color Charts



523 Purple Garden



524 Solar



525 Lichen



501 Confetti



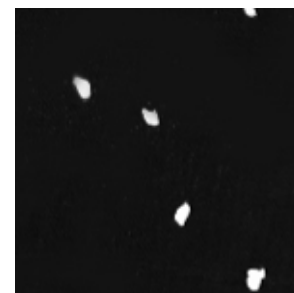
302 MJ Natural



109 Lipstick



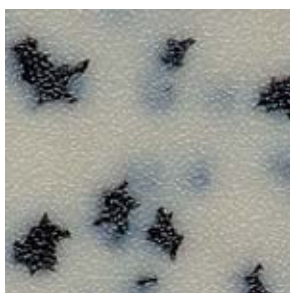
503 Warm Orange



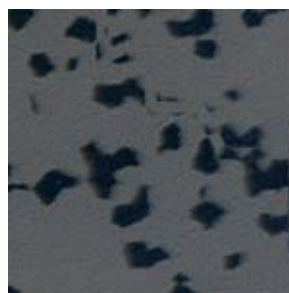
511 Midnight



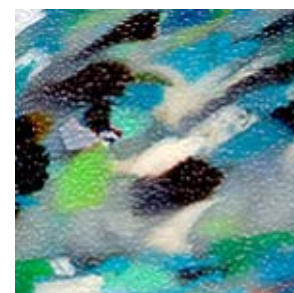
507 White Splash



512 Black Star



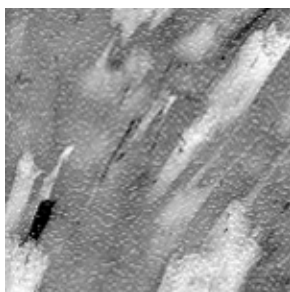
515 Twilight



504 Cool Blue



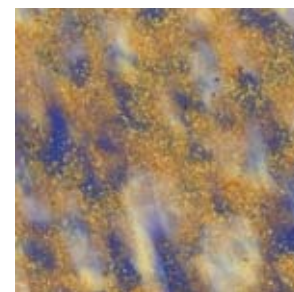
521 Rainforest



513 Tornado



550 Pine Dust



Custom

Origins Introduction

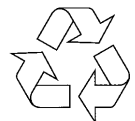
Origins is the name of a decorative material that offers fantastic visual stimulation. It achieves its punch by acknowledging its origins, which are colorful post-consumer detergent bottles. The material elevates recycling to a new art form. Unlike plastic laminate products whose printed patterns are repeated, the randomness of this material's color at the surface is real and unique. With the penetration of color all the way through the material, new design and fabrication advantages are offered. It is a completely safe, non-toxic material that causes no harm to the environment during its manufacture or use and it helps to minimize waste.

The creation of Origins is an involved process. Plastic bottles must be collected, sorted by color and shredded into pieces about the size of oatmeal. The flakes must be washed in hot water to remove contaminants such as soap, milk and paper labels and then thoroughly dried. By isolating the individual colors during the feed stock preparation process, a wide variety of color pattern customization is possible.

Individual colors of flakes are carefully blended into specific color formulas. A measured amount of the blend is spread into a mold, which is positioned in an oven and heated until the plastic becomes molten. Pressure is then applied and this causes the randomly distributed colors of flakes or pellets to move in fascinating ways, as they permanently bond together. Conversely, the processes of injection molding and extrusion are unable to match this technique because their process homogenizes the color of the molten plastic.

One of the best things about Origins is that it offers an aesthetic response to recycling that is not dull and dutiful but rather colorful, joyous and in many ways, superior to its competitors. Given that most plastic items are only one color, this material has a future in many as yet untapped applications. Origins is a serious decorative material made from recycled plastic. By making a recycled material look and feel desirable, the material takes a step forward, changing the use of recycled materials from a cause to a common place.

All inquiries are welcome.

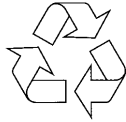


ORIGINS SPECIFICATIONS

- 1. PRODUCT NAME - ORIGINS**
PRODUCT No. - GMPM05H
CSI Divisions - 6, 9 & 10

- 2. MANUFACTURER**

Yemm & Hart Ltd
1417 Madison 308
Marquand MO 63655-9153
Tel: 573-783-5434 Fax 573-783-7544
Email: yemmhart@earthlink.net
Web: www.yemmhart.com



- 3. PRODUCT DESCRIPTION**

Origins is the trade name of a plastic panel used as an interior building material that is made from recycled polyethylene. It takes approximately 8 milk jugs to equal 1 Lb of Origins. The bottle recycling designation is HDPE #2. Polyethylene (PE) is a thermoplastic material that is resistant to chemicals and moisture. It has a weight of 0.036 per cubic inch. Typical Origins is not UV stabilized.

Origins panels are made by compression molding PE particles in the form of flakes or pellets, which can be different colors or sizes. When various colors are blended together and compression molded, the result is a unique pattern that goes all the way through the panel.

- 4. APPLICATIONS**

Origins is ideal for restroom and shower partitions, vanity and counter tops, work surfaces and table tops. Origins can be used as a plastic laminate or a solid surfacing material.

- 5. INSTALLATION**

1/8" Origins, when used as a plastic laminate, must have the adhering surface abraded with 40 to 60 grit sand paper to allow adequate contact adhesive purchase. Less than 1/2" thickness require a substrate for horizontal surfaces. 1/2" requires 12" and 1" requires 24" o.c. support. Origins holds fasteners well, threaded inserts and through-bolts are preferred.

- 6. WARRANTY**

Yemm & Hart Ltd guarantees Origins used indoors against breakage, corrosion and delamination for **15 YEARS** from the date of receipt by the customer.

- 7. SPECIFICATIONS**

Origins is readily available in the following sizes:

50" x 98"	(1270.0mm x 2489.2mm)
62" x 122"	(1574.8mm x 3098.8mm)
57" x 147"	(1447.8mm x 3733.8mm)

At additional cost these sizes are available:

21" x 24"	(533.40mm x 609.60mm)
24" x 48"	(609.60mm x 1219.2mm)
30" x 60"	(762.00mm x 1524.0mm)
48" x 72"	(1219.2mm x 1828.8mm)
72" x 144"	(1828.8mm x 3657.6mm)

Origins is available in gauges or thicknesses of:

1/8"	(3.175mm)	3/4"	(19.050mm)
1/4"	(6.350mm)	1"	(25.400mm)
3/8"	(9.525mm)	1-1/4"	(31.750mm)
1/2"	(12.700mm)	1-1/2"	(38.100mm)
5/8"	(15.875mm)	2"	(50.800mm)

All panels are made with textured finish on both sides, known as a partition finish. A Gloss finish is available upon request. Panels 1/2" (12.7mm) or thicker automatically receive a clear peel coat masking on two sides. All gloss finish panels receive masking regardless of thickness.

- 8. TRANSPORT**

Origins is shipped untrimmed with the mold edge to provide edge protection of the panels during shipping and to allow extra material for saw kerfs. Panels are packed interleaved on oversize skids with a gross weight usually not exceeding 2500 Lbs. and shipped LTL freight class 55. 1 to 3 – 4'x8'x1/8" sheets can be rolled and shipped via courier. All packaging is reusable & recyclable.

- 9. MAINTENANCE**

Clean Origins with solution of warm water and non-abrasive ammoniated cleaner such as Ajax liquid or mild solvent for more persistent stains and adhesive residue.

- 10. CAUTIONS**

Prices and availability may change without notice. Origins may be batch sensitive. Customer is responsible for determining the suitability of these products for their applications.

YEMM & HART

GREEN MATERIALS
 1417 MADISON 308 MARQUAND MO 63655-9153 USA
 TEL 573-783-5434 FAX 573-783-7544 www.yemmhart.com

ORIGINS

Panel Price List
 Origins Patterns & Solids

100% POST-CONSUMER RECYCLED

POLYETHYLENE (HDPE # 2)

COMPRESSION MOLDED PAN

Pebble finish with smooth optional.

Masking standard on 1/2" and >

Add \$0.60/sf for masking on < 1/2"

Price Key w/ Color Numbers

Market: 302, 306 & 501

Solids: 101-129

Bead Patterns: 510, 511, 512, 515

Splashes: 505, 506, 507, 508

Shard Patterns: 304, 502, 503, 504,

513, 514, 516, 517, 519, 521, 522,

523, 524, 525

Non-Recycled: 000, 005, 006, 007, 008

(add 35% to Market pricing)

--- ALL COLORS ARE BATCH SENSITIVE ---

Panel Sizes		Gauge	Prices are in US \$ per Panel				
(after removing mold edge)		(+/- 1/32" 1mm)	Market	Solids	Beads	Splashes	Shards
24 x 48	609 x 1219 mm	1/8" 3 mm	\$ 111.46	\$ 116.88	\$ 118.09	\$ 117.85	\$ 121.85
24 x 48		1/4" 6 mm	152.75	163.58	166.01	165.52	173.52
24 x 48		1/2" 13 mm	145.84	167.51	172.36	171.39	187.40
24 x 48		3/4" 19 mm	216.59	249.09	256.37	254.92	278.92
24 x 48		1" 25 mm	287.34	330.67	340.38	338.44	370.45
24 x 48		1-1/4" 32 mm	358.09	412.26	424.39	421.97	461.98
24 x 48		1-1/2" 38 mm	428.84	493.84	508.39	505.50	553.51
24 x 48		2" 51 mm	628.55	715.22	734.62	730.76	794.78
48 x 96	1219 x 2438 mm	1/8" 3 mm	220.87	242.31	247.12	246.16	262.00
48 x 96		1/4" 6 mm	291.69	334.58	344.19	342.27	373.96
48 x 96		1/2" 13 mm	470.89	556.67	575.88	572.05	635.42
48 x 96		3/4" 19 mm	697.75	826.42	855.23	849.49	944.54
48 x 96		1" 25 mm	924.60	1,096.17	1,134.58	1,126.93	1,253.66
48 x 96		1-1/4" 32 mm	1,151.46	1,365.92	1,413.93	1,404.37	1,562.78
48 x 96		1-1/2" 38 mm	1,378.31	1,635.66	1,693.28	1,681.81	1,871.90
48 x 96		2" 51 mm	2,062.50	2,405.63	2,482.46	2,467.15	2,720.61
60 x 120	1524 x 3048 mm	1/8" 3 mm	344.46	377.91	385.40	383.91	408.61
60 x 120		1/4" 6 mm	454.92	521.81	536.79	533.81	583.22
60 x 120		1/2" 13 mm	830.08	963.86	993.82	987.85	1,086.67
60 x 120		3/4" 19 mm	1,231.72	1,432.40	1,477.33	1,468.38	1,616.62
60 x 120		1" 25 mm	1,633.37	1,900.94	1,960.85	1,948.92	2,146.56
60 x 120		1-1/4" 32 mm	2,035.01	2,369.48	2,444.36	2,429.45	2,676.50
60 x 120		1-1/2" 38 mm	2,436.65	2,838.02	2,927.88	2,909.98	3,206.44
60 x 120		2" 51 mm	3,599.38	4,134.53	4,254.35	4,230.48	4,625.77
56 x 146	1422 x 3708 mm	1/4" 6 mm	516.26	592.18	609.17	605.79	661.86
56 x 146		1/2" 13 mm	884.99	1,036.82	1,070.81	1,064.04	1,176.19
56 x 146		3/4" 19 mm	1,357.89	1,585.63	1,636.62	1,626.47	1,794.69
56 x 146		1" 25 mm	1,800.39	2,104.04	2,172.03	2,158.49	2,382.78
56 x 146		1-1/4" 32 mm	2,242.88	2,622.45	2,707.43	2,690.51	2,970.88
56 x 146		1-1/2" 38 mm	2,685.38	3,140.86	3,242.84	3,222.53	3,558.97
56 x 146		2" 51 mm	3,978.28	4,585.60	4,721.57	4,694.49	5,143.07

Prices and availability may change without notice.

Payable by check drawn on US bank or major credit cards.

PE panel weight calculation formula: L" x W" x T" x 0.036 = Lbs.

Large panels are palletized flat and shipped LTL freight class 55.

Single 1/8" sheets can be rolled and shipped via courier.

Customer is responsible for determining suitability of this material for their applications. Thank you for considering recycled !



Credit Card Fee	3%
Cartons	\$25
Pallet/Packing	\$75

Origins Installation

Safety: Always wear safety glasses when cutting polyethylene or any material. Hearing protection is advisable when using power equipment. Respiratory protection should be used when a dust producing operation is being performed, such as sanding. Gloves or tongs should be used when thermoforming to prevent burns.

Handling: Always protect both surfaces from abrasions of any kind when handling Origins. Tape, paper, chipboard and cardboard are all readily available materials that can be used to protect the surfaces while you handle and fabricate the material. Origins is shipped interleaved with protective material to insure it arrives in prime condition.

General Machining Characteristics: Polyethylene is machinable using standard wood and metal working equipment. In some cases, certain adjustments must be made in cutting speeds and feed rates for lower heat distortion temperatures to avoid heat build-up from tool friction. For optimum tool life and accuracy, carbide or diamond tipped tooling is recommended. Tools should be kept sharp and smooth, with good side clearance angles. Water-soluble coolants may be used. Material to be machined should be supported and clamped to minimize vibration (which can cause chipping and rough edges).

Saw Cutting: Polyethylene can be cut with all types of saws. Handsaws, hand power saws, jigsaws, band saws and table saws. The optimum circular saw blade for cutting polyethylene is a $\frac{1}{16}$ " kerf, carbide tipped, 1.25 tooth per inch saw blade. Slower feed rates will minimize chatter marks on the cut edge. The index surface of the material (that which is in contact with the saw table or base) should be protected from abrasion with wax, tape or chipboard. Cutting of polyethylene does not produce noticeable airborne dust.

Laser Cutting: Polyethylene can be successfully cut with a laser. Testing the laser on the material to be cut is recommended because the power of the laser must be matched with the thickness of the material for a crisp clean cut. Complex patterns can be cut from a CAD file with remarkable accuracy.

Water Jet Cutting: Polyethylene can be successfully cut with a water jet. As with a laser, the water jet should be tested on the thickness of the material to be cut.

Die Cutting: Polyethylene can be successfully die cut in 1/8 thickness. The top edge will be slightly eased and the bottom edge will be sharp. The material should be tested first. The number of parts that can be cut at one time depends upon the thickness of the material, the pressure exerted by the die cutting machine and the design/strength of the steel cutting rule. This is a high-speed way to produce large quantities of the same part.

Routing: Polyethylene can be routed with hand held and CNC routers. High-speed steel or carbide tipped cutters quickly remove material leaving a crisp slick edge. Good material hold down is essential. Routing is used for cutting out irregular shapes, edge profiling, milling and engraving.

Shaping: Polyethylene panels can be run through a shaper to profile edges. High-speed steel or carbide tipped cutters quickly remove material leaving a crisp slick edge. Good material handling and material surface protection is essential.

Turning: Polyethylene can be satisfactorily turned on a lathe. Cutting tools with negative back rake and front clearance will give the best results. Feed rates of 0.02 to 0.10 inches per revolution and turning speeds of 250 to 750 surface feet per minute give the best turning results.

Origins Installation - continued

Drilling: Polyethylene can be drilled by hand, with hand power drills, drill presses or CNC drilling. The faster speeds produce holes with slick interiors and crisp clean edges w/ no surface deformation. Virtually any type of drill bit works. Drilling is required when using mechanical fasteners. Recommended feed rate is .004 to .020 inches per revolution, deep holes require backing drill out of hole periodically to remove chips. Drill specifications for optimum results are as follows:

DRILL ANGLES		DRILL SPEEDS			
Spiral Helix Angle	22° to 45°	Up to 0.093" Dia	5,000 rpm	0.225" to 0.312" Dia.	1,700 rpm
Rake Angle	0 to 5°	0.094" to 0.125" Dia.	5,000 rpm	0.313" to 0.375" Dia.	1,300 rpm
Point Angle, Small Drills	60° to 90°	0.126" to 0.187" Dia.	3,000 rpm	0.375" to 0.500" Dia.	1,000 rpm
Point Angle, Large Drills	90° to 118°	0.188" to 0.224" Dia.	2,500 rpm	0.500" Dia. and over	use fly cutters
End Angle	120° to 135°				
Lip Clearance Angle	12° to 18°				

Milling: Milling at 500 to 1000 sfpm should give good milling results

Reaming: Fluted reamers are recommended. Speed is approximately the same as for drilling.

Tap & Die: Threads both male and female can be successfully cut into polyethylene. Generally tap and dies of 2 or 3 flutes and a slightly negative rake work best. While operating, the tap or die should be periodically backed off to clear chips from the threads.

Deburring: Polyethylene can be deburred with a deburring tool. The deburring tool is an inexpensive hand tool that bevels edges, working best on interior curve edges.

Edge Planing: Polyethylene can be planed with hand and hand power planers. These tools are useful for beveling or easing edges to relieve the edge sharpness left by most cutting operations. Planes are also useful for reducing the width of panels by slight amounts.

Thickness Planing: Polyethylene can be successfully thickness planed with a knife or abrasive planer. Begin by reducing the thickness by no more than 0.010" per pass. Depending upon the type of knife planer used, the surface may show knife marks.

Sanding: Polyethylene can be sanded for decorative effect, to remove or hide scratches and in surface preparation. Hand sanding is often used for small area surface preparation when adhesives are going to be used. Hand held electric or air sanders are used for sanding large and/or irregular shaped areas. Wide belt sanders or abrasive planners can be used to create a brushed look. CNC sanding can be used to apply a consistent swirl pattern and sand blasting is an efficient way to cover very large areas quickly. Coarse grit such as 40, 60 or 80 will produce a suede like finish. By stepping up the grits, by no more than 100 at a time, a very smooth surface can be achieved with 600 grit papers. All sanding produces airborne dust.

Polishing: Polyethylene can be polished. As the final step after sanding to 600 grit, hand or power buffing using an automotive or plastic buffing compound will result in a high polished surface. Edge polishing can be achieved with a cloth buffing wheel. To polish and ease edges at the same time, 2 or more cloth buffing wheels may be ganged on the same arbor.

Origins Installation - continued

Decorating: Polyethylene can be decorated with ink or paint. Silkscreen inks and paint have been developed for polyethylene but all require that the surface of the polyethylene be treated to allow adhesion of the ink or paint. Plastic decorating is widely used in the automotive industry. Surface treatment is called oxidation and this is accomplished by any one of the following:

1. A blue flame passed over the entire surface to be decorated. The flame must pass by fast enough not to distort the material and it must be the blue portion of the flame.
2. Sulfuric acid w/ specific gravity of 1.82 (must be contained in glass bottle to be strong enough) bath, dip or application w/ polyethylene or polypropylene bristle brush. Allow to stand for 5 to 10 minutes before rinsing off with water.
3. Corona treatment of the surface using an electrical discharge. This method is only practical with extruded polyethylene because consistent thickness and surface properties are required.
4. Another method of surface preparation is plasma etching.

Mechanical Fasteners: Screws and bolts are a common and very successful fastening method. Polyethylene is denser than wood and does not have cells that collapse to accommodate fasteners. It will also melt slightly as a fastener is forced through it, then it will cool around the fastener securing it in place. Because of this, fasteners will actually hold better than in wood but pre-drilling is recommended to avoid surface deformation or splitting of the material over time. Nails and staples work but are not recommended for high quality results. Properly installed threaded inserts are a good way to firmly secure polyethylene to many other materials.

Laminating: Polyethylene can be laminated to itself and other substrates. The highest quality lamination of polyethylene to polyethylene is in a compression molding press. With this method several thicknesses of material can be laminated together to form a 100% bond. When different color panels are used, the laminated panel becomes suitable for engraving or edge profiling. This method of lamination requires no surface preparation. When laminating to wood or any other material, abrade the side of the polyethylene to receive the adhesive with a 36 to 80 grit paper. Apply a good grade of contact cement per the label directions. With contact cement lamination, the seams can still be welded using adhesive or heat. The various adhesives tested and approved for use with Origins are:

1. 3M # 4693 Contact Cement, quick, visible glue line - <http://www.3m.com>
2. Loctite Super Bonder Products #414, 416, 454 w/ #770 primer, a cyanoacrylate, invisible glue - http://www.henkel.com/cps/rde/xchg/henkel_com/hs.xsl/12165_COE_HTML.htm
3. 3M #DP-8005 Scotch-Weld Structural Plastic Adhesive, invisible glue line - <http://www.3m.com>

Edge Gluing: If strong watertight bonds are required for edge gluing, there is no adhesive that would work as well as 3M #DP-8005 Scotch-Weld Structural Plastic Adhesive.

Origins Installation - continued

Tack Welding: Polyethylene tack welds with a plastic welder, a soldering iron, a wood burning tool and even a clothes iron. Tack welds are produced when the hot tool is run along the seam where 2 pieces of polyethylene are touching, producing a thin film of polyethylene joining the two pieces together. Tack welding is not strong and is used primarily for positioning to allow another fastening method to be used.

Welding: Polyethylene can be welded using a plastic welder and a polyethylene-welding rod. There are several type of plastic welders available. The joints made with a plastic welder are as strong as the material itself and are highly recommended for edge joints. In some cases the plastic welding rod can be cut from the material to be welded, which allows for the weld joint to become invisible. The simplest type welder produces a stream of hot air and can accept various different types of welding tips. Another welder heats up the edges of each material and injects heated welding rod into the joint. Some plastic welding suppliers are:

1. Seeley Inc., hot air type, requires electricity and compressed air @ 800-258-2936
2. Kamweld Products Co Inc hot air type, requires electricity and compressed air - 781-762-6922 - <http://www.kamweld.com/>
3. Drader, injector type, requires electricity and compressed air @ 403-440-2231
4. Abbeon Cal Inc, distributor of plastic fabrication equipment @ 800-922-0977

Forming: Polyethylene can be thermoformed and vacuum formed. Experimentation is required to achieve the correct balance of material thickness, heat and timing. Thermoforming can also be achieved with a 2-part mold, where both surfaces of the heated material are pressed between two molds and allowed to cool.

Repairing: If repairing becomes necessary, it can often be accomplished with a variety of materials. Many of the above listed adhesives will work including auto body putty. Rubbing the scratch with a spoon can often repair a minor scratch. More serious scratches can be repaired by carefully applying heat from a plastic welding torch to cause the material to "flow" back together. A large scratch or gouge is best repaired with a plastic welder and then sanding and buffing the repaired area to match the surrounding area. If welding is not practical, mars can be repaired with epoxy glue. Drill a few 1/32" holes in the deepest parts of the area to act as anchors for the adhesive. Then cover the surrounding area with wax or very thin tape. Mix up a small batch of 5-minute epoxy and tint it with color pigment or plastic dust if desired. Add the mixture to the depression, being careful to fill up the cavity and the anchor holes. Place a waxed piece of a hard material with a texture like the marred surface, over the epoxy and clamp or apply weights in order to apply as much pressure as possible to produce some adhesive squeeze out. This will insure a similar texture on the repair's surface. When the Epoxy has set, remove the clamps or weight and peel off any thin layers of adhesive squeeze out and clean off the wax. Trim with razor if necessary. When done correctly, it will be difficult to detect the marred area.

Maintenance: Wipe down the surface with a soft damp cloth with or without mild detergent.

Please contact us if you need further information or help with a specific application.

Origins Counter Top Applications

Origins is 100% High Density Polyethylene and is 100% Post-Consumer Recycled unless otherwise noted. Environmental attributes and unique organic color patterns make Origins a popular choice for countertop applications. As polyethylene, Origins requires special adhesives and is softer than thermoset resins (such as conventional solid surface or high-pressure plastic laminate materials).

Characteristics

Origins is manufactured in thicknesses ranging from 1/8" (the thinnest) up to 2" and in common panel sizes of 50" x 98", 62" x 122" and 57" x 147". At 1/8" thk, it is suitable for use as a plastic laminate. Origins can also be used as a solid surface material, typically at 1/2" or thicker. Origins panels are embossed with a slight texture to inhibit minor scratching.

As Plastic Laminate

1/8" thick Origins panels require a suitable substrate to span distances between supports, typically a 3/4" thick wood product. Abrade the side of the Origins panel to which adhesive will be applied with 40 to 60 grit sandpaper to improve adhesion. Caution: Failure to sand may result in delamination later. Use regular plastic laminate cutting tools to trim and shape the edges. One advantage of 1/8" Origins material, which is thicker than the more common HPL, is the ability to add a more robust edge details, such as a radius or bevel.

Solid Surface

A solid surface panel offers a designer the opportunity to explore creative or complex edge possibilities, such as a convex overhanging curve or a wavy edge with several small overhanging curves. When Origins is used as a stand alone, solid surface material of 1/2" or thicker, an adequate support structure will be required, unless applied over a substrate. For 1/2" material, supports should be at least every 12" in each direction, for 3/4" material, every 18" in each direction, with 1" thick material supported every 24" in each direction. When using a substrate for support, mechanical fasteners (screws) every 6" are recommended, since contact cement will not be adequate to fasten it securely. All counter tops should be continuously supported along any adjoining walls. The front edge of any counter top should be adequately supported for its anticipated usage. For example, in a college restroom, a 1" thick x 12' long vanity top might require a 1/4" thick x 2" x 3" galvanized steel angle hidden behind the decorative/structural front apron, would counter the event of several students deciding to sit or stand on the vanity top.

Edge Treatments

The front edge of a thick solid surface counter top can be shaped to any profile as soon as the top is cut to size. However, by laminating several layers of thinner 1/4" or 1/2" thk material together for the front edge, a counter top can be made to appear thicker than it really is, at possibly a lower cost. An analysis of local labor and adhesive costs for building up an edge should be weighed against purchasing a full thickness panel. Origins material in 3/4" to 2" thick does not require a built-up edge. The width of the built up material should be at least 2" wide.

We recommend either 3M DP8005 or Loctite 454 w/primer as adhesives for this kind of fabrication. Mechanical fasteners (such as screws) should be used in addition. A built up edge is suitable for a variety of edge profiles. Complex edges are more appropriate to thick panels but can also be achieved in a built-up edge. Additional planning, material and adhesive will be required.



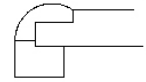
Drip Groove

The purpose of this groove is to keep liquid from rolling over the front edge of the top and then following the underside of the top to the point there it intersects with the cabinets underneath, thereby damaging them. A drip groove is recommended for both a built up edge and for solid surface counter tops. The groove is cut into the underside of the top, about 1/8" wide and 1/8" deep, and is positioned so that it will be 1/2" to 1" forward of the cabinets after the counter top is installed. Although a built-up edge may eliminate the need for a Drip Groove, since the cabinets would sit behind the built up portion, it is still recommended since a major liquid spill may be able to go over the edge and run under.



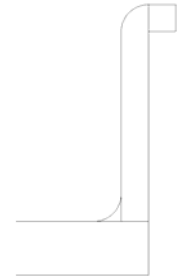
No Drip Edge

A typical plastic laminate post-formed top has a rise or bump at the front edge to prevent liquids from going over the edge. This same result can be achieved on Origins material using a different method. To accomplish the rise at the front, a strip of material will need to be added, similar to a built up edge. A rabbet or step must be cut into the front top edge about 1/4" deep and 2" wide. A second piece of material must be cut and shaped before adhering it into the rabbet or step with 3M-DP8005. Pictured is a section drawing for a no drip, built up edge. A Drip Groove is also recommended as a precaution.



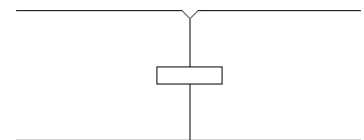
Back Splash

To prevent spilled liquids from coming into contact with the walls of a building, it is important to have a water-proof seal at the intersection of the backsplash and the counter top. The recommended adhesive for sealing the joint between the backsplash and the top is 3M-DP8005. A silicone sealer does not adhere to polyethylene and will not provide a water-proof seal. A silicone sealer can only act as a gasket, provided mechanical fasteners such as stainless steel screws (on the underside) are used to hold the backsplash to the top. Backsplashes can be any height and a different thickness than the countertop. A scribe build-up on the backside may be used for fitting against uneven walls. The backsplash can have a radius front edge and/or a cove molding added to the intersection of the backsplash and the counter top using 3M-DP8005 adhesive.



Seams

When a counter top is longer than 12 feet (exceeding the dimensions of available panel sizes), a seam will be required. Or complex bends or legs may require seams. As is the case with high-pressure plastic laminate, it is not possible to hide seams. It is recommended that the seam be joined with a groove and spline. Due to the possibility of a thickness variation, seams should be indexed off the top surface. A good alignment of the top surfaces may be achieved using wood "biscuits". A continuous plastic spline will provide better moisture resistance. For either method, 3M-DP8005 adhesive should be used on all surfaces of the joint before final joining. Complex counter tops can be joined using hardware known as a tight-joint fastener. Set into grooves made in the underside of the counter top, this hardware leaves the underside of the counter smooth with nothing protruding beneath to interfere with cabinets below. Another method is to fasten blocks to either side of the joint and fasten the blocks together to make a tight joint. If clear silicone sealer is used as a gasket material (instead of the recommended adhesive), it should be applied before the tops are pulled together. A slight bevel is recommended on either side of two joined tops at the seam. The beveled area can also be filled with 3M-DP8005 adhesive (careful masking the surface beforehand is strongly recommended) but never in lieu of adhering the entire joint as described above.



Maintenance and Repair

Other than occasional cleaning with soap and water, very little maintenance is required for an Origins counter top. Abrasive cleaners and cleaning pads should be avoided. Food preparation such as cutting should be on a cutting board and a trivet or hot pad should be utilized for hot containers. The surface should be kept free of abrasive materials such as sugar, salt and sand. Avoid sliding heavy appliances across the counter top. These should have rubber feet or other protection for the surface. Origins is embossed with a very slight texture at the factory to minimize minor scratching, however usage will eventually cause some scratches to develop. Noticeable but minor scratches can be healed by carefully applying heat lightly to only the scratch. Caution: if not done properly, serious damage can result. Some scratches may be partially healed by applying pressure with a hard, smooth object such as a spoon and rubbing against the scratch. A scratch can be removed by sanding, however the entire top surface of the counter would need the same amount of sanding to match. Coatings such as silicone or floor sealer may work for hiding minor scratches. A test should always be conducted on a thoroughly clean surface before applying these materials.

Origins Typical Properties

<u>Material History</u>			
Feed Stock	100% Post Consumer Resin (except where noted)		
Primary Source	Recycling Centers		
<u>Component Material Name</u>	<u>Abbreviation</u>	<u>Estimated Percentage</u>	
High Density Polyethylene	HDPE #2	98%	
Low Density Polyethylene	LDPE #4	1%	
Polypropylene	PP#5	1%	
<u>Technical Specifications</u>	<u>ASTM Method</u>	<u>Units</u>	<u>Value</u>
Specific Gravity	D792	Lbs/ft ³	0.952
Water Absorption	D570	%	<0.03
Compressive Strength	D695	Lbs/in	3,200 – 3,800
Flexural Modulus	D790	psi	220,000
Elongation at Yield	D638	%	16
Tensile Strength	D638	psi	3020
Elongation at Break	D638	%	1250
Tensile Impact	D1822	Ft-Lb/in ²	120
Izod Impact Strength, Notched	D256	Ft-Lb/in of notch	3 – 7
Rockwell Hardness	D785	M	67
Durometer Hardness	D2240	Shore D	68
Brittleness Temperature by Impact	D746	°F	-105
Coefficient of Linear Thermal Expansion	D696	In/in/°F x 10 ⁻⁶	124
Thermal Conductivity	C177	Btu-in/hr-ft ² -°F	1.53
Heat Distortion Temperature Under Load	D648	°F/66 psi	156
Deformation Under Load (122f-2000psi-24hrs)	D621	%	9.3 – 20
Dielectric Strength	D229	v/mil	486
Electric Resistance	D257	ohm-cm	8.4 x 10 ¹⁴
Dielectric Constant	D150	@ 60 Hz	2.65
Dissipation	D150	@ 60 Hz	0.006
Melt Index	D1238	°F	248 – 275
Ignition Temperature	D1929	°F	640
Smoke Density	D2843	%	13.9
Burning Rate	D635	in/min	0.79 inch
Hazardous Products of Combustion		Carbon Monoxide, Carbon Dioxide	
Polyethylene is a CLASS 3 building material , check with local fire marshal before specifying.			
All information given herein is offered in good faith as representative of the characteristics found in materials listed herein. Physical property measurements are typical values only and are subject to normal variations in test method and product manufacture. No guarantees are expressed or implied and Yemm & Hart Ltd assumes no liability.			

SECTION 1 - PRODUCT IDENTIFICATION & EMERGENCY INFORMATION

SUPPLIER: **YEMM & HART LTD** EMERGENCY TELEPHONE NO: **573-783-5434**
CHEMICAL NAME: **High Density Polyethylene (HDPE) (#2)** REGULAR TELEPHONE NO: **573-783-5434**
CHEMICAL FAMILY: **Thermoplastics** PERCENTAGE (%) **100** CAS NUMBER: **9002-88-4**
TRADE NAMES: **Origins**

SECTION 2 - TYPICAL CHEMICAL & PHYSICAL PROPERTIES

APPEARANCE: **Waxy Solid** ODOR: **Slight paraffin odor**
BOILING POINT: **N/A** MELTING POINT: **248° - 275° F**
VAPOR PRESSURE - mm Hg 20C: **N/A** SPECIFIC GRAVITY gr/cc (WATER = 1): **.952**
VAPOR DENSITY (AIR = 1): **>10** PERCENT VOLATILE BY VOLUME (%): **<0.4**
SOLUBILITY IN WATER % BY WEIGHT: **Insoluble** EVAPORATION RATE (BUTYL ACETATE = 1): **N/A**
FORMULA: **(CH₂-CH₂)+Additives (if any)** pH: **N/A** VOC: **N/A**

SECTION 3 - POTENTIALLY HAZARDOUS INGREDIENTS

MATERIAL: **N/A** PERCENTAGE (%): **N/A** TLV-TWA VALUES ADOPTED BY ACGIH: **N/A**

SECTION 4 - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE: **Problems not expected** THRESHOLD LIMIT VALUE: **N/A**

SECTION 5 - EMERGENCY FIRST AID PROCEDURES

EYE CONTACT: **Flush thoroughly with water. If irritation persists, call a physician.**
SKIN CONTACT: **If hot material contacts skin, flush with cold water and secure treatment of thermal burn.**
INHALATION: **Problems not expected.**
INGESTION: **Problems not expected when ingested, if uncomfortable seek a physician.**

SECTION 6 - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: **640° F (338° C) (ASTM D56)** AUTOIGNITION TEMPERATURE: **640° F (338° C)**
FLAMMABLE LIMITS IN AIR % x VOLUME - LEL: **N/A** UEL: **N/A**
EXTINGUISHING MEDIA: **Carbon dioxide, foam, dry chemical and water fog.**
SPECIAL FIRE FIGHTING PROCEDURES: **Water or foam may cause frothing. Use water to keep fire exposed materials cool. Use standard chemical fire fighting procedures. For fires in enclosed areas, firefighters must use self-contained breathing apparatus. Prevent fire control or dilution runoff from entering streams, sewers or drinking water supply.**
UNUSUAL FIRE AND EXPLOSION HAZARDS: **Exposure to fire can generate highly toxic fumes. Dust may be flammable when finely divided and suspended in the air.**
NFPA HAZARD ID: HEALTH: **1** FLAMMABILITY: **1** REACTIVITY: **0**

SECTION 7 - REACTIVITY DATA

STABILITY (THERMAL, LIGHT, ETC.) - STABLE: **Yes** UNSTABLE: **No** CONDITIONS TO AVOID: **Extreme heat**
INCOMPATIBILITY (MATERIALS TO AVOID): **Strong Oxidizers**
HAZARDOUS DECOMPOSITION PRODUCTS: **Carbon monoxide, acetaldehyde, formaldehyde, formic & acetic acid**
HAZARDOUS POLYMERIZATION - MAY OCCUR: **WILL NOT OCCUR: X** CONDITIONS TO AVOID: **None Known**

SECTION 8 - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: **Sweep up and collect as harmless organic waste.**
WASTE DISPOSAL METHOD: **Recycle, landfill or incineration in accordance with regulations.**

SECTION 9 - SPECIAL PROTECTION INFORMATION

EYE PROTECTION: **When cutting, drilling or sanding** PROTECTIVE GLOVES: **When handling hot material**
RESPIRATORY PROTECTION (SPECIFY TYPE): **When cutting or sanding, approved dust respirators must be worn.**
VENTILATION: **Use adequate ventilation when cutting, sanding or thermo processing.**
OTHER PROTECTIVE EQUIPMENT: **Gloves are recommended when handling heavy material with sharp edges.**

SECTION 10 - SPECIAL PRECAUTIONS

HANDLING: **Thin polyethylene sheets, when slid across one another can build up a static electrical charge. Do not slide sheets from a stack where potentially flammable air/dust or air/vapor mixtures exist. To minimize static electricity buildup, lift sheet straight up from stack. Thermo degradation products of polyethylene may include acetaldehyde, formaldehyde, formic acid and acetic acid.**
STORAGE: **Store in a cool area.**
PRECAUTIONARY LABELING: **Do not slide thin polyethylene sheets off of a stack where potentially flammable air/dust or air/vapor mixtures exist due to possible fire or explosion hazard from static electrical charge.**

SECTION 11 - TOXICOLOGICAL DATA - Acute toxicology

TOXICITY: ORAL (RATS), DERMAL (RABBITS), INHALATION (RATS): **Nontoxic - Based on testing of similar products and/or components.**
EYE & SKIN IRRITATION (RABBITS): **Non-irritating - Based on testing of similar products and/or components.**

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